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Working Paper

Annex to MS94: Compilation of case study reports A compendium of case study reports from 40 cities in 14 European countries

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Annex to MS94: Compilation of case study reports

A compendium of case study reports from 40 cities in 14 European countries

Working Paper No. 94

Authors: Cristina Garzillo, Peter Ulrich (ICLEI)

March 2015

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no. 290647.

Editors: Cristina Garzillo, Peter Ulrich (ICLEI)

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This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no. 290647.

Disclaimer

The information and materials contained in this Compilation are based on desk research and on primary data resulting from expert interviews and questionnaires. Any opinions and conclusions expressed in this material are those of the authors and do not necessarily reflect the views of the Project Consortium or the European Commission.

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Case study reports

The reports were written by 16 field researchers as the result of the field research conducted in the second half of 2013 in 40 cities in 14 countries across Europe. They explore what institutions are required to ensure a local transition towards sustainability. They synthesise all relevant information for each city, collected by the field researchers throughout their field and the preparatory research, enriching and contextualizing the data collected via questionnaires and face-to-face semi-directed interviews as well as additional desktop research. Thus, they constitute a relevant component for data analysis and interpretation and for answering the research questions of the research project "The Role of Cities in the European Socio-Ecological Transition (ROCSET)", which is part of the larger WWWforEurope project.

The reports are structured into seven sections. In the first part, a general city profile first provides *background information*, giving factual data on size, population, climate, special characteristics, etc. and providing information on basic government/administrative structure as well as on economic conditions (growth trend, key business and industries, employment, etc.). Then *local lifestyle* and *key challenges and trends* (economic, social and environmental ones) are addressed. The second part comprises a sector specific synthesis for *water*, *energy* and *green spaces*, each referring to availability, affordability and consumption levels, key issues, key actors/partnerships and key actions/measures/initiatives. The third part looks into governance and citizens´ participation, specifically into *multilevel governance* (province, national, EU) and *participation and bottom-up action*. In the conclusion, a *short summary* is provided, and finally *trends and challenges for the future* are outlined. All reports contain a *references* section at the end of the document.

The compendium covers all selected countries and cities and provides an important insight into each case through the eye of the respective field researcher processing all his/her collected relevant information in it.

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Northern Europe

1. Denmark – Aalborg

1.1 City profile

Background information

Factual data

The population of Aalborg's municipal area is approximately 203,400 inhabitants (2013). 120,000 of these live in the city of Aalborg. The municipal area is 1,373 km^2 (2013).

Aalborg is located in the Northern part of Denmark on the peninsula of Jutland and has a temperate climate. The Limfjord cuts through the peninsula of Jutland and the city of Aalborg and thereby connects the Western sea (Atlantic Ocean) with Kattegat (and the Baltic Sea). The city is located on both banks of the fjord. Historically, this was a very important transport route to Scandinavia, and the port of Aalborg one of the greatest in Denmark. The surrounding land is mainly agricultural and industrial farmland, there are few natural forests. The Municipality of Aalborg was merged with five smaller (and rural) municipalities in 2008 after a major national public steering reform. The municipality has also become responsible for rural development politics and nature management in these areas. The municipality is divided into eight main land areas.

Aalborg is an old industrial city with the largest industrial harbour in Denmark. The harbour has now moved out of the inner city to a new industrial area east of the city. The old harbour area has been renewed during the last decade with green spaces, open-air swimming facilities, and development of youth housing, housing, university facilities, and a cultural centre. Through the last two decades, a conscious strategy has been in place to renew old industrial sites to new (sustainable/green) housing areas and cultural areas. The city is trying to reinvent itself as a knowledge economy instead of an industrial city. Aalborg University is the third largest in Denmark, and very aware of their regional development role both regarding business/industry development and public authorities (planning, schools, etc.)[i].

Basic government/administrative structure

The city council is the highest authority. The administrative leader is the city executive. The highest political leader is the mayor. Aalborg has seven committees: the Committee for Health and Sustainable Development (which was established in 2005); the Technical and Environmental Committee; the Committee for Public Utilities; the Committee for the Elderly and Disabled; the Committee for Culture and Education; the Committee for Family and Social Welfare, and the Committee for Employment. Each political committee has a department in the municipal administration. In addition the mayor has an administrative department.

Economic conditions

Major employment categories: public administration education and health (35%), Trades and transport (24%); Manufacturing, mining and other industries (11%), construction (5%) the arts and leisure (5%)

information and communication (4%), finance (2%), other businesses (9.6%). The university is a major employer and attracts students to the city. The local unemployment rate is 5.4% (2013).

As can be seen from these figures, the university and public administration generate a large part of the working places in Aalborg. Aalborg University employs 3000 people and has 18,000 students.

The city has a 2% growth rate, which is mainly migration from the surrounding rural areas. In addition, there are many students that come from all over Denmark. The number of workplaces is also growing. The financial crisis does not seem to have affected industries severely (according to several interviewees). Older industries have been in a state of transition for several years, towards more knowledge intensive productions.

Local lifestyle

Aalborg is the third largest city in Denmark. It is the largest city in the region and has a role as a regional centre for Northern Jutland (administration, hospitals, education).

The city has a diverse economy that attracts people from the surroundings. The old city centrehas several pedestrianised streets and is very picturesque. There are many students in the streets at all times of day. Many people use the bicycle and there are bike lanes, but compared to Copenhagen, the city has not yet developed an integrated bicycle structure.

There is a general understanding among citizens, public administration and business environment in Aalborg that the city/region is remote from the centre of power in Denmark, Copenhagen. The City of Aalborg seems to have come to an agreed understanding between businesses and public administration (and the university); that is: if we want to get things done, we have to do it our own way by working together,and not wait for the national government. Aalborg therefore demonstrates a sense of pioneering spirit, and an entrepreneurial culture. It seems that there are many non-traditional partnerships between industries (eg waste chain), between industries and the local authority, and businesses, industries and local authority with the university. The university in this sense manages a brokering role between many different stakeholders and environments. Aalborg has further taken some untraditional turns, and has addressed the sustainability agenda as a strategic perspective since 1994.

Aalborg is, in other words, a “transition town” moving from an industrial to a green city. The city invests in the student environment. The Aalborg municipality is building far more student buildings than other Danish cities. The new student buildings are placed on the attractive waterfront in the city centre. The planning of these buildings involved the participation of students in the counselling group.

The city public administration is keen to establish a good student environment, attract students, and ensure that students stay in the city after their education. The student population also supports the cultural sphere of the city. The new cultural centre on the waterfront has transformed the old charcoal power plant into a central meeting point, with a cinema, theatre, and basic practice facilities for young musicians.

There is a focus on developing “green growth” with this city transition, both among industry and local businesses. The traditional heavy industries are looking for new more knowledge intensive productions. There is a publically funded initiative to support the development of enterprises for greener growth (energy reduction, CSR, etc.). The public authorities work with the private industries and businesses to develop industries with a focus on green technologies and knowledge workplaces.

Key challenges and trends

As with other large cities in Denmark, Aalborg is concerned with population and economic growth. However, the city developed a "green profile" and since the 1990s has had a (political) strategic focus on sustainable growth.

Municipal plans regarding sustainability issues: the overall vision is that sustainability strategies are the foundation for the city development, and must integrate social and human aspects as well as economic ones, in the planning of area, environmental and urban development. The current sustainability strategy (2013-2016) is the city's third sustainability plan. Sustainability has become the cross-cutting theme of all other departments. The Committee for Health and Sustainability works with all the other departments to ensure that they consider and implement measures that can support the overall sustainability strategy. Aalborg has been engaging in sustainability for 20 years:

Aalborg charter 1994: first municipal sustainability vision

Part of the network of sustainable cities (which was established after the Aalborg sustainability charter in 1994).

Aalborg commitments 2004: sustainability revisited – new visions for sustainable cities

Municipal Sustainability Strategy 2008-2012: mapping and assessing sustainability challenges

Municipal Sustainability Strategy 2013-2016: key issues treated in the strategy document: sustainable city and housing; sustainable mobility (transport); Sustainable utilities (energy, heat and water); sustainability and the citizens (participation and greening of everyday life competence; sustainable business transformations and green growth; nature and environment.

Municipal Climate and Energy Strategy:

Aalborg "the climate municipality": vision to cut CO^2 emissions by 2% every year towards 2020

The flower of sustainability: a tool or policy instrument developed for and by the physical planning department in Aalborg that integrates a broad sustainability concept. The flower petals concern different issues of sustainability: nature, social, economy, environment, local values.

Green-blue plan: physical planning connecting the city and surroundings through green and blue areas and landscapes for recreation and accessibility.

Organic food: vision to ensure 30% organic food in all public canteens etc. before 2015 and 60% organic in 2020.

Energy: funding for developing and implementing energy saving solutions in all public buildings. Energy leadership: all public buildings have energy management to save energy.

A centre for green transformation in the municipality of Aalborg was established in 2013. There is a holistic perspective on sustainability issues within planning, health, construction, building networks/social capital.

Economic issues and trends

The industry in the region is doing well despite the financial crisis. The university has been involved in redirecting old industries, generating innovation and developing new spin-off industries based on existing clusters (wind energy, etc).

1.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Aalborg's water is supplied by the public utility company Aalborg utilities AS (previously part of the municipal organisation). The water provided is pure groundwater, which is (not treated at a plant, but just oxidated). The pumping stations are located outside the city centre. The quality and availability is currently very good. The availability is not threatened, but the quality is threatened by pollution especially from agricultural activities (nitrate and pesticides) and other domestic pesticide use. There are some mild tensions between the Water Company and farmers. Farmers get compensation to reduce or discontinue use of pesticides or fertilizers near the pumping areas.

The company provides water to 90 000 households. Monitoring and measurements of water quality is done continuously. There are also small private water wells that provide water to a few farms. According to the public utility company the quality is not always tested. Consequently, it is estimated that there might be unacceptable concentrations of nitrate and pesticides.

Changing consumer behaviour has been a local strategy (also at national level) during the last 20 years. This has been supported by the installation of water measurement meters in all households and companies and water taxes (called the green taxes). Consumption levels have decreased during the last two decades due to these large public campaigns to save water and the green taxes. Water is still affordable for all citizens.

Water extraction has decreased from 13 million m^3 in the 1990s to 7 million m^3 today. Over the same period the city's population increased.

Key issues

There is concern about new types of pollution from i.e. antibiotics in agricultural manure. The geology around Aalborg is primarily chalk sediments and is not very good at filtering and purifying water. Therefore, it is important that the areas around the wells are clean from fertilizers and pesticides.

The public utility company works to get agreements with farmers in the vicinity of groundwater stations to farm organically or not to produce crops. Economic compensation is provided. They also work to get agreements with natural protection authorities to pump up groundwater near nature protection sites. It is a key concern to increase collaboration with farmers and nature protection authorities to ensure better practice around the groundwater catchment areas.

The water utility company has participated in two major EU INTERREG projects about groundwater protection and monitoring. These projects have provided funds for knowledge development about the waterscape as such and on how to improve measurements and management. It also participates in

national partnerships with other public utility companies in Denmark. A primary task is to improve knowledge about waterscape system.

Since the 1980s there has been a focus on the renewal of water infrastructure. The water system is now developed, so that various pumping stations and water utility companies in the larger region are connected into one regional water system and infrastructure. These measures have been implemented to increase water security and stability.

Energy

There are two main energy purposes in Aalborg (and Denmark); energy for heat and energy for electricity (electricity is seldom used for heating.) Aalborg has one coal power plant (previously located in the city centre, and now on the outskirts of the city). The coal power plant was previously publically owned but is now privately owned by Swedish company Vattenfall AS. The power plant produces electricity and uses the surplus heat to supply Aalborg's long distance heating system.

In the municipality of Aalborg about 75% of the heat is provided from surplus heating water into the water based long distance heating system (fjernvarme). Besides the coal power plant, this heat is provided by two other main sources: the waste incinerator plant (all waste is burned and the heat is used to warm water to supply the long distance heating water pipes to the entire city). The other source of surplus heating is the Aalborg Portland cement factory that also produces surplus heat from its processing.

The heat system is in this sense a somewhat closed system that uses heat energy that would otherwise be wasted.

The electricity system is however connected with the national grid and thus the Nordic and European market. Local citizens and companies can install solar cells on their buildings (if they comply with local regulations) and become connected to the national grid. Thereby they can 'earn' money when they produce more than they consume. (This national policy is however being adapted as national revenues on electricity taxes became to poor)

Wind energy is also present – but it is costly to build and it is difficult to get permits from the local planning authorities and difficult to build because of neighbour protests. Geothermal heating is still very unexplored and in some cases undesirable because of concerns over ground water. Large-scale geothermic energy has been tried out in other places in Denmark but without great success.

Electricity costs approximately 1.70 kr (or 2 EUR) per KW/h. Households have measuring units and have to report their monthly consumption to the electric company. There is a new national regulation coming with the provision that every household and company should have a smart meter so that consumers can regulate their consumption better.

Key issues

There was a project between the municipality of Aalborg and Vattenfall AS to develop a plant for electricity based on biomass. However this project stopped because the financial crisis made electricity so cheap making investments in the plant unprofitable. Another point of difficulty was that all the biomass had to be transported from somewhere, and if it was to be local biomass (in a sustainability sense the only viable

option) then it would require heavy traffic on the local roads. These plans were therefore creating difficulties in other domains. The project has now stopped.

Some of the interviewees point to the fact that the public local authority has to become more proactive and take clear decisions about energy in order to start a transformation. For a start, they could regulate areas designated for wind power.

A third point is that national legislation has to facilitate and reward investments in renewable energy. As it is today it is not viable to invest in large scale local energy when cheaper energy can be bought from nuclear plants, or hydro-electric plants on the European market. Several interviewees pointed out that the whole energy system needs to be reinvented to create new and more sustainable energy production chains.

Green spaces

Availability, affordability and consumption levels

In accordance with transition thinking, the physical planning authorities (and politicians) have had a strong focus on transforming previous industry areas in the city centre into green spaces. The habour area has been developed into recreational spaces (parks and open-air baths) and some (high-end) housing and some student housing. Old industry sites have been turned into a cultural center (Nordkraft). Other industrial sites (old train facilities) have been developed into urban housing with a focus on recreational space, energy-saving houses and rainwater storage.

The planning department is very aware of the necessity of engaging the public in management and decision making of the urban green spaces. The department has created a green council (with NGOs and private sector entrepreneurs) that is summoned in the early planning phases of areas to get their viewpoints.

A good example is Karolinelunden - an abandoned amusement park in the middle of the city. The NGO givrum.nu ('Give Space Now' and one of the interviewees) has become the project leader of a citizens' initiative to develop the old park. They have been given space to experimental urban gardening.

Another example is the public planning initiative to involve children in social housing areas to design their own parks in the area, and encourage inhabitants to participate in the maintenance of the parks.

There are also public initiatives to involve school classes and kindergartens in green space management and activities.

Other

Conference for sustainable city development

A festival focusing on the sustainable initiatives in Aalborg takes place every year. The festival covers many different aspects and involves actors from private sector, public-private partnerships, and NGOs to raise awareness and develop new collaborative initiatives between stakeholders in the municipality. It covers issues like solar panels, electric vehicles, urban farming, ecology, wind energy, outdoor fitness, and activities for citizens and businesses. The festival is arranged by the Municipality of Aalborg in cooperation with the university, business clusters, citizen organisations, NGOs, and other partners.

The festival, which began in 2013, is a way of improving the dialogue between campaigners and communities on the ground and the municipality.

A network for sustainable business development in the Northern Jutland region is prioritizing CSR and green growth driven thinking for developing industries.

A network for sustainable construction, involving the local government, private building companies and the university, has also been set up. Developing and building new (experimental) energy efficient housing is one of the network's priorities. The municipality invests in these buildings to create demonstration projects to support development in sustainable construction and inspire other projects in the city.

1.3 Governance and citizens' participation

Participation and bottom-up action

The Municipality of Aalborg sees that there is room for improvement in facilitating citizens' participation. One of the main purposes of the new sustainability festival is to communicate better with citizens. This communication serves both to give information about what goes on in the city, such as different initiatives to build identity and pride, and to invite more citizens into dialogue.

Regarding local decision- making, citizens, NGOs and non-profits are to some extent invited to participate in the area planning and green space management. There were several citizens' initiatives regarding green spaces. There are many traditional allotment gardens, but also new citizen initiated (and some NGOs) activities related to urban gardening. As these are also more included in the local authority decision making (or at least planning) this is perhaps also a demonstration of how people become more engaged when they are allowed to participate in issues that matter for their everyday life. The city authority has further established a green council where different non-profits are taken into account/invited to participate in strategies about area planning. Further rural communities are involved through their community councils. About energy and water, very little involvement is done.

There was not any citizen initiatives related to water (the closest is the broader nature protection NGO interviewed, but water was neither a main topic here). In relation to energy, there are non-profit organisations that work with energy saving advice to citizens and companies, and they also provide information campaigns to citizens. They did however express the wish to be more included in the local authority planning or decision-making.

1.4 Conclusion

Short summary

Aalborg is a city that is very conscious about the sustainability challenges – and has a long history of developing strategic plans and political commitments to work towards broad societal transitions – also on the international agenda. Eight years ago, the municipality established a new committee for health and sustainable development as a steering, management and planning institution that could work to integrate sustainability thinking in all other committees. The vision was to break down the sector-specific thinking that often affects issues of sustainability that in essence cut across all societal aspects. This department has created two generations of strategic sustainability plans, with both long-term visions and concrete

plans of actions and measurable goals. There is strong collaboration between the different departments and committees in the municipality. The department of health and sustainability has facilitated communication between technical environmental problematics and socio-economic aspects of sustainability.

The municipality perceives that one of their main challenges for the future is to improve their collaboration with civil society. However, there seems to be well-developed collaboration in the management of green areas, where citizens with new initiatives are allowed to manage and experiment with different recreational and food-production activities. In rural districts, the municipality has direct communication and collaboration with small town councils regarding to local district development.

The university plays a vital role in transition thinking. They are mentioned by all interviewed actors as a key player in planning and development both with the public and private sector. The university is playing a brokering role between different actors (social capital) and providing expertise in both technical and socio-economic issues. In this way, the university consciously plays an important regional development role. There is an intense broad collaboration between private sector industry, the public sector and the university about green growth and CSR.

Trends and challenges for the future

- Traffic: collective transportation –and related infrastructure. Bicycle infrastructure.
- Increased urban farming.
- Renewable local energy vs. the European energy infrastructure and market ruled energy system.
- The university is growing and facilitating industrial growth and spin offs.

[i] For more statistical figures about Aalborg in English: http://www.e-pages.dk/aalborgkommune/757/

2. Denmark – København

2.1 City profile

Background information

Factual data

Copenhagen is situated in the East of Denmark on the island of Zealand and has a temperate climate. The city is located by the Øresund Strait that connects the Baltic Sea with Skagerrak – and the Atlantic Ocean, and separates Denmark and Sweden. Denmark and Sweden are connected by a bridge, first opened in 2000, between Copenhagen and Malmö. This inter-city region is now understood as the "Øresund region". The region is increasingly an integrated work, life and labour market and region. Copenhagen and the surrounding metropolitan area is the most densely populated area in Denmark.

The Municipality of Copenhagen had 569,000 inhabitants (Danish bureau of statistics) in 2013. The metropolitan area has a population of 1,954,411.

The city-region has an international harbour, international airport, dense and well-developed train connections to the rest of Denmark, Sweden, and Germany. Both short and long-distance trains are a very popular means of public transportation.

Local transportation: Copenhagen has had S-trains (local trains in the city/metropolitan area) since 1934. They connect the inner city with the larger metropolitan area. From 1986 on, they were electrified. These trains are very popular, and have high rates of customer satisfaction. In 2002 Copenhagen opened its first underground metro with two lines right through the city centre, connecting the airport with national and international train connections. The metro is being expanded with a city circle metro. The public transportation network in the city has an integrated the ticketing system, which is very convenient for service users. In addition to S-trains and metro there are buses and regional and long-distance trains. The regional trains also connect Copenhagen with Malmö in Sweden.

Cycling is another very popular means of transportation.

Basic government/administrative structure

The Municipality of Copenhagen is the local authority. The city parliament (Borgerrepresentationen) is the highest political authority. It is elected every four years. It consists of 55 politically elected citizens from 10 different city areas of Copenhagen. There is one Lord Mayor for the city as a whole and the Economic Committee. There are in addition six mayors for each sector and committee: the Culture and Leisure Committee, the Technical and Environmental Committee, the Social Committee, the Children and Youth Committee, and the Employment and Integration committee. Each committee has its private department with an economic budget.

The government structure in Copenhagen is unique. There is no executive body consisting only of politicians from the majority party. Instead, the departments or sections are divided between all the represented parties in the city government. This on the one hand ensures that all represented parties are given a part of the political power by having at least one department mayor. However, it also creates

conflicts between different sections or departments because they are not steered by politicians from the same party.

Economic conditions

Copenhagen is a growth region in terms of the number of inhabitants and business development. In a study by UBS, Copenhagen was ranked as the city with third highest gross average income in the world in 2012. The average income in Copenhagen is higher than in the rest of the country.

Copenhagen Capacity is a non-profit organization that seeks to help start-up businesses in the region, as well as establish clusters of different business interests and knowledge. The region is known for the medicine industry), clean technologies, fashion and creative industries, and shipping and logistics. Several of the larger and more established industries have moved out of the city perimeter over the last 20 years (Carlsberg breweries, shipyards, etc.) making space for new housing areas (Holmen, Nordhavnen, Sydhavnen).

Higher education: there are several large universities in Copenhagen. Copenhagen University is the oldest and largest. It was merged with several smaller universities and university colleges in 2008 as part of a national university reform. There are 6 faculties and 100 research centers on four different campus areas. The university has 9,272 employees (5,023 academic staff and 4,249 full-time technical and administrative staff). The university has approximately 38 500 students enrolled. CBS (Copenhagen Business School) is a large public independent university with approximately 20,000 students enrolled and 1500 academic staff. In addition, the universities of Aalborg and Aarhus have established campuses in Copenhagen. DTU: Danish Polytechnic University is located right outside the municipality, but within the metropolitan area.

There were around 351,439 jobs in 2011 in the city of Copenhagen and an additional 269,586 in the surrounding metropolitan area. Tourism is an increasingly important source of income. Around 15% of the country's gross national product is produced in Copenhagen. The Municipality of Copenhagen is the largest employer in Denmark with 45,000 employees. The share of 35-year-old inhabitants in Copenhagen with higher formal education is 43% - the highest in Denmark (the lowest is 38%). Formal basic and higher education is public and free in Denmark.

Local lifestyle

Cycling is a main transportation form for Copenhageners. Separate bicycle paths are built on all major roads in Copenhagen. Crosscutting bicycle paths have been planned and realized across Copenhagen – called the green pathways. One of the most traffic intensive intersections has a digital sign that registers number of bicycles per day and year. On an average morning at 9 am, more than 23 000 bicycles pass by. In total approximately 970 000 passing bicycles were recorded that year (October 2013).

High levels of education and public campaigns create a high focus on green lifestyle and organic food. The new Nordic food initiatives focus on local and wild food.

Copenhagen's government has decided that there should be minimum 30-60% organic food in the public canteens (kindergartens, schools, elderly care, etc.) over the next decades.

Many bottom-up initiatives exist for greening the city. Many housing cooperatives develop their city spaces (streets, and city yards) into green areas for recreation and urban gardening. Membership of a housing cooperatives are is a normal part of life in Denmark – either through a rental cooperative, an owner-cooperative, or an "andel-cooperative" (shared ownership). The cooperatives are not only active regarding green spaces but also on energy questions, e.g. on solar panels on their buildings in the city. They are not involved in questions of water supply or infrastructure.

There are about 130 volunteer organizations in the city. These are concerned especially with social issues, but also with environmental concerns.

Key challenges and trends

Economic issues and trends

Copenhagen experienced some recession during the 1990s followed by growth since 2000. Copenhagen is the most entrepreneurial region of Denmark and is developing six main clusters: life sciences, ICT, food, clean technologies, transport and logistics, and creative industries.

Several old harbour areas have been developed into new office and residential areas. The bridge connection to Malmö (Sweden) and the building of the metro and train connection to the airport facilitated the development of a new area called "Ørestaden". There are currently three to five thousand new apartments with 8,500 inhabitants. It is estimated that the area will have around 30 000 inhabitants within the next decades. The area also houses commercial areas and office spaces. It is connected to the city and the airport by metro. There is a focus on providing green spaces in the entire area. Copenhagen is the only region of Denmark where the average age is not expected to rise in the next 30 years.

The city works in many ways for a sustainable future, not only though public campaigns, education and consumption, but also by the facilitation of green and recreational spaces in the city. The municipal vision is to reduce energy consumption and become CO_2 neutral by 2025.

Other

The planning perspective

Sustainable development work was formally started in 1999 when the city government established the Council for Sustainable Development of Copenhagen. They produced a plan that described the first policies for sustainable development in Copenhagen. The mandate of the council was to describe the main visions and goals for future sustainable development as well as to elaborate on citizens' participation, inter-disciplinary collaboration in the organization across different sectors, and how the local Agenda 21 "thinking" could influence the thinking of private businesses and industries.

From 2009 to 2012 plans concerning sustainability in construction and housing were developed related to sustainable project design, materials, water and drainage, energy consumption, waste, noise, landscaping, etc.

In connection with the municipal strategy for sustainable development, a public plan for greener everyday life in Copenhagen was developed, based on the Agenda 21 outlook. The plan was mainly based on municipal facilitation of citizen involvement through four large workshops. A further 12 families were

interviewed in their homes to give other perspectives on the sustainability challenges and possibilities. The involvement of the citizens produced perspectives for a more sustainable Copenhagen. The plan can thereby also inform the municipality about how it can contribute to and help its citizens with a greener everyday life.

The green, smart and CO_2 neutral city – this is the Climate Plan for Copenhagen 2025. In 2009, the city government decided that CO_2 levels should be reduced by 20% until 2015 – in 2011, it was decided that Copenhagen should be the world's first CO_2 neutral city. The 2011 Climate Plan is very ambitious in several other areas apart from CO_2, as it aims for change in a greener and smarter direction. It emphasizes that it is only through the engagement of the public and private sectors that it will be possible to achieve these goals.

Copenhagen was awarded the European Green Capital 2014 prize because of its green business model, its focus on green spaces, bicycle transportation in urban planning and the goal of becoming CO_2 neutral in 2025. The focus for the 2014 Green Capital campaign in Copenhagen was "Sharing Copenhagen", as the city presents solutions in the following five areas:

- The good urban life of the future:
  Cities and sustainability, smart city, urban space and quality of life, the cohesive city.
- Resource effectiveness and sustainable consumption:
  Resources and waste, food, design and recycling, energy consumption and buildings, water.
- The blue and green city:
  Blue and green urban solutions, sea swimming pools and city beaches, parks and green areas, biodiversity, urban gardening.
- Green mobility:
  Cycling, public transport, accessibility.
- Climate and green transition:
  Climate change adaptation, energy renovation, CO_2 reduction

2.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The Copenhagen area gets its water from ground water sources. The water is pure and does not need to be treated before drinking - it only needs to be filtered and oxidated. The idea of pure available water to all citizens is of important cultural significance. There is an underlying cultural and political understanding that water should be clean and good, and that access should be balanced with the needs of nature.

Since the 1970s, the water extraction for the capital has decreased by 50%. The reduction in water use can be seen as a consequence of green taxes, reduction of leakages, and public water saving campaigns. In addition, many water-consuming industries have moved out of the capital region. On a household level, the water use has decreased from 114 l/day (2007) to 111 l/day (2012). The goal is 100 l/day per household, a message that is communicated in public information campaigns.

The public utility company HOFOR supplies the capital region. It supplies 50 million m^3 water to approximately 2 million people per year. Water is very affordable in the capital region - 1000 liters costs 39.19 DKK (approximately 4.5 EURO).

HOFOR has approximately 600 wells on 50 spring areas – all of them outside the capital region. The capital area is too polluted with pesticides and other substances for water extraction. It takes around 10 years to establish a new groundwater well. The main issues are that the groundwater resources are extracted far from Copenhagen in other municipalities. This generates two main challenges:

Infrastructure and maintenance: the water has to be transported over long distances. This makes the system more vulnerable for leakages and unforeseen events.

Juridical rights to water: HOFOR has to make negotiations and contracts between the capital region and the surrounding municipalities for long-term water supply. Currently this is not a problem because there is enough water, but over the long term, it can become problematic. The extraction of water must be balanced not only with the needs of the other municipalities but also with the natural thresholds.

The long-term potential problems are vulnerability of the wells to pollution of groundwater both from agricultural substances and from saltwater infiltration. In addition, the consequences of climate change gives insecurity of how that will affect the groundwater and water cycles on a very long-term basis.

Key issues

From HOFOR's perspective, there should be a regional governance level that could manage and strategically plan the water resources on a higher level than the municipalities.

HOFOR works with ideas and development of saltwater treatment, groundwater reservoirs, etc. to secure drinking water for the capital over the long term. They also work on how to create local drinking water supply within the capital region. One long-term project is to develop a system where rainwater can be filtered down in certain underground structures in Copenhagen (e.g. parks and green areas), then be treated by different earth layers and pumped up again as drinking water.

This project is connected to another new water problem in Copenhagen: heavy rainfall. The sewer system cannot absorb heavy rainfall, which leads to black water flooding in basements etc. This has created new initiatives for sewer system upgrades, but also how city planning of green areas and private gardens can do more to absorb or deviate flooding.

Key actors/partnerships

Municipality of Copenhagen and HOFOR (the metropolitan supply company[i]: owned by several municipalities in the capital region).

Key actions/measures/initiatives

Public water saving campaigns (public and private, families and schools).

Technical measures to save water (fix leaks etc.).

The “groundwater funding” initiative is a foundation and collaboration between different actors (municipalities, farmers associations, environmental protection agency). This aims to protect the groundwater through forest plantations, and compensation to farmers for reduced fertilizer and pesticide use. Securing water catchment areas is happening through making deals about sustainable agriculture (reduce fertilizer and pesticides) in the water catchment areas, and planting of forest in previous agricultural land to avoid exploitation of the area. HOFOR is now evaluating if citizens are willing to pay more for their water – as a direct funding of groundwater protection initiatives.

Public funding to rainwater solutions for one-family houses such as using rainwater for flushing toilets and washing machines etc. are supported with 10 000 DKK (1,300 Euro) per house

Energy

Availability, affordability and consumption levels

Energy in Denmark has two main perspectives: heat and electricity. Copenhagen has an energy vision and climate plan to become CO_2 neutral by 2025, meaning independence from fossil fuels. In 2011, Copenhagen had reduced the CO_2 level by 21% compared to the 2005 level. Heating is provided by district heating to 98% of Copenhagen households. The district heating is mainly produced by the waste incinerator. The municipal utilities company HOFOR (and their political steering board) has recently decided to expand and invest in a new incinerator with a larger capacity to burn waste. Several interviewed NGOs considered this an unwise strategic decision because, although it provides heat based on waste it will damage the energy strategy (and finances for investing in alternatives) of Copenhagen for many years and hinder other sustainable energy initiatives. Further, some actors perceive that the burning waste is a waste of resources that could be re-used.

The coal power plant is planned to be converted to use bio-fuels – perhaps based on organic waste from the city.

Long-term perspectives are to develop areas for wind power. The problem is that wind turbines are not efficient in urban areas. The wind acts differently in urban spaces and is not suitable to drive the turbines. Therefore, Copenhagen has to negotiate for areas outside the city or in the outer perimeters of the city to acquire areas for wind energy. This is very difficult because windmills are not welcomed by most private housing areas. Further, the airport is located in the city perimeter by the sea and there are restrictions to windmills close to the airport.

The production and distribution of local energy is difficult because it is connected to the overall energy system. The mismatch of energy supply and capacity of the distribution system presents a challenge for local energy production.

Solar energy: several Copenhagen housing cooperatives (both owner, rental, and shared) have taken the initiative to install solar panels on their buildings. This is a very efficient way of producing local energy (according NGO expert) – because the energy is produced in the same place as, it is used. However, regarding the production and returning energy to the grid might create some difficulties. The challenge for investing in and setting up solar cells include restrictions on cosmetic changes to buildings, and changing policies regarding solar energy.

In relation to energy, private and public transport are also considered important on the CO_2 balance. First of all, public transportation is a focus area (metro, S-train, bus-lanes, etc.), buses on gas, and the bicycle (bike-lanes, city bikes for loan, etc.). On a different scale, the municipality is trying to buy more electric cars (80% in 2015). Hydrogen cars are being looked at over the longer term.

Key issues

Copenhagen aims to become the first CO_2 neutral capital city by 2025

This requires the city to reduce energy consumption on a general basis through public education and value campaigns. Green mobility and creating green habits of transportation is also a priority.

Key actors/partnerships

HOFOR (the metropolitan utilities company);

Communication with NGOs (the ecological council, the Energy service (PUBPRI partnership and consultation/advisory company);

Communication with industry and business clusters (Danish Industry, Copenhagen Capacity,) regarding energy saving measures.

Key actions/measures/initiatives

Energy savings

Alternative transport and fuel

Waste incinerator

Building wind turbines to provide Copenhagen with clean energy. Citizens are encouraged to invest in their own energy solutions.

Solar panels: citizens and housing associations are encouraged to invest in solar panels on their roofs.

Green spaces

Availability, affordability and consumption levels

Since 1947, the Finger Plan has ensured green spaces between the main access roads (the five fingers). There is a high focus on green spaces and clean air as part of the high quality of life in urban Danish areas (there is not much wild nature in Denmark). The growth of the city puts existing green spaces and the potential for developing new ones under pressure. The municipality develops green space plans every five years. Other plans can be changed more rapidly.

It is a standing strategic goal in the municipality that 95% of the inhabitants in Copenhagen should be able to reach a public green space within 15 minutes. It is considered valuable that the citizens use public green spaces, a tendency which is increasing. People use the public spaces more for daily and leisure activities. There are three main functions of the green spaces (social, health, and environmental).

There are some area conflicts especially in some former industrial areas that have been transformed to residential areas where there are fewer public green areas - although there are also private green areas. There are also conflicts about space for roads and parking places with green areas or cycle lanes. These conflicts are often handled by local political councils.

The municipality has opened up many public spaces that were previously enclosed (kindergarten playgrounds, schoolyards, etc.), an initiative that is appreciated among the citizens. However, some of the private or NGO actors interviewed claimed that the public park authorities need to be convinced by non-public actors to generate new initiatives that open public spaces for new activities.

After the rainfall in 2009 and 2011, there has been an increased (political) focus and increased funds for activities and measures that can contribute to managing heavy rainfall in the city. The municipality has now developed “cloudburst plans” that divide the city into rainfall zones.

Key issues

Create green city spaces in streets, yards and on roofs.

Area pressure or conflicts due to increasing population and increasing green space use. Noise related to tourism, cultural economies (music, festivals)

Some green areas are “colonized” or occupied by organizations for sports such as soccer.

Key actors/partnerships

NGOs

Local political councils

Depending on the plan: involvement of citizens or experts.

The municipality has established a Green Council. This is an advisory body that performs counseling. Large NGOs are represented along with the mayor of the Technical and Environmental municipal department.

Key actions/measures/initiatives

Cloudburst plans and green space design that can handle heavy rains

Urban greening

2.3 Governance and citizens’ participation

Multilevel governance

Copenhagen is relatively independent of the national state in relation to water and green spaces.

Water is steered together with some of the neighbouring municipalities through the public utility company. Therefore, water could be seen to be managed on a regional level. It is however, a challenge for

Copenhagen that water is legally steered at municipal level because they are dependent on water outside the region. They have to negotiate contracts with other municipalities.

Public green spaces are managed and planned by the municipality. They often collaborate with NGOs or local associations and local political councils.

The energy sector (and especially electricity) is completely managed nationally and on EU-level. Heating is controlled by the public utility company.

Participation and bottom-up action

The municipality is an important actor with independent financial resources, competence and expertise to steer Copenhagen in a more sustainable direction. The municipal department acts mainly on the strategic level and invite NGOs to give their advice and opinions. The operating parts are to some degree outsourced in public companies (like the utilities company).

The citizen participation dimension is a legal foundation in the formal planning processes. Citizens have the right to be heard. They are also to some degree involved in the sub-municipal councils across the 10 districts in the municipality. The range of citizen participation varies according to context (digital involvement seen as a way to capture the opinions of residents). Citizens tend to be more on green spaces and local neighbourhood planning, and less on heavy infrastructure like the metro expansion, energy and water. Participation is more based on politicians and the invitation of NGOs, who have a great deal of involvement in Copenhagen. In the last 20 years a collaborative tradition between politicians and NGOs has developed.

The municipality has an increased focus on citizen behaviour with institutional plans for sustainability that must be carried out by citizens in their daily life. It must become easier and more obvious for citizens to understand and change their everyday behaviour. The municipality works to understand how citizens think about the environment in their everyday actions, and adapts its strategies accordingly so that they are better integrated in the life of the citizens. This is an approach that is informed by citizens and makes the strategies matter for citizens. The municipality increasingly tries to collaborate with the private sector, mainly on urban development, building or development regulations, and green growth.

2.4 Conclusion

Short summary

Copenhagen is a large city and a capital. There are many different initiatives directed towards a more sustainable development. The steering aspect of the sustainability work in Copenhagen is very complex. There are many different public, private and voluntary initiatives and activities that work next to each other in partly separate – partly synergetic relations. It does not seem as if there is one dominant leader that sets the direction for the sustainability agenda. Rather it seems as if the sustainability perspective has grown independently among many different actors and institutions in parallel who challenge one another to go further.

The sustainability agenda has been driven from a bottom up initiative since 1999. With the new Climate Plan, the sustainability agenda has risen to the highest level and is seen as a necessary strategy for the future of the city. It is also attractive to new citizens and the business environment.

Private companies help to create an arena in which politics and business engage with sustainability and recognize the importance of sustainability as an ingredient in developing attractive urban spaces for the next generation.

The role of the universities was not particularly present. There are many universities, research and higher education institutions in the region, but it does not seem that they have a particular collaboration with the local authorities (although this may exist with the national government). The role of the voluntary organizations and professional NGOs was very important for the city (both within water, energy and green spaces), and their work in engaging citizens was acknowledged by the municipal authorities.

Among the people interviewed, there seems to be a focus on the following key topics: waste as a resource, green mobility in the city, an urban development adapted to rainwater, green urban spaces. The initiatives are often mentioned in municipal strategies, but the activities take root through NGOs, private companies or citizen initiatives.

Trends and challenges for the future

Housing and workplaces: the city has to develop housing and workplaces to continue to be attractive for well-educated inhabitants. There might be some challenges in the balance between securing space for recreation and housing.

Recycling of waste and materials: there are recycling stations, but these must be established to be more attractive places that people are willing to use.

Water: Copenhagen has a vulnerable water situation. Over the long term, they need to become more self-sufficient by developing plants for purifying seawater, or models for draining and purifying increasing rainfall.

Capacity to cope with heavy rainfall (and perhaps sea-level rise) in the urban planning

[i] HOFOR (the metropolitan supply company); takes care of water and energy supply, waste water management and sewer system; district heating, gas. They have a vision for sustainable city development: New strategic planning for "creating sustainable cities"

3. Sweden – Göteborg

3.1 General city profile

Background information

Factual data

Located in the Southwest of Sweden, Gothenburg is the resident city in the region *Västra Götalands Län*. Gothenburg is recognised as a world city according to Globalization and World Cities Research Network (GaWC) with the ranking Gamma- (GaWC 2010).

It is the second most populated municipality in Sweden with a population of 528 014 inhabitants (SCB 2013a). The population increased from 474 572 in 2002 to 525 442 in 2012 (SCB 2013c). In relation to 2011, the population increased with 5,700 people in 2012 (Gothenburg Annual Report 2012, p.12), which is a lower population growth than previous years.

With its 192.38 km^2 (SCB 2012a), Gothenburg's urban area is the largest in Sweden. It thereby places itself before the capital Stockholm, which is the most populated urban area. However, the municipality land area is 447.76 km^2 (SCB 2013b), making Gothenburg ranked as 185th largest municipality in Sweden.

Most buildings are rather low but there are a few buildings that are between 50 and 90 meters high. In terms of city architecture, characteristic buildings are "the lipstick" (*Läppstiftet)*, the Gothenburg Opera, The Museum of Art and the "fish church" (*Feskekôrka*), to name a few.

Gothenburg has a costal climate, which is relatively mild. In the summers, the average temperature is around 17-18 degrees (SCB Statistic year book 2011, p.33) while the winters have an average temperature of around 0 degrees (SMHI).

Basic government/administrative structure

As in all Swedish municipalities, the decisions are being made in the municipal assembly (*Kommunfullmäktige*), which is the local parliament. The municipal executive committee (*Kommunstyrelse*) has 13 representatives, including the Mayor, and is the local government that leads and coordinates all the municipalities' work and is responsible for the economy. Each municipality can then arrange their own committees, responsible for different areas.

In Gothenburg there are ten district committees, with their own district departments. The district committees are responsible for elementary school, elderly care, childcare etc. The different departments represent eight different areas: Housing, Recreation, Culture, Environment, Technical provision, Traffic, Education and other departments. The local government is lead by a coalition of the Social Democrats, The Left Party and the Environmental Party. The municipal tax is 21.12% (SCB 2013e).

The total budget for 2013 was 2,718 Million € (23,917,400,000 SEK), which is lower than for 2012 (Gothenburg city budget 2013). The result (excluding items affecting comparability) was 67.7 Million € (596,000,000 SEK), which was a decrease compared to 2011 while the debts increased, reaching 3,478 Million € (30,609,000,000 SEK) in 2012 (Gothenburg annual report 2012, p.68-69).

Economic conditions

Gothenburg is the second largest city in Sweden and hosts the largest harbour port in Scandinavia. Many multinational corporations, such as Volvo, Volvo Trucks and SKF, have their headquarters in Gothenburg. Medical corporations such as Nobel Biocare and Astra Zeneca have offices in Gothenburg. The city is also home to Sahlgrenska University Hospital, the largest in Northern Europe with over 17,000 employees. Gothenburg has 102 municipally owned companies (Göteborgs-Posten 2013), which is considerably more than other municipalities in Sweden. The private sector is diverse with companies operating in 750 different types of industries (Gothenburg city budget 2014, p.14).

The city and especially the car industry were hit hard by the financial crisis in 2008. The city has been able to recover and luckily Gothenburg has been less affected by the Euro Crisis that started in 2012. The Gothenburg region has unemployment of around 7.5% or 35,100 people. The unemployment rate for young people between 18 and 24 years old is 15.2% (Gotenburg city annual report 2012, p.12).

Special characteristics

The city will celebrate its 400th anniversary in 2021. It is the only city in Sweden with a recognised English name. Swedish nicknames are (in English) “The new Amsterdam” and “Little London”. The population is relatively young and the average age in Gothenburg is 38.9 (SCB 2013d). The cultural diversity is with Swedish measures very high and the population that has foreign heritage is 31.0%, while 23.1% was born in a foreign country (SCB 2012). Gothenburg has been an important harbour hub and since the 1990’s it is also an important event city in Sweden with many international concerts and events as well as the largest amusement park in Scandinavia, named *Liseberg*.

Local lifestyle

Mobility

Cycling is a common means of transportation. Gothenburg has a wide public transport system (with trams busses and ferries) although it is constantly a subject for criticism. There are on-going plans and investments to increase the quantity and quality of public transports. City Tolls have been introduced in order to reduce traffic in the city centre and to finance new road infrastructure projects. *Vision K2020* is a project aiming at realising that half of all travels shall be made by public transports by 2020 (K2020).

Key challenges and trends

Economic issues and trends

The municipality has experienced a more challenging situation in the past years. The economic margins are less due to increased net costs, caused by demographic changes, and investment volumes connected to expansion and reinvestments in buildings (Gothenburg city annual report 2012). The median income in 2012 was 238,143 SEK compared to the national average of 241,622 SEK and the unemployment rates were 9.3% in 2012 compared to 8.4 on the national average (ekonomifakta.se).

Social issues and trends

Social issues are challenging for Gothenburg, especially problems with segregation and large socio-economic differences between city districts. People with low education, high unemployment, etc. are

overrepresented in some districts while high educated and well-paid inhabitants dominate in others. Average life expectancy differs as much as seven years between city districts (Förslag till Budget 2014, p.8). Integration remains a challenge in Gothenburg. This is a problem since almost one third (31.0%) of the population has foreign ancestry and 23.1% were born in another country (SCB 2012b).

Environmental issues and trends

Climate change is perceived as important for Gothenburg. The city infrastructure is especially vulnerable to increased precipitation and a rising sea level. Flooding has been a problem for the city and there have been some incidents where large damages were sustained on streets and houses.

Another issue is air pollution and the city has difficulties meeting the EU's air quality directive states regarding NO_2 emissions. It is estimated that around 300 people are dying prematurely in the city every year, due to air pollution (Göteborgs-Posten). The CO_2 emissions from traffic are at about the same level (800,000 tonnes) as in 1990 (Gothenburg city annual report 2012, p.51).

3.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The availability of water in Gothenburg is high since the river *Götaälv* flows through the city. It is Sweden's richest river in terms of water quantity (Göta Älvs Vattenvårdsförbund, p.7). There are two waterworks in Gothenburg, which produce together round 170 million litres per day (Göta Älvs Vattenvårdsförbund, p.49). The quality is besides good.

For a private house the variable cost is 13.61 SEK/ m^3 with a basic fix fee of 2,888 SEK (Gothenburg city 2012). If a household consumes 150 m^3/year, the cost would be around 3.3 öre/litre (1 öre is approx. 0.011 cent). The average consumption level is 170-litre/24-hours/person (Gothenburg city 2013b). This means that each individual spends around 5.61 SEK5 per day on water.

Key issues

The water supply is sufficient and the quality is also relatively good. However, potential threats are water-dispersed diseases, such as parasites, bacteria and virus. Therefore the protection of raw water is very important. Future flooding caused by climate change will increase pollution of the raw water. This is a problem, particularly in Gothenburg, since the city uses surface water and not ground water as source for its drinking water.

Another problem is that municipalities situated further up the river release their treated waste/sewage water into the river. Some people who are not connected to the sewage infrastructure release their untreated waste/sewage water in the river, which affects the raw water quality and thus Gothenburg, which is further downstream. Parts of the infrastructure (water pipes etc.) are out-dated and need maintenance or replacement. Another issue is the difficulty to fully monitor leakage on the entire pipe system, which is about 1,740 kilometres long.

Key actors/partnerships

Kretslopp och vatten (Recycle and Water) is a municipal department that works to create a recycling society. It is responsible for supplying the inhabitants and companies with drinking water and sewage treatment (Gothenburg city 2013e). The municipality produces the majority of all the water consumed in Gothenburg.

Föreningen Vatten was founded in 1944 and is a nationwide non-profit, non-political organisation working for knowledge of water, water protection and our shared environment. Their main task is to arrange cross-professional meetings to foster knowledge exchange and debate, conferences for broad and specific competence as well as arranging a drinking water and sewage treatment fair (Föreningen vatten 2013).

Key actions/measures/initiatives

The Department for Recycle and Water has developed a testing program, together with the Environmental Department, that is more rigorous than The National Food Administration requires (Gothenburg city 2013a). Future effects of climate change, mostly flooding, can affect the raw water quality. In order to further secure the water quality, Gothenburg has invested heavily to install so called "ultra filters" that reduce the number of harmful particles (parasites, bacteria etc.) in the drinking water (Gothenburg city 2013c). The water work Lackarebäck has the largest ultra filter facility in the Nordic region.

Through its 13 water towers the city has the capacity to secure drinking water supply if there would be a power shortage or any other distortion in the water production (Gothenburg city 2013c). Investments have also been made to increase the production capacity. In addition, extensions and maintenance of the water grid system are performed constantly (Gothenburg city 2013d). In addition to the municipality's actions, the NGO *Föreningen Vatten* arranges a few meetings, seminars and cite visits every year to spread knowledge about water and water protection.

Energy

Availability, affordability and consumption levels

The energy supply is good. The variable price from the municipally owned Göteborgs energy is around 1.18 SEK/kWh. The yearly contract fee is a 765 SEK for an apartment and 1,265 SEK for a house (Göteborg Energi 2013 and Dinel 2013). However, since the electricity is sold on the free market, customers are able to change agreement and provider of the services and thereby reduce the cost. A price of 1.30 SEK/kWh or 1.50 SEK/kWh including fixed costs can be used as an estimate (Energi & Klimatrådgivningen 2012).

The total energy production in 2011 was around 1,139 GWh, where Combined Heat and Power produced 1,135 GWh and Water Power produced 3.7 GWh (regionfakta.com). The average electricity production per inhabitant is 2,188 kWh (Ibid). Wind energy is growing and there are several wind turbines, including Sweden's largest, and also several ongoing wind power projects in the Gothenburg area.

Key issues

A major challenge for Gothenburg is to reduce its dependence on fossil fuels (Gothenburg Annual Report 2012, p.11). This means that the city has to find an alternative energy source, which will require a lot of

investments and planning. The municipality has set up an environmental target called *Begrönsad klimatpåverkan*, which states that the city shall reduce its emissions of carbon dioxide by 30% by the year 2020. It also says that the city shall have a sustainable and fair emission level of carbon dioxide by the year 2050. Both these targets are today predicted to be very hard to meet (Gothenburg city 2013i). Increased energy efficiency is a high priority as well.

Key actors/partnerships

Göteborgs Energi AB is the largest municipally owned energy company in Sweden and the leading energy company in Western Sweden.

Göteborg Wind Lab is Gothenburg's own testing arena for sustainable energy production technology and wind power, which is a cooperation between Göteborgs Energi, General Electric, SKF, and Chalmers Technical University.

Bränno miljögrupp is a non-profit organisation working to open a dialogue with the municipality regarding the plans to build wind power plants in the archipelago outside the coast of Gothenburg. The organisation is positive to renewable energy sources but wishes that the situation and potential consequences are investigated further.

WinGo is a non-profit organisation that was founded by inhabitants and companies in Gothenburg's Southern archipelago to foster a successful and sustainable development (Wingo.nu 2013a). The aim is to be more than self-sufficient in renewable energy and at least CO_2 neutral by building wind power plants in the archipelago (Wingo.nu 2013b).

Key actions/measures/initiatives

City tolls were introduced in 2013 to reduce the traffic in the city centre. According to the interviewees, this has significantly reduced the number of people who commute from the outside areas to the city centre.

Göteborgs Energi AB has made investments in the renewable energy sector. This includes the installation of three new biogas plants in 2012 (Göteborgs Energi annual report, p.4) and wind power investments. Göteborg Wind Lab installed Sweden's largest wind power plant with a diameter of 113 metres and a total effect of 4.1 MW (Energikunskap.se) with an estimated yearly production of 15,000 MWh (Göteborg Wind Lab). There are plans to build additional wind power plants in the water outside Gothenburg but this has met heavy resistance from people living in the surrounding areas. A web based tool called "Sun map" has also been created by Göteborgs Energi AB to show house owners the sun energy potential for installing sun cells on the roofs of their houses.

Vindkraftskooperativet Västanvind is an initiative by Göteborgs Energi AB and Din El to stimulate climate friendly and sustainable electricity production. Electricity is produced by wind power and sold to the members at production price. Another initiative is the project *Sol, vind och vatten* that helps organisations in Gothenburg to evaluate and monitor their energy consumption. *Gasendal* is a biogas facility where sewage sludge is being used to create biogas, which leads to lower carbon dioxide emissions. Gothenburg energy has set a target to replace all natural gas with biogas by 2050.

The previous EU project *Princip* aimed at creating energy effective buildings, introducing biogas to the transport sector and building a railroad all the way to the harbour to reduce truck transport in the city.

Electricity connection of ships has been implemented in the harbour, which has led to reduced emissions and air pollution. Gothenburg is since 2012 participating in the EU initiative "Smart Cities" and is leading the project Celsius, which aims to increase waste heat utilisation (Gothenburg annual report 2012, p.49).

Green spaces

Availability, affordability and consumption levels

According to SCB (2005) there are 1,220 green spaces in Gothenburg with a total area of 26,171 hectares and there is more forest, green spaces and water than there are streets and buildings (Gothenburg city 2013h). Gothenburg Botanical Garden is one of the largest in the world with a total area of 175 hectares. (Including the natural reserve, the actual garden is around 40 hectares). Slottskogen is 137 hectares and situated immediately Southwest of the city centre of Gothenburg. The areas are free to enter.

Key issues

A study made earlier this year found that 88% of the inhabitants want to live close to green spaces (Vårt Göteborg). The number and area of green spaces is not a significant issue at the moment although for some green spaces there might be issues of quality. In addition, as the city grows, existing green space might be threatened to make room for buildings and roads. Around 11% of the citizens in Gothenburg lack access to green spaces within 300 metres from their homes (SCB 2005b).

Key actors/partnerships

Park- och naturförvaltningen (The Park and Nature Department) is a municipality department that administers parks, plantings, squares, and nature areas (Gothenburg city 2013f). The department has altogether about 790 employees (Gothenburg city 2013g).

Stadsbyggnadskontoret (The Urban Planning Department) is responsible for making a detailed plan that describes how and where it is allowed to construct buildings and facilities. The department is thus responsible to decide if and when it is allowed to exploit green spaces in the city.

Ekocentrum is an independent non-profit foundation that works to increase the transition to an ecologically sustainable society and offers independent environmental educations. It is also a platform for different organisations to showcase good examples for a sustainable society. It is self-financed through their activities and not dependent on any grants.

Göteborgs miljögrupp is a local part of *Friends of the Earth International*. It is a non-political, non-profit organisation, which works for the environment and solidarity. The organisation is promoting ecological and sustainable development and an equal society (Göteborgsmiljögrupp).

Stadsjord is an organisation that works as a knowledge centre and source of inspiration to increase the levels of self-sufficiency in food, democracy and neighbourhood heating in Swedish cities (Stadsjord.se). The organization is a branch within the family owned company Hyla Pond AB, which was established by Niklas Wennberg. Niklas Wennberg has been a key person in alternative urban farming methods in Gothenburg. Stadsjord received the Honeysuckle award (*Kaprifolpriset*) for best environmental project in Gothenburg from the Swedish Society for Nature Conservation (*Naturskyddsföreningen*).

Key actions/measures/initiatives

There is an initiative to create classrooms in the nature where children can apply theoretical knowledge practically. This is done in cooperation between schools and the Park and Nature Department. The ambition is to create 100 outdoor classrooms scattered throughout the city.

There are several initiatives to encourage urban farming. *Gothenburg City's Housing Office* has started the initiative *Stadsnära odling* to stimulate small scale and "close to housing" farming. Göteborgsmiljögrupp arranges study circles to promote urban farming; something they have chosen to name *Guerilla gardening* (Göteborgsmiljögrupp). *Stadsjord* has had several projects. They initiated for instance a unique project with pigs in the city to prepare the soil for growing plants.

Grön Kultur Högsbo is a city-farming cooperative with 140 members. They have 55 farming lots in the district Högsbo. There are also other farming cooperatives such as *Odlingskooperativet Tillsammans* with 40 members (Hemfrid 2012).

In terms of information spreading and awareness, *Ekocentrum* has several trainings and lectures. They mostly direct their services to organisations but also invite citizens to participate in thematic seminars.

3.3 Governance and citizens' participation

Multilevel governance

Due to its size and the division of districts committees there is not a totally unified consensus on all levels of administration. The district committees can act rather independently in some areas. There are some processes that involve systematically cooperation between different parts of the administrations. One example is S2020 that stands for Social Sustainable Development and is the name of a mission that involves several departments and that aims to bring the same attention to social issues as to economic and ecological issues in the city planning. Another is K2020, which is a process to analyse the future public transports in the city region.

Province

Due to its size and importance, Gothenburg has a relatively large influence at the regional level. The region *Västra Götaland* is one of three County Councils (*Landsting*) with regional autonomy and has a larger responsibility for the regional development compared to other provinces in Sweden. The regional government is normally responsible for nature conservation issues, regional planning and health care to name a few examples.

Göteborgsregionens kommunalförbund (GR) is a collaborative organization for 13 municipalities in Western Sweden. GR's mission is to increase cooperation and work as a forum for spreading ideas and knowledge. Targeted areas are, among others, sustainable growth, research, urban planning and labour market (grkom.se).

National

Being the second largest city in Sweden, Gothenburg has a natural collaboration with the national governance. However, Gothenburg receives only little of the national tax re-distribution. *Västsvenska paketet* is a project partly financed by the national government, which aims to increase and improve the

transport infrastructure around Gothenburg and Western Sweden, for this region to develop in a sustainable way.

EU

EU supports the development of Gothenburg and in 2012, 71.5 million SEK were disbursed by the EU to a total of 167 development projects in the city of Gothenburg (Gothenburg city 2013j). In relation to environment, the following EU projects can be mentioned: STEP-UP (Strategies Towards Energy Performance and Urban Planning), Sustainable Food for Urban Communities and the now finished PRINCIP (Proactive and Integrated Climate Change In Resource Planning).

Participation and bottom-up action

Participation

Participation from citizens has been encouraged by the worldwide Agenda 21 but has not become visible until now - 20 years after its introduction. The use of city councils and committees also brings politics closer to the citizens. Being an industrial city for several decades has led to the workers' movements having played a central role for the citizens' possibilities to influence political decisions. The engagement is higher in some areas than in others.

Even if the municipality invites citizens to participate in the public debate, the involvement is not very high from their side. On the other hand, some claim that the municipality has not been able to take advantage of the grassroots' engagement and knowledge (Göteborgs fria). There have been some developments of principles and guidelines for how a citizen dialogue can be achieved. There, however, have been difficulties to realise such principles since some politicians experience citizen dialogue as a threat to the representative democracy and that only influential people can make their voices heard. Citizens on the other side feel that most decisions are already made and that there is no real substance behind the dialogue (Abrahamsson 2013). Nevertheless, there is an interest to participate. One interviewee mentioned that when there are opening hearings on e.g. the environmental program, the municipality has to hold them again because an excessive number of people come to listen.

Bottom-up action

There have been some initiatives related to housing issues, since there are problems to provide affordable housing in Gothenburg. It is especially hard for young people to enter the housing system and to get their own apartment. There are also several initiatives to promote urban farming in the city (Stadsjord, Göteborgs miljögrupp etc.). Some actions promote renewable energy production while other formations have been focusing on making resistance towards building wind turbines in the archipelago. Immigration and segregation issues are very visible and there are some initiatives trying to change this situation. The initiatives and mobilisation of people often appear simultaneously with certain political decisions. These are mostly non-supportive actions on different topics such as no to EU, no to city tolls and no to wind turbines.

Staden vi vill ha is a newly established initiative for inhabitants in the Gothenburg area who want to create a forum for people to bring forward proposals and priorities to create the city that “we want”. The first part is to influence the debate before the election in 2014 to develop the democracy so that the people, living in Gothenburg can be a part of changing the city (Staden vi vill ha). *Omställning Göteborg* is a network of

people that in different ways wants to work to make Gothenburg less dependent on fossil fuel, more ecological, economic and socially sustainable (Omställning Göteborg). The network has several subgroups that are involved in different topics such as ecological farming, housing, energy, and green entrepreneurship.

3.4 Conclusion

Short summary

Gothenburg is the second largest city in Sweden and plays a central role as a growth engine of South-Western Sweden. It also has the largest harbour in Scandinavia. The city is characterised by a high diversity. There is notable district segregation and the city is also facing social problems. For many years the city has a social democratic political leadership. Infrastructure is a central topic and public transport is an often-debated issue. In terms of energy provision, fossil fuel is predominant with natural gas being the main source of energy. There are on-going investments in wind power and biogas to tackle a transition to renewable energy sources. Water provision is good and investments have been made to secure the quality of the drinking water. Civic participation is more common in some areas than in others and there is space for further improvements in engaging the inhabitants to take a more active role in the transition. There are some bottom-up initiatives and additional initiatives are needed, especially to increase the renewable energy provision and to solve the social problems that the city is facing.

Trends and challenges for the future

A large challenge for the future is to move away from the dependence on fossil energy sources. Significant investments and changes are necessary to increase the share of renewable energy sources in the total energy mix.

Social issues are evident in Gothenburg, with segregation as a major problem. The challenge is being able to create attractive alternatives in all city districts and to counteract housing careers and instead encourage a multitude of housing options in all districts. Housing itself is a major issue with demands that largely exceed the supply of apartments in the city.

In 2012, the Gothenburg region accounted for almost half of the employment increase. Of the total increase of 30,000 employed people, 14,000 came from the Gothenburg region (Gothenburg Annual Report 2012, p. 12).The unemployment rate still continues to grow.

The challenges involve:

- Increase energy efficiency
- Reduce the dependency in fossil fuels
- Increase integration
- Increase employment
- Reduce waste
- Reduce segregation between city districts
- Manage demographic changes
- Build new housing
- Reduce car traffic
- Increase public transports and use of bicycles

4. Sweden – Umeå

4.1 General city profile

Background information

Factual data

Umeå is the largest city in the North of Sweden and is the resident city in the County of Västerbotten *(Västerbottens län*), the second largest in Sweden. The water supply of ground water and surface water is very good both qualitatively and quantitatively. The Ume River (*Umeälven*) flows through the city and into the Bothnian Sea.

The climate in Umeå is tempered, but can also be viewed as sub-arctic since the average temperature normally only exceeds +10.0˚C three months a year. The summers are mild and bright with an average temperature of +14.0 ˚C, while the winters are relatively cold and dark with an average temperature of -8.5 ˚C for January and February (Umeå city 2013a). Umeå has around 1,782 hours of sun each year and the precipitation is around 668 mm/year (Umeå city 2013a).

Umeå municipality's land area is 2,316.61 km^2 (SCB 2013 a). With its 117,524 inhabitants (SCB 2012a) it is the most populated municipality in Northern Sweden. The population has increased by around 10.3% since 2002 (SCB 2013b), and the population density is around 51 people per square kilometre (Umeå city 2013f).

The city is characterised by low buildings, but there are some on-going projects that are slightly taller. The city centre is located on the North side of the Ume River. The area south of the river is mainly occupied by private houses. Around 79 594 people live in the population centre, which corresponds to 68.9% of the municipality's population. The increase was 829 persons in 2012 (Umeå Annual Report 2012).

Basic government/administrative structure

As in all Swedish municipalities, decisions are taken in the municipal assembly (*Kommunfullmäktige*). The municipal executive committee (*Kommunstyrelse*) leads and coordinates all the municipalities' work and is responsible for the economy. Each municipality can arrange its own committees, responsible for different areas.

Umeå municipality has several committees, each with its own department. There are eight thematic committees (Buildings, Social, and Environment etc.) and three city district committees. There is also the Chief Guardians Committee (*Överförmyndarnämnd*) and an Election Department, a Revision and an Equality Sub-committee (*Jämställdhetsutskott*).

The major political party is the Social Democrats (*Socialdemokraterna*) (38.23% of the votes), followed by the Conservative party (*Moderaterna*) (18.29 per cent). The third largest party is the Left party (*Vänsterpartiet*) with 11.14 per cent. The Left party and the Social Democrats together have formed the committees since 2010. The ruling mayor since 1995 plays a central role in the forming of the political agenda.

Umeå belongs to the top 12% in terms of municipality taxes (SCB 2013c). The municipality tax in Umeå is 22.60 SEK for every 100 SEK that people earn in Umeå (Umeå city 2013b) and corresponds to around 68% of the total city´s income. The municipality's total net costs for 2013 are 5.6 billion SEK, where the largest financial post is the Social Welfare Committee, which represents 31.8%, followed by the Pre- and compulsory school committee (29.5%) and the High school and the Adult education committee that correspond to 10.0% of the expenditures (Umeå Annual Report 2012). The budget (total costs) for 2012 was 6,809.9 million SEK (Umeå city Budget 2012).

Economic conditions

Being the major city hub in the North of Sweden, the city has a relatively good economic position. Tourism has grown due to the increased interest for nature and "exotic" places. The city therefore benefits from the surrounding wilderness.

There are around 12,000 companies established in Umeå and most of them are small companies with less than 250 employees (Umeå city 2013a). The two major employers in Umeå are, apart from the public sector, Volvo Trucks and the Swedish Post, where Volvo Trucks AB is the single largest private employer in Umeå with around 2,400 employees (Umeå city 2013d). The environment has an increasing focus in Umeå and there are several companies that focus on environmental friendly services and production (Umeå city 2013e).

Historically and structurally, the public sector has a large share of the provided jobs on the labour market. Between 1997 and 2007 private sector jobs have increased with around 38% while public jobs stayed practically unchanged. Overall, the number of employed people increased with over ten% between 2000 and 2007 (Umeå city 2009). The local government has set up a goal to reach a population of 200,000 inhabitants by 2050 (Umeå Annual Report 2012, p.51).

Umeå was able to survive the financial crisis and the following recession relatively well. Due to large investments in recent years, the economic situation is nevertheless strained. In terms of future investments, Umeå municipality will invest 2.9 billion SEK for the period 2013 to 2016, and the municipally owned group of companies will invest 3.8 billion SEK. The municipality will foremost invest in streets, roads and squares (Umeå Annual Report 2012). The unemployment rate was 7.7% at the end of 2012 (Umeå annual report 2012, p.47).

Special characteristics

Umeå, which used to be an important military hub, has changed to an educational centre. The city has two universities; Umeå University and the Swedish University of Agriculture Sciences with around 38,000 students in total (UMU 2013 & SLU 2013).

The city has been appointed the European Capital of Culture 2014.

The proportion of the population between 20 and 29 years is significantly large (SCB 2010), which is often the case for university cities and regional centres. The average age is 38.4 years (Umeå city 2013a). There are 11,531 people born outside Sweden living in Umeå (Umeå city 2013k). In terms of diversity, Umeå has 99 nationalities with at least 10 people living in the city. (Umeå city 2013k). However, only 12.0% of the population in Umeå are of foreign descent and 9.8% were born in a foreign country (SCB 2012b).

The city is called the "City of Birches", mainly because many birch trees were planted in the city centre to prevent fires to spread between buildings (Umeå city 2013n). Umeå was selected as “Sweden’s quality municipality” in 2005. This is an award that evaluates municipalities in the following four areas; democracy, activities, work environment and city planning (SKL 2013).

Local lifestyle

Mobility

Cycling is a commonly used means of transportation (especially for university students). There is a well-built system with pavements and cycling lanes throughout the city. The ambition is that the city's growth should take place within 5 kilometres radius from the city centre and the university. The idea is to create a city with high availability that requires few transports (Umeå city 2013j).

Public transport is not developed to its fullest at present but the local government is working to decrease car traffic in the city centre. This involves increasing the frequency of public transport. The municipality has also invested in electric busses to decrease emissions.

Key challenges and trends

Economic issues and trends

In order to double the population by 2050, housing and new jobs are needed, which will lead to increased tax revenues. However, to increase the attractiveness of the city, for both new citizens and companies, large investments are needed.

Umeå municipality owns 25.8% of the production at Stornorrfors, which represents around 600 GWh/year (Umeå annual report 2012, p.22). This gave the municipality a positive income result of 130.7 Million SEK for the year 2012 (Ibid.).

Social issues and trends

Even if they exist, social problems are not very widespread, and income distribution is rather equal. Crime rates are low in Umeå. Due to its size and remote location, the inflow of migrants is neither comparable to the major cities in Southern Sweden, which face more immediate social issues. However, there are small tendencies of right wing ideas within a small group of people, but they are not widely spread.

Environmental issues and trends

In terms of environmental issues, air pollution caused by traffic is the biggest challenge for the city. Two European highways (E4 and E12) are passing through the city, causing heavy traffic (Umeå city 2013l). The government is working to resolve this issue. There is a project to create a new road system, which will redirect the traffic in order to increase accessibility, air quality, and traffic safety. People are also encouraged not to use cars as their means of transportation within the city. CO_2 has been reduced over the last two decades measuring 415,776.8 tonnes per year in 1990 to 34898.2 tonnes in 2011 (Airviro, 2013-19-17).

4.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Umeå has a very high availability of water. UMEVA has ten waterworks of which Forslunda waterworks (20,000 m³/day) is the largest. It produces 9 million m³ of drinking water every year and supplies around 90,000 people. The company also operates 18 sewage treatment plants. The variable costs for drinking water is 7.89 SEK/m³ including taxes and the wastewater drain cost is 10.40 SEK/m³ including taxes (Umeva.se 2013a). The fixed installation and connection costs depend on the type of accommodation. If you live in a house that consumes 150m³ water, the total price (fixed and variable) is around 3 öre per litre (Umeva.se 2013b).

Umeå uses ground water to get its drinking water. The water has low levels of salt and is of high quality. To make sure that the ground water levels are sufficient, large infiltration basins are being filled with water from the Ume River and its tributary Vinde River. In these basins the water is filtered through the ground and thereby mixed with the natural groundwater, before it reaches the wells (Sustainable Umeå 2013). When the Statistics Sweden (SCB) presented its study: Satisfied citizen index (*Nöjd Medborgarindex*) in 2012, Umeå scored 89 out of 100 in the water and sewage category, which was the highest score in Sweden.

Key issues

In terms of water availability, there are no foreseeable limitations. Instead, potential threats are unfiltered sewage from houses, which are not connected to the sewage system, but since the majority is connected to the sewage infrastructure, this is not a major issue.

The most pressing challenges are of economic character. UMEVA has invested heavily recently and needs to invest even more in infrastructure, technology and capacity. The water fee was increased by 20% in 2012. The plans to increase the population in Umeå heavily will also demand further investments.

Key actors/partnerships

UMEVA AB (Umeå Vatten och Avfall AB) is the municipally owned company, which is responsible for the municipality's water, sewage and waste management. UMEVA works to provide good drinking water and to take care of waste in an environmentally correct manner. Forslunda waterworks is the central water facility that produces most of the drinking water for the inhabitants in Umeå. The waste and recycling part is managed by a subsidiary company.

Naturskyddsföreningen (SNF) or The Swedish Society for Natural Conservation (SSNC) is an Environmental NGO that acts in many areas. In terms of water issues, SSNC works to protect water supply sources against substances that may endanger health and the environment. However, SSNC has not had a prominent role in terms of drinking water issues in Umeå so far.

Sveriges Fiskevårdsförbund (Fish Management Associations) is one of several associations that operate to maintain and control the fishing in the lakes and rivers, whose water is used for drinking water reservoirs.

Key actions/measures/initiatives

The new sewage treatment facility in Umeå, located on the so-called "ÖN" (the island) is the largest single investment for UMEVA; (half a billion SEK). UMEVA estimates that for the whole operation of drinking water, sewage and waste treatment, an additional investment around one billion SEK is necessary in the upcoming five years (UMEVA yearly report 2012).

UMEVA has also worked with information and knowledge sharing with nearby municipalities. Other actors have not taken any prominent actions in terms of improving the water situation in Umeå so far.

Energy

Availability, affordability and consumption levels

Since the Swedish electricity market was deregulated in 1996, electricity prices have increased in Sweden (Möller & Kahvedzic, p.18). The regional price (fixed and variable) for an apartment is between 91 and 104 öre/kWh, depending on housing type and consumption level (Umeå Energy 2013a).

The main source of energy comes from hydropower and the municipality is co-owner of the regional hydroelectric plant *Stornorrfors*, which produces the largest share of all hydroelectric plants in Sweden. It has the next largest installed capacity (590 MW). Wind power is also expanding as part of a long-term plan to reduce the impact on environment and health. Waste products from society are utilised in Combined Heat and Power (CHP) plants to produce electricity and central heating in the city. There are two CHPs with a total effect of 170 MW (Umeå Energy 2013a).

The total electricity production in Umeå is around 2,904 GWh divided by Combined Heat and Power 298 GWh and 2,606 GWh for Water Power, which gives a production of approximately 24.9 GWh per inhabitant (Regionfakta.com 2013). The largest generator of electricity is the hydroelectric power plant at Stornorrfors. Stornorrfors produces 2,298 GWh/year (Vattenfall). The total wind power production (17 wind facilities) produces 68.5 GWh (Sustainable Umeå). The annual electricity production exceeds the consumption of electricity in Umeå, which is approximately 1,400 GWh (Ibid).

Key issues

Energy supply is not a significant issue now, but with a growing population until 2050, the supply has to increase.

A more pressing issue is to increase energy efficiency. Umeå is a relatively cold city and many facilities were built with ineffective energy standards in terms of insulation and heating installations.

Key actors/partnerships

Umeå Energi AB (*Umeå Energy*) is the municipally owned Energy Company. It owns 25.8% of the hydroelectric plant Stornorrfors. The company is both environmentally (ISO 14001) and safety (OHSAS 18001) certificated (Sustainable Umeå). Umeå Energy's ambition is to be climate neutral by 2018 (Umeå Energy annual report 2012). Umeå Energy also owns 12 wind power plants and two Combined Heat and Power (CHP) plants (Umeå Energy 2013b).

Vattenfall AB is one of Europe's leading energy companies for producing electricity and heating. The company owns 75% of the hydroelectric plant Stornorrfors that produces the majority of the energy in Umeå.

Kvarkenvinden is an economic association that was established in 1997. It operates seven wind power plants and the targeted total production is 634,000 kWh/year (Kvarkenvinden 2013).

Bostaden AB is the municipally owned housing company, with a few wind power plants. They are also working on energy efficient solutions. There are on-going expansions of solar cells to supply houses with electricity (Sustainable Umeå).

Key actions/measures/initiatives

With highest consideration to the environment, Umeå Energy is working to secure a sustainable electricity production (Umeå city annual report 2013, p.40). Umeå Energy invested approximately 80 million SEK in Umeå's electricity net, which is 3,000 km long and reaches 56,000 customers. Investments are being made to increase the net and infrastructure security and to meet the demand of a growing Umeå (My news desk 2013a).

The housing project "Hållbara Ålidhem" was awarded the *Sustainable Energy Europe Award 2013* in the category "living" (Umeå city 2013i). Environmentally friendly building methods and materials were used and one of Sweden's largest solar panel facilities is under construction. Tenants can adjust their energy consumption in real time through smart energy panels in each apartment. In 2014, an entire solar cell plant with a total area of 2800 m^2 will be finalised. It will thereby be the largest of its kind in Sweden (Sustainable Umeå).

Green spaces

Availability, affordability and consumption levels

There are plenty of parks and green spaces in Umeå. The green spaces are generally free to use for the public and there is no fee to enter the parks. According to SCB (2005a) there are 397 green spaces in Umeå with a total areal of 10,524 ha. The city is surrounded by woods and the limited size of the city gives inhabitants good access to vast nature areas.

The city is called the "City of Birches", since many birch trees were planted in the city centre to prevent fires to spread between buildings (Umeå city 2013n). The most central parks are Broparken, Rådhusparken, Döbelns Park, and Strandpromenaden. There are also a few larger green spaces within 5 kilometres from the city centre. The citizens see it as important to be able to have a view of greenery from their workplaces and homes (Bäckman 2012).

Key issues

Since the city intends to increase the number of citizens and to "densify" the city, there will be challenges in order to preserve green spaces in the city centre. The vision of the five-kilometre city will of course limit the area where new buildings and infrastructure can be built. Therefore, it is important to develop green spaces with high social and ecological values.

Another problem is the degradation of eco-systems in the city. According to one interviewee, a challenge is to get the municipality to value the green infrastructure and thereby encourage actions to improve the quality and diversification of the green spaces in the city.

Key actors/partnerships

Gator och parker (*The street and park department*) is responsible for the development and maintenance of public spaces such as streets, squares and parks. This also involves meeting public demands for a good park environment (Umeå city 2013m). The street and park department is quality certified according to ISO 9001. They build or rebuild some parks and playgrounds every year.

Naturskyddsföreningen i Umeå (SSNC in Umeå) is the local circuit of Sweden's largest nature and environmental organisation SSNC. The circuit works on local environmental issues and conducts activities related to nature and environment.

Omställning Umeå (Transition Umeå) is a group of 26 members. It is part of *Omställning Sweden*, which is the Swedish part of the Transition Towns network (Transition Sweden 2013). They work to initiate and implement transition towards sustainability in Umeå.

Key actions/measures/initiatives

The municipality works, to establish a sustainable green infrastructure that makes the city's green spaces available for the citizens and that fosters biological diversity in the proximity of the city (Umeå City 2013c). The municipality has established a park (in 2013) with a specially designed Parkour area, which is used as a recreation activity for mostly younger inhabitants in Umeå. Transition Umeå also has a dedicated area in this park, where they organise themselves in a study circle, which meets two hours every week to spread ideas and encourage people to grow crops in the city (My news desk 2013b).

A Clean and Safe Umeå (*Ett rent och tryggt Umeå*) is a project that aims to reduce the littering in the city. The ambition is to reduce the levels of littering by 50% by 2016, compared with the levels of 2009 (Umeå city 2013o).

SSNC has different initiatives. Sustainable Umeå (*Hållbara Umeå*) works with local environmental issues. Sustainable lifestyle (*Hållbar livsstil*) works with issues related to how our lifestyle affects the environment. City farming is one of their topics.

4.3 Governance and citizens' participation

Multilevel governance

There seems to be a unified view within the municipal political body and administration, and the major plan was developed with joint support of most political parties. The city administration cooperates with academic institutions (e.g. *CERUM - Centre for Regional Science at Umeå University)* and the private sector (e.g. Balticgruppen) among others. The will to grow is emphasized as an important factor for increased sustainability since higher density is likely to reduce the need for transportation and give more job opportunities.

The local government´s departments collaborate closely, and one success factor was to merge several departments together to an urban planning department where all the expertise is gathered in one place.

This also enables faster decision-making because it reduces conflicts between departments such as environment and technical departments in an infrastructure project and enables a joint decision to be made from the beginning.

Province

One of the initiatives on the regional level is *BioFuel Region*, which is a collaboration between municipalities, the private sector, regional associations, universities and regional governments. The focus is on a transition towards renewable energy with an emphasis on transports and sustainable products (Biofuelregion.se). Since Umeå is the major city in the province Västerbotten, its municipality plays an important role in coordinating some operations in the region.

National

The project "sustainable municipality" (*Uthållig kommun*) is a project initiated by the Swedish Energy Agency (*Energimyndigheten*), which is a national agency working for environmentally friendly and effective energy systems. Umeå is one of the 38 municipalities that participate. The aim is to create, develop and spread best practice with an energy focus within the areas of spatial planning and industrial policy (Swedish Energy Agency 2013). Due to new legislation, it is now also possible for the citizens of Umeå to measure the electricity consumption per hour.

Umeå has a Social democratic/Left party local government while the national coalition government is conservative/liberal. There are no party specific conflicts but the national government tends to prioritize infrastructure projects in three major cities in Sweden rather than smaller growing cities such as Umeå. There have been discussions for many years regarding motorways and railroad infrastructure projects. Umeå is dependent on national investments to improve the air quality situation.

EU

The European Commission has granted through the environmental program "LIFE+" 2.6 million Euros for the project "Green citizens of Europe", which is lead by Umeå. The project aims at finding new solutions for joint transportation, bike rental in the city centre, energy efficiency and waste management in housing communities (Umeå city 2013h). Umeå continually applies for EU grants in order to implement new projects. The EU has been warning Umeå for excessive levels of air pollution in the city and is thereby pushing for changes to be made. In October 2009, during Sweden's presidency in the EU, EU's Competitiveness Ministers met in Umeå to discuss growth, climate and energy (Umeå city 2013g).

Participation and bottom-up action

Participation

There is space for bottom-up initiatives in some areas and less space in others. The public sector in Sweden on all levels is very transparent and the majority of all information is available to the public. According to the interviewees the low levels of citizen participation, seem to be due to lack of engagement from the inhabitants' side rather than insufficient forums for influence.

The citizen participation and bottom-up action initiatives are rather low in Umeå. This is due to the idea that most things work quite well and that there are no bigger efforts needed to change the present

features of the city. Therefore, it is mostly individuals that are active on a number of issues. However, there are some groups of people and associations active within the city.

83.85% of the citizens entitled, voted in the last election. According to one interviewee, the interest to participate in specific issues is rather low. People only tend to care if they are directly affected by a decision.

Bottom-up action

There have been a few initiatives to change or influence aspects of the city. For instance, there have been demonstrations to counteract right wing group tendencies. In terms of the three focus areas the mobilisation varies. Regarding water issues there have not been any real bottom-up actions, which may be due to the favourable water situation in Umeå. Green spaces are a more present issue where there are some actions related to urban farming (Transition Umeå) and to preserve some specific green spaces in the city. In terms of energy, there is a growing interest for consumption patterns, transport habits and improvement of energy efficiency in buildings.

Important issues

- Traffic
- Public transport
- Consumption habits
- Energy efficiency
- Housing

4.4 Conclusion

Short summary

Being the resident city of the County of Västerbotten and the largest city in the North of Sweden, Umeå plays an important role both regionally and nationally. The city is characterised by a young population, mostly due to its predominant position as a university city. The city is lead by a Social democratic/Left party government. There are problems with air pollution due to the intense daily traffic. Electricity is mainly produced through hydropower and the central heating, fuelled by waste, predominates the heating of buildings. CO_2 emissions have been reduced during the past decades. The water provision of high qualitative water is very good but costly investments are still needed to maintain this situation. In terms of citizens' participation, more can be done to engage inhabitants further in the political decision-making. As the city grows, the voice of the people and the impact of bottom-up initiatives will be of greater importance.

Trends and challenges for the future

Being the largest city in Northern Sweden, Umeå has a central part to play for surrounding municipalities and as a consequence for increased urbanisation, regional centres such as Umeå will be important for the further economic, social and environmental development. The political ambition to be a city where the central parts can be reached within a radius of five kilometres requires extensive measures of "densifying" the city in order to be able to fit the growing population.

One of the main challenges for the future involves reducing pollution and traffic (to increase air quality) in the central parts of Umeå. Regarding water and energy provision, this is not a major obstacle even if the

municipality would reach the targeted population of 200,000 inhabitants by 2050. Since Umeå is situated in a cold climate, energy efficiency is of great importance. Apart from conducting direct measures, the municipality hopes that new technology will solve many issues related to transport and energy efficiency. Other challenges involve:

- Improve the energy standard and efficiency in buildings.
- Meet the need of a city that will have an external population growth (targeted to 200,000 inhabitants by 2050).
- Manage the preservation of green spaces in a growing “5-kilometre” city centre.
- Creating jobs is crucial for the future of Umeå.
- Enhance the city’s attractiveness.
- Provide enough housing.
- Minimise social exclusion.

5. UK- Birmingham

5.1 City Profile

Background information

As the second largest and second most populous city in the UK, Birmingham has an area of 803 km^2 consisting of 2,439,600 inhabitants. Birmingham is located in the West Midlands area of the UK. Situated 119 miles away from the capital, Birmingham is very well connected to the rest of the UK and Europe with a major airport located on the outskirts of the city and served by several railway companies via four main railway stations in the city centre (CitiesOutlook, 2013).

There are no major rivers running through Birmingham, however a series of small rivers create a small network of waterways, together with the 114 miles of canals within the city. The city is located on a series of hills (Birmingham.gov.uk, 2014).

The climate of Birmingham is classed as a temperate maritime climate, with maximum summer temperatures at 21.5 °C and winter at 6.5 °C. Due to its inland location and elevation, Birmingham experiences heavy snowfall in the winter. During the summer, the Urban Heat Island effect has a considerable effect on the city due to its size and dense structure (MetOffice.gov.uk, 2014).

Basic government/administrative structure

Following a government restructuring in 2004, Birmingham now has the largest local authority in Europe with over one million inhabitants represented by 120 councillors from 40 wards across the metropolitan area. The headquarters of the council is situated in Birmingham city centre.

The Greater Birmingham & Solihull Local Enterprise Partnership is a partnership between Solihull, East Staffordshire, Lichfield Tamworth, Bromsgrove, Cannock Chase, Redditch and Wyre Forest. Originally set up in 2010 to help strengthen the economies of the local areas, encourage economic development, and improve skills across the region, this partnership has now become one of the largest local area partnerships in the UK. It works to improve the prospects of over 2 million residents and the creation of 840,000 jobs (Birmingham.gov.uk. 2013.)

Economic conditions

Birmingham City Council (BCC) has experienced significant funding cuts from national government sources. During the 2013/14 period general grants have been cut by more than £27 million. It is estimated that from the years 2010/11 to 2016/17, the general Government grants to Birmingham City Council will be cut by £300 million. The extent of council cuts means that Birmingham City Council will have to make cuts amounting to £615 million. As per city council policy, the BCC organised a number of consultations with the public and local stakeholders in order to decide which services should receive cuts; final decisions were made by city councillors (Birmingham.gov.uk. 2014).

Like most other cities in the UK, Birmingham had in recent years experienced a rise in unemployment. Last year however, the rates of unemployed in Birmingham decreased by 233 to 42,196 in December 2013. The current figure stands at 9.2% (Birmingham.gov.uk. 2013).

Special characteristics

Despite Birmingham's high elevation and the minimal amount of waterways throughout the city, it still experiences significant flooding.

Birmingham is a very diverse city, and Birmingham residents come from a large variety of national and ethnic backgrounds. People of Pakistani backgrounds in Birmingham make up for 13.5% of Birmingham's residents, people of Indian background make 6% of the residents and other large groups also exist in significant numbers such as people from Black Caribbean backgrounds. Of the 238,313 residents who were born outside of the UK, 45% of these arrived within the last decade, which shows that migration into Birmingham has been significant over the last ten years (Birmingham.gov.uk. 2013).

Local Lifestyle

After the Highbury Initiative in 1998 (a regeneration initiative to push social and economic growth in Birmingham) had been implemented, a major restructuring of public pedestrian routes was undertaken in order to shift the centre of the city into a more pedestrian friendly place. The inner core of the city was divided into quarters, such as the Jewellery Quarter and the Gun Quarter. The links between these quarters and the links into outer residential areas were improved in order to create a lively and successful urban structure (Rudi.net. 2014).

Key challenges and trends

Economic issues and trends

Previously known as the "City of a Thousand Trades" Birmingham had a huge manufacturing past, producing a wide range of products. Birmingham became specialised in the automotive trade and at one point 72% of Birmingham's employed were working within this sector. During the 1970s, recession hit the city hard and forced the collapse of the automotive sector. As Birmingham's industry was built solely on this sector, its inhabitants experienced many hardships. Therefore, Birmingham transitioned from a city of high employment and high wages to high unemployment and deprivation. More recently, Birmingham has experienced modest growth and a surge of public sector employment (CentreforCities, 2011).

The European Active Inclusion Strategy was developed following a two-stage public consultation in 2006-2007 to be carried out as a bottom-up initiative addressing the social-economic issues. The strategy develops a comprehensive policy to define how the pillars of income support, labour market and social services can work together to promote integration and employment of excluded populations in Birmingham's labour market.

Social issues and trends

Birmingham has the third highest levels of obesity and respiratory health issues city in the UK. This is particularly a problem with child populations. In Birmingham, over 25% of the population are obese, on average 12% of children in schools across Birmingham are overweight and around 10% obese. In some wards in the city, there are levels of up to 60% obesity among children (Birmingham.ac.uk. 2013).

A number of initiatives coordinated by EUROCITIES exist in the city in order to create an inclusive and diverse city. BCC is currently participating in the Cities for Active Inclusion, which has identified that by 2024 the city is forecast to have not a single majority ethnic group (Eurocities-nlao.eu. 2014).

Environmental issues and trends

Birmingham's Vision Statement was produced by the Green Commission and published in March 2013. The theme of the Statement works on three main foci to make Birmingham a greener, more sustainable city. The themes that were identified are

- Planning framework and policy
- Sustainable energy and CO_2 reduction
- The green economy

Following the publication of the Vision Statement, the Green Commission published a Birmingham Carbon Roadmap in December 2013 focusing on the required actions to cut the CO_2 emissions for Birmingham through the following ways:

- Accelerating investment for delivering heat and power to the city
- Creating more local renewable energy
- Improving travel options
- Widen investment in building energy efficiency programmes

Currently the city has a target of 60% reduction in CO_2 emissions by 2026 (Birmingham City Council, 2013). Birmingham City Council had a self-imposed target during the period 2008 – 2011 to reduce by 12% per capita carbon emissions, which was met. 378,843 tonnes of carbon has been saved through these targets. These savings have been made primarily through the domestic sector and via the reduction of energy consumption.

5.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

There are no issues with the quality and availability of water. Generally, all sectors are happy with the quality and availability, and no concerning issues were identified. Consumption levels are at 130 litres, per person per day, which is among the lowest water usage levels in Britain. As in most other UK cities there are virtually no community development projects on the issue of drinking water quality and availability due to the high standards of both. There are however some community projects such as Friends of Birmingham groups, which safeguard and protect wetlands and lake areas to preserve the water and associated biodiversity.

Key Issues

There are significant risks of both flooding and drought in the city. Despite the lack of major waterways in the city and the vicinity around it, there are many areas under constant flood risks and specific work by the City Council is underway to address these.

Key actors/partnerships

Severn Trent Water PLC is a private UK water company. Severn Trent Water supplies 1,800 million litres of water per day to 7.7 million people as well as to 8.7 million customers receiving sewerage services in an area covering 21,000 km^2. The water comes from a range of river abstractions, groundwater sources (mainly boreholes) and reservoirs (Stwater.co.uk. 2013).

Key actions/measures/initiatives

Severn Trent Water invested in the city infrastructure so that there was a 7% reduction of water loss, achieving a record level of reductions, making Birmingham's water infrastructure less likely to lose water than most other UK cities (Stwater.co.uk. 2013).

Energy

Availability, affordability and consumption levels

The non-domestic sector is responsible for 43% of emissions in Birmingham producing 2.8 million tonnes of CO_2. Birmingham has over 40,000 businesses, the majority of which are SMEs; these are believed responsible for the high rates of emission as well as from the City Council, Birmingham's universities and a number of hospitals. 36% of emissions come from the domestic sector (2.2 million tonnes of CO_2) and transport contributes 21% of emissions (1.5 million tonnes of CO_2).

Standard rates for electricity in Birmingham for units come to 14.1855 p per kWh in addition to a 27 p per day standing charge. Gas tariffs come to 4.3575 p per kWh with a standing charge of 31.5 p per day. On average, a customer of E.ON, one of the big six energy companies in the UK and a major local provider in Birmingham, will pay £101.85 monthly (Eonenergy.com, 2013).

The energy bill for 2011 came in at £1.68 billion. The council has strong commitments to reducing this in light of recent budget cuts, as reducing consumption by 25% will free up £450 million that can be used elsewhere in the council's services that have suffered as a result of stringent cuts to its services.

Key actors/partnerships

Energy at Birmingham University has been researching energy issues for over a century, currently there are over 100 researchers undertaking studies in the area and working with partner universities and organisations in the local area.

Localise West Midlands is a company working with small / medium sized businesses and public sector organisations to help them better understand and control energy use.

Friends of the Earth Birmingham is the local group of a larger international organisation. They take a lead role for Birmingham's community to campaign and promote more sustainable use and development of energy in the city and its surrounding.

Cofely, a GDF SUEZ company are experts in Energy and Environmental Efficiency. They work closely with the BCC to deliver energy efficiency measures and cut CO_2 emissions throughout the city. Currently their work centres on The Birmingham District Energy Scheme which aims to reduce CO_2 emissions by 60% by 2025 (Cofely-gdfsuez.co.uk, 2014).

EUROCITIES is a large network of cities that work with local governments across Europe to promote sustainable initiatives. Birmingham was one of the six founding cities and they work closely on a number of programmes to change energy, transport and economic issues.

Key actions/measures/initiatives

The *Birmingham District Energy Scheme* is one of the main schemes used by the BCC and partners to reach the commitments outlined in the City Council's climate change strategy, one of which aims to reduce CO_2 emissions by 60% by 2025. This project is owned and operated by Cofely District Energy. The scheme employs varied innovative methods including Tri-generation, producing heat, electricity and chilled water to achieve its goals (Cofely-gdfsuez.co.uk. 2014).

Saving Energy in Europe's Public Buildings using ICT, a pilot study in Birmingham organised by SMARTSPACES is aiming at reducing the city carbon footprint by 60% until 2026. Specific buildings with high resource consumptions were targeted to assess the effectiveness of the study, and BCC is working with social landlords and householders to offer energy efficiency measures and strategies in domestic buildings in the city (Smartspaces.eu. 2014).

A Climate Change Adaptation Action Plan has been developed in order to provide strategic leadership and influence in order to secure funding and act on the city's needs to address energy issues. Key areas of action include Birmingham becoming a 'Low Carbon Transition' city, improving energy efficiency in the city's buildings, reducing unsustainable energy consumption, reducing the environmental impact of the city´s transport system and reducing the impact of non-renewable resources (Birmingham.gov.uk. 2014).

The *Carbon Roadmap* (2013), a BCC document, outlines a commitment for the city council to cut its energy bills by half between 2016 and 2018. This is to be done via the introduction of cost efficient measures in offices, schools and other public buildings. So far, the measures taken have reduced the levels by 24% in 2011.

CASCADE is another EUROCITIES organised project, which aims to deliver networking and mutual learning on local energy leadership with a number of different partners including the Wuppertal Institute for Climate, Environment and Energy.

Green Spaces

Availability, affordability and consumption levels

Birmingham has plenty of green spaces within and around the city. There are few problems identified with access and quality of green spaces. There are approximately 600 parks and public open spaces, more than 200 play areas and 115 allotment sites within the city, therefore green spaces are plentiful and opportunities to frequent the spaces are available to most citizens. During the course of the research it was noted that most individuals were happy with the condition and quantity of the green spaces in the city, and saw the BCC as a positive factor in maintaining and securing the existing green spaces, though it was noted that there were some minor failures in maximising on some of the spaces. Green spaces within Birmingham are used for a variety of reasons and a diverse group of people, and they are well used and maintained (Birmingham.gov.uk. 2014).

Key issues

Some issues exist around unkempt green spaces adjacent to the canals which can be developed for a variety of uses such as exercise, transport to and from work, cycling paths, walking paths etc., however as a result of poor lighting and poor keeping, these areas are perceived as unsafe and unfit for purpose and therefore scarcely used. It was identified that there could be more done on this, if the BCC is committed to its statement of turning Birmingham into a truly green city.

Key actors/partnerships

The main bulk of work involving green spaces and parks within Birmingham is undertaken by Birmingham City Council**.** The BCC is ultimately responsible for the upkeep and security of the green spaces within the city and is generally perceived favourably in its ability to maintain and secure the spaces.

Friends of groups

As in many cities across the UK, the Friends Groups are very well developed and active within the city in order to develop and maintain local green spaces. There are some examples of very successful initiatives such as Witton Lodge Community Association who have a very successful partnership with the BCC and other external actors such as businesses and other friends groups.

Key actions/measures/initiatives

The Green Living Spaces Plan is a strategy which has been developed by the BCC in order to secure, enhance and ensure Birmingham's natural green and water spaces through long term planning and maintenance. Seven principles have been identified as imperative to meet the goals of the plan, these are:

- An adapted city – to ensure the city's infrastructure is ready for the effects of climate change
- The city's blue network – adopting water sensitive urban design within Birmingham
- A healthy city – to improve the quality of life and well-being of Birmingham's citizens
- The city's productive landscapes – supporting allotments and future community food growing, as well as tree and woodland planting
- The city's greenways – improved urban mobility and connectivity throughout the city
- The city's ecosystems – expanding protected and Nature Improvement Areas
- The city's green living spaces - Birmingham becoming an international City of Green Living Spaces (Birmingham City Council, 2013)

Currently the *Your Green and Healthy City* (Supplementary Planning Document) is being developed to identify priority areas that need addressing within the city, to make it greener and more sustainable (Birmingham.gov.uk, 2013).

5.3 Governance and citizens' participation

Multilevel governance

Birmingham City Council, as the largest local government in Europe, experiences some problems in planning and delivering actions. During the course of the research it was mentioned a number of times that if the BCC was broken down into smaller, more manageable units, then the council would function more efficiently, with better working relationships amongst the different departments.

Most city councils in the UK have developed and are committed to maintaining partnerships with councils in their region or county. Birmingham is experiencing difficulties in this area and has a tense working relationship with the "Black Country" – Yorkshire councils due to differing priorities.

Local

The following numbers represent the numbers of councillors for each political party, though currently one seat remains unoccupied.

Labour: 76

Conservative: 28

Liberal Democrats: 15

National

There seems to be consensus among most of the participants of the study that the local government is significantly constrained by the national government. This is a result of both financial constraints and local governments' autonomy in making decisions. A number of participants stated that the city council would and could be more efficient and effective in delivering its services, if there was devolution of government and more power was brought back to the BCC.

EU

The BCC works very closely with other local governments outside of the UK, especially with the other founding cities of EUROCITIES; Barcelona, Frankfurt, Lyon, Milan and Rotterdam. These city councils along with Birmingham collaborate together on a number of programmes and projects in order to transition towards a more sustainable city. By undertaking a number of different pilot studies, Birmingham is leading the way in the UK for its innovative sustainability initiatives.

There are seven Members of the European Parliament operating in the BCC, working on a number of different issues such as energy, employment and economic affairs.

Participation and bottom-up action

There is a large number of active community groups in the city, working on a wide range of issues, primarily on green spaces and energy as well as on social inclusion and migrants' rights. It seems that there is a very good working relationship between the groups and the local council, and this relationship is undertaken through a number of different ways. There is the possibility of cooperating through forums and public consultation events, as well as working on projects with the council to further its commitments.

However problems do seem to exist due to the size of the BCC, and there seems to be confusion among the community groups regarding the responsibilities of departments.

As with most other cities, there are virtually no community groups working on water issues. What does exist exists solely on the protection of wet areas such as lakes and wetlands and the biodiversity of these areas. This became a much more prominent issue since one of the major lakes within the city was contaminated twice in the last six years. Seeing the devastation caused by these incidents, to the flora and fauna of the Witton Lakes, pushed the agenda of protecting wet areas higher up the list of both the city councils and the local communities´ priorities. The Friends of Witton Lake community group now carries out patrols in the evening, on a volunteer basis, in order to maintain the safety and the protection of the lakes.

5.4 Conclusion

Short summary

Birmingham's sustainability initiatives are coming along in the BCC, through businesses and the third sector. It is clear that the city council is taking big strides towards ambitious sustainability targets, not just in terms of reduction but also in terms of the number of projects under way to address a variety of challenges. The city council is well aware of the challenges and strengths of the city and working towards strengthening these. It can be seen that there is a holistic approach to addressing sustainability: energy, transport, green spaces and cultural diversity are addressed through tailored programmes with the ambition of building upon them. Civil society is also very active and involved within the city and the relationship between the council and third sector is of a high standard, both sides being acutely aware of the benefits of a good working relationship. Input from businesses into third sector working is lacking.

Key issues and challenges

- Significant health problems within the city population; primarily obesity and respiratory health
- Car oriented city with transport in the outer city regions lacking public transport options
- Opportunities being missed in order to promote a greener city by the council; lack of activity in improving canals
- High levels of unemployment and poverty in certain areas

6. UK – Glasgow

6.1 City Profile

Background Information

Factual data

Glasgow is the largest city in Scotland with a 2012 population of 598,830 in the city limits. The size of the city totals 175 km^2 (Centreforcities.org.uk, 2013). It is has the highest population density of any Scottish city with 3,400 people per km^2 and as of 2012 there were 285,984 households (General Register Office for Scotland, 2013).

Glasgow is located in the West of Scotland, with the River Clyde running centrally through the city. The River Kelvin also runs through the North of the city. Glasgow is well connected by canals and owes its 20th century shipbuilding industry to the rivers in the city, which allowed it to flourish (Glasgow.gov.uk, 2013).

The climate of Glasgow is oceanic. The annual mean temperatures in central Glasgow are in the range of 9.4 °C to 9.7 °C. On average January is the coldest month with average temperatures between 1.9 °C and 6.0 °C and July the warmest with temperatures reaching between 19.2 °C and 11 °C. Glasgow receives an abundance of rainwater, with 1124.3 mm annually (Metoffice.gov.uk, 2013).

The city centre is highly pedestrianised with an easy to navigate grid system. As a result of Glasgow's historically predominant industrial sector and the extensive population growth, Glasgow grew to be a highly urbanised and very densely populated city. The decline of the steel and coal industry in the 1970s led to high levels of poverty and urban decay throughout the city that can still be seen today.

Basic government / administrative structure

Glasgow City Council (GCC) is a single tier local authority since 1996 since the councils of Glasgow city district and the Strathclyde region merged under the Local Government (Scotland) Act 1994. The Lord Provost of Glasgow is elected as the head of the council and performs duties as general civil leader. The executive branch of the council is led by a Leader of the Council, the leader of the largest political grouping is responsible for undertaking the duties associated with the role of Leader of the Council. GCC is made up of 79 elected members from a variety of six political parties, representing 21 wards throughout the city (Glasgow.gov.uk, 2013).

Economic conditions

Glasgow is Scotland's largest urban economy with an annual output of £15.7 billion. It is the country's largest center of employment with total employment at 66.3% in the 2011-2012 period. Glasgow provides additional employment for 160,000 people who commute into the city to work (Glasgow Economic Facts, 2013a). Weekly earnings in the city are an average of £482, which is in the top 20 highest weekly earnings in the UK (Centreforcities.org.uk, 2013).

Glasgow has a £2,135 million gross revenue budget and projected expenditure of £270 million for 2013/14 (Glasgow.gov.uk, 2013). Glasgow reached the peak of industrial production during early 20th century, and with the establishment of Scottish Enterprise in 1990, the city is being actively promoted as an investment

location to the rest of the UK and overseas markets (Glasgow Economic Facts, 2013). Despite the decline in manufacturing and its historic famous shipbuilding industry since the 1970s, the economy of Glasgow is in progress with financial services sector, media centers, business tourism and newly growing technology development sector. The private sector is the biggest employment provider with 377,500 jobs provided in comparison to 164,500 public sector jobs. Job Seekers Allowance (JSA) claimants have steadily been dropping since 2010, from 5.9% to 4.6%, with now only 19,164 people in the city on JSA benefits compared to 2010 numbers of 24,389 (Citiesoutlook.org.uk, 2013).

Glasgow hosted Commonwealth Games in the summer of 2014, the total budget for which was £450 million. GCC undertook a massive development strategy to create venues and businesses (thus new jobs) in preparation for the games (Centre for Cities, 2010).

Special characteristics

The population of the city is the most diverse in Scotland, with increasing rates of immigration, specifically by refugees and asylum seekers. There are small but significant numbers of Pakistani, Indian, Chinese, African, and Caribbean communities. Minority ethnic groups are believed to make up 5.5% of the city's population (Glasgow.gov.uk, 2013). Glasgow is home to three universities; University of Glasgow, University of Strathclyde and Glasgow Caledonian University, therefore a majority of students reside in the city with vast numbers of international students.

Glasgow experiences significant adverse weather conditions such as heavy rainfall and strong winds, due to this Glasgow is at risk of flooding and it was identified that infrastructure needs improvements.

Local lifestyle

Glasgow is a major Scottish transport node with a comprehensive internal transport network including motorways, the UK's second largest suburban commuter rail network, and an extensive network of bus routes. The ongoing projects of the city like Clyde Fastlink Project; Walking/Cycling Projects; Glasgow Airport Rail Link; River Travel/River Crossings and Subway-Regional Transport Strategy, are a determination of the city towards sustainable living (Glasgow.gov.uk, 2013).

Key challenges and trends

Economic issues and trends

There has been a steady increase in numbers of migrants who fill city jobs and the process of EU enlargement and the significant resettlement of asylum seekers in the city have created a fresh labour pool within the city (Glasgow Economic Facts, 2013).

Glasgow has taken significant strides in urban regeneration over the last 20 years, including a major regeneration project in the East end of the city, where improvements are being made to Glasgow Green, housing is being built and improvements to the existing housing stock is being undertaken. Additionally as a result of high levels of youth unemployment, a specific job centre "the youth hub" has been developed for use by 18 – 25 year olds only.

Social issues and trends

Glasgow is the most deprived city in Scotland, with approximately 50% of residents (amounting to 283,000 people) living in 20 of the most deprived areas in Scotland (Understandingglasgow.com, 2013). In addition, 30% of children in 14 out of 21 wards were found to be living in poverty, in a recent study by The Campaign to End Child Poverty. Projections illustrate that this figure is due to rise drastically over the next decade. (thirdforcenews.org.uk, 2013).

Glasgow also has a significant crime problem, with rates for Glasgow higher than anywhere in the whole of the UK and 60% higher than the Scottish average including homicides, and violent and gang-related crime (Understandingglasgow.com, 2013).

Environment issues and trends

Sustainability in Glasgow has only been on the agenda for the city since 2010; prior to this, there were few aims on the GCC agenda. Since the publication of Sustainable Glasgow in 2010, the city has transformed its understanding and approach to creating a more sustainable Glasgow. The GCC has undertaken a thorough analysis of the city, its current carbon emissions, the city's renewable energy resources, its infrastructure, and has consequently identified technical and financial opportunities. It is stated within the initiative that the proposals could reduce Glasgow's carbon emissions by 30% over the next decade (Glasgow Economic Facts, 2010).

The housing stock of the city, two-thirds of which is in the form of flats and primarily from the Victorian era, lacks in energy efficiency and requires extensive improvements of insulation, window glazing and heating. This has been identified as a target area for improvement for the GCC.

6.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Glasgow is in a very beneficial position regarding water; surrounding Glasgow are an abundant amount of lochs and the heavy amount of rainfall means there is no risk of water shortage. As a result of the abundance of water, in many forms, and the extremely high quality of water, few providers exist outside of the main water provider and the regulatory watchdog.

Water is provided by the national water provider Scottish Water. Charges for Scottish Waters' 2.4 m customers are £2.2020 (for the first 25 m^3 of water) and an additional charge of £0.7978 (for volumes after 25 m^3) for household metered charges. In 2013/14 the water supply charges increased by 2.8%. This was the first increase in four years (Scottish Water, 2013).

Key issues

Glasgow's water and sewage system was installed during the Victorian era; as a result, much of it is in need of improvements or replacement. Scottish Water is in the process of major reconstructive work of its infrastructure. In the April 2006-March 2010 investment period, the company managed to reduce the loss of water due to leakage and damages by 450 m^3 litres of water daily. This is a reduction of 33%. In the

latest investment programme, the water mains throughout the city centre will be replaced and will be achieved by 2015.

Key actors/partnerships

A partnership established in 2002 exists between Scottish Water, Scottish Environment Protection Agency, Scottish Enterprise, the GCC and Scottish Canals to overcome drainage and sewerage issues, which add to flood challenges within metropolitan Glasgow (Scottish Water, 2013).

Scottish Water, unlike the rest of the UK water companies, is a public company that serves the whole of Scotland and is responsible for delivering water and wastewater services. Scottish Water delivers 2.3 billion litres of drinking water daily and removes nearly 1 billion litres of wastewater per day across Scotland. Outlined in their Business Plan is a strategic goal to conduct business sustainably where the risks of climate change is recognised and plans to use more renewable and carbon emission friendly methods are set out. Scottish Water is primarily funded by customer charges and loans taken from the GCC (Scottish Water, 2012).

Waterwatch Scotland is responsible for representing customers both domestic and public, investigating customer complaints and influencing policy where necessary (Scotland.gov.uk, 2013).

Key actions/measures/initiatives

The Water Industry (Scotland) Act 2002 was passed in order to dissolve the previous regional water providers and create one nationalised water provider; Scottish Water, to regulate water quality and availability and to establish Water Customer Consultation Panels (Legislation.gov.uk, 2013).

The Water Services (Scotland) Act 2005 was passed in order to create the Water Industry Commission so that offences of unauthorised use of the public water and sewerage systems could be regulated and sentenced. In addition, policies to safeguard drinking water from pollution and set fixed charges for water services were created (Legislation.gov.uk, 2013).

Energy

Availability, affordability and consumption levels

The energy bill for GCC in 2012 was approximately £26 million. Glasgow's CO^2 emissions stand at 6,500 t in 2010, which is not only higher than average but also makes Glasgow the fifth highest emitter in the UK and the highest in Scotland. Per capita emissions in Glasgow are 6.2 t (Citiesoutlook.org.uk, 2013).

ScottishPower is the main energy provider in the city; it charges 12.235 p per KWh of gas and electricity consumed for domestic purpose (ScottishPower, 2011). The total consumption of energy in Glasgow was 12,448.6 GWh in 2012, 4,726.2 GWh of which was consumed by industrial and commercial sector. The domestic sector was responsible for 4,170.2 GWh of consumption while transport was responsible for 2,947.0 GWh of energy use. The 605.1 GWh of energy remaining was used by bioenergy and waste services (GOV.UK, 2013).

The 'Sustainable Glasgow Strategy' has proposed several green energy projects, which would bring in an estimated £1.5 billion in new investment into the city (Glasgow Economic Facts, 2013).

Key issues

Glasgow produces little of its own energy, and renewable energy even less so. Few plans are being considered to increase renewable energy generation in the city and its surroundings. The wind farm at Whitelee, with 140 (though plans are underway to increase the number to 215) turbines is the main generator of renewable energy in the area. Overall, it contributes less than 1% to the city's energy use, far below the 20% target for 2020. Eventually, this farm is predicted to generate 322 MW to 539 MW, the equivalent of powering approximately 300,000 homes (BBC, 2013). Despite this, there are currently few renewable energy options available for Glasgow. Rather, the use and installation of district energy and heating seem to be paving the way forward for energy plans in the city.

Though little primary evidence of this was found during the course of the research, it was mentioned frequently that there is a small but significant population of the city, still heating their homes with coal heaters from the industrial period.

Key actors/ partnerships

ScottishPower is the main producer and supplier for energy generation and distribution in Glasgow. ScottishPower owns and operates all of the electricity transmission assets in Glasgow and 95% of the distribution network with its retail business supplying gas and electricity to over 5 million customers (Glasgow.gov.uk, 2013).

South Seeds, a community-led organisation established in 2011 works with residents and other organisations on the topics of energy, green spaces and waste. Their aim to tackle climate change is followed by assisting residents in the South of Glasgow by improving energy efficiency in their homes, assisting with cutting fuel bills and tackling fuel poverty. The organisation is funded by the Scottish Government's Climate Challenge Fund. That they work in a very specific area of Glasgow (four areas in the South of the city), which they mapped out intricately, means they know the area, the residents, the issues and the challenges very well and are able to provide tailored and effective solutions (South Seeds, 2013).

Key actions/measures/initiatives

Step Up is a four-city partnership including Glasgow, Ghent, Riga and Gothenburg on energy and sustainable planning organized by EUROCITIES. It aims to provide the necessary tools and knowledge of energy issues and sustainability to create an integrated sustainable approach into Glasgow's city planning policies and actions (Stepupsmartcities.eu, 2013).

Affordable Heating Project is a scheme in which 1900 households will receive improvements and repair to their homes, delivering low cost and energy efficient heating and hot water. SSE and Scottish Gas have worked in partnership to develop a new energy centre on the Wyndford Estate in Maryhill from which the local housing will be powered by a Combined Heat and Power (CHP) engine (Glasgow.gov.uk, 2013)

G-HEAT was established as a partnership between GCC, the Scottish Federation of Housing Associations, the Glasgow and West of Scotland Forum of Housing Associations, the Glasgow Advice and Information Network (GAIN) and the Wise Group to provide information and advice to residents on energy issues in order to tackle fuel poverty within the city (G-heat.org.uk, 2013).

District heating is actively being explored by the GCC, and is outlined within the Sustainable Glasgow Initiative. The Commonwealth Games village is set to receive a district heating network and the Polmadie Energy from Waste project is under consideration to provide energy to its network. Currently suitable customers for the project are being assessed but the project is due to be in operation by 2015 (Glasgow.gov.uk, 2013).

Green spaces

Availability, affordability and consumption levels

Glasgow is known in the UK as “dear green place” which illustrates how green the city is. Glasgow’s green space network makes up 20% of the city’s land area, which forms links throughout the urban area. This includes rail and road corridors, parks and cycle routes.

The functions of the spaces are diverse and are considered an integral part of Glasgow’s infrastructure. Included in the green space network are 5 city parks, 12 district parks, 74 local parks, 527 outdoor sports pitches, approximately 330 sports venues, 350 equipped outdoor children’s play areas, 27 allotment sites, hundreds of amenity open spaces and approximately 3 million trees.

The Council has outlined its commitment to improving and investing in the park and open spaces in the city such as the park regeneration works within Tollcross Park, Glasgow Green and the Kibble Palace Botanic Gardens glasshouse (Glasgow Economic Facts, 2013). Glasgow Green, the oldest of the city's parks, is currently undergoing a major development having received funds from the Lottery Heritage Fund (Glasgow.gov.uk, 2013).

The GCC has some regeneration projects, which include installing all-weather tennis courts and skateboard parks, upgrading allotments and upgrading playgrounds throughout the city.

Key issues

There are some conflicts around the issue of the use of green spaces in the city, with the GCC frequently using them for economic activities, concerts, festivals, fairs and similar events. Community groups are antagonised by what they see as overuse of the community green spaces by the GCC for economic use that is not of equal advantage of Glasgow’s citizens and local communities.

Key actors/partnerships

Land and Environmental Services at the GCC are responsible for management of the city parks and open spaces and are required to work in line with community groups though a tense relationship exists between the green spaces group and the department at the GCC.

Friends of Glasgow Green is a community charity dedicated to advancing education and awareness of the Green, Glasgow’s oldest green space which has been in continuous existence since the 18th century. Since its establishment in 2007, the Friends of Glasgow Green has grown significantly and has since received a large amount of funding from the Lottery Heritage Fund in order to maintain and safeguard the biodiversity, environment and usage of the Green (friendsofglasgowgreen.org.uk, 2013).

Key actions/measures/initiatives

A Consultative Draft - Glasgow Open Space Strategy (GOSS) has been commissioned, to examine Glasgow's priorities, and has outlined the following six strategy areas for how open space can contribute to achieving the priorities:

- Place setting for improved economic and community vitality
- Health benefits and well being
- Creating connections
- Improving ecological quality
- Enhancing natural processes and generating resources
- Managing the micro-climate

DEV-11: Green Spaces is a development strategy for Glasgow's green spaces, and outlines the importance and function of the spaces to the city, the economy, its residents and visitors (Glasgow.gov.uk, 2013).

6.3 Governance and citizens´ participation

Multi-level governance

GCC is the single local authority in Glasgow. The Council's decision-making structure is made up of an Executive Committee, five Policy Development Committees and two Scrutiny Committees. Many regulatory type committees such as Licensing and Planning plus a small number of other committees exist within the GCC. The council undertakes work within the following departments: Chief Executive's Office, Corporate Services, Development and Regeneration Services, Education Services, Financial Services, Land & Environmental Services and Social Work Services (Glasgow.gov.uk, 2013).

This governance structure of Glasgow City has a direct influence upon sustainability issues in the city. In recent days, issues of urban gentrification and regeneration have become seriously associated with governance and sustainability in Glasgow (McIntyre and McKee, 2005).

During conversations while undertaking research it was noted that one challenge for Glasgow was competing priorities within the administration caused partially by overlapping working areas.

GCC has consistently been made up of social-democratic party councilors since the 1970s and this is still the case today with the following make-up of GCC councilors:

- Scottish Labour Party (SLP): 44
- Scottish National Party (SNP): 26
- Scottish Green Party: 5
- Glasgow First: 1
- Scottish Liberal Democrats: 1
- Scottish Conservative and Unionist Party: 1

National

The GCC is one of the most powerful councils in Scotland and works hand in hand with the Scottish Government. Priorities between the two governments are of a similar nature and good working relations exist with GCC receiving vital support from national government, both in terms of funding and backing for projects. Currently there is a lot of discussion as to the effect of the result of the 2014 Referendum on Scottish Independence. This could overhaul completely the function and working methods of the GCC and other councils in Scotland.

EU

There is a good and clear understanding of the relationship between EU legislation and policies and the GCC, and attitudes towards the EU within the GCC seem to be cordial.

Participation and bottom-up action

All offices within the GCC have assured 'Freedom of Information'. The minutes of the council meetings are regularly published, to encourage citizen participation within the decision making process. Despite this, citizen participation in Glasgow is relatively low, and very concentrated around specific areas of the city, and on specific themes. A handful of community organisations exist on the topic of energy, though primarily the biggest theme in the city is green spaces and urban regeneration. As a result, community groups are not well organized. It was observed that there is a lack of networks within the city with regard to community groups, and many community groups have ceased to exist over the last five years as a result of no or little leadership and no progress within the scope of their mandate. It was also found that community groups were not always content with their relations with the council. It was expressed, both from Glasgow City Council and from community groups within the study, that there is a need for more understanding and clarity regarding rights of citizens to get involved and how to do so.

Active civil society in Glasgow tends to be national (both Scottish and UK) rather than community groups and associations such as Friends of the Earth Scotland, Greenspace and Scottish Refugee Council.

6.4 Conclusion

Short summary

It seems, from a review of recent plans and actions of Glasgow City, that the priorities of the city are finance/economy establishment, urban regeneration and energy efficiency projects. These types of instant and long-term investments themselves will assist Glasgow to become more sustainable. However, other areas remain a challenge for sustainability in Glasgow. A common sustainability vision, shared by the GCC, business actors and the third sector, could take sustainability in Glasgow to another level. In an era of severe funding cuts and lack of financial capabilities, which GCC has been suffering from, community groups as well as private enterprises could assist in meeting the sustainability goals of the council. Furthermore, a more integrated sustainability management within the GCC and among the different departments could move sustainability forward.

Key challenges and trends

- High levels of poverty
- Biggest percentage of refugees and asylum seekers in the UK
- High levels of energy inefficient housing
- Problems with urban density of city

7. UK – Leeds

7.1 General city profile

Background information

Factual data

As the 10th largest city in the United Kingdom with a size of 550km^2, Leeds has a population of 751,500 inhabitants making it the 8th most populous city in the country. Leeds has seen a 5.1% (by 35,900 inhabitants) increase in population size between the years 2001 and 2011 (Citiesoutlook.org, 2013).

Located in the North-East of England, within the Yorkshire and Humber region, Leeds is connected to the North Sea by the Aire River and via the Liverpool and Leeds canal to the Irish Sea. To the West of Leeds lies the Pennine Mountain Range, which affects the climate of the city by providing a rain shadow resulting in a reduced annual rainfall of 840mm (Climatedata.eu, 2013). The climate of the city is oceanic, with mild summers and moderate rainfall with a mean temperature of 16 °C in July (the warmest month). Winters are chilly with occasional snowfalls, and the mean temperature of January (the coldest month) is of 3 °C (Metoffice.gov.uk, 2013).

Leeds is densely built beyond the city centre as a result of post war construction, which saw the city badly damaged. The city core retains a 4-7 storey height for the majority of buildings within the conservation area. Beyond that, the residential areas, particularly the social housing estates in the city centre are primarily made up of taller buildings and tower blocks (Leeds City Council, 2012).

Basic government / administrative structure

The city of Leeds has a local government system, with the Leeds City Council (LCC) as the local authority. It is the second largest metropolitan authority in England (LCC also acts a local authority beyond the city limits and is also responsible for the West Yorkshire region). The Council is composed of 99 Councillors, three councillors working for each of the 33 wards of the city. There are 32 Parish and Town Councils in Leeds, which are first tier of local government and these maintain a close working cooperation with LCC. There are 7 departments within the LCC working on a range of issues including transport, housing and planning (Leeds.gov.uk, 2013a).

As a result of reduction in funding from the National Government, around £55m in savings must be accomplished by LCC within the 2013/14 period. The estimated total budget spending for this period totals 583.9 million GBP, an average of 1.7% decrease from the 2012/13 period (Leeds.gov.uk, 2013b). To prepare for the budget and distribute spending, a number of public consultation campaigns were conducted to assess public opinions and priorities.

Revenue expenditure of the LCC was funded from a variety of sources, primarily, the general government grant, business rates and council tax. Charges from services such as council home rent, as well as using reserve funds, also act as a supplement for the expenditure. In the period 2013/14, the following sources contribute to capital projects: grants and contributions (35%) revenue contributions to capital including the Housing Revenue Account (HRA) (23%), borrowing (42%), which is undertaken at agreed rates of interest and repaid from revenue budgets (Leeds.gov.uk, 2013c).

Economic conditions

Historically Leeds has been an industrial centre with businesses in manufacturing making up the majority of the employment, however this has declined by up to 31% in the last decade, with forecasts that it will continue to do so. During this time, the financial and business services has grown remarkably by 25% and it is now the biggest financial centre in the UK outside of London (*Sectors of the Economy*, 2013).

Nevertheless, Leeds has been hit hard by the recession with a 5.5% decrease in jobs between the years 2008 and 2011 and a 68.8% employment percentage. Despite this, the median weekly earnings for people working in Leeds are £473, making it the third largest weekly salary in the UK (Small Business Factsheet, 2013). Total employment numbers in Leeds was estimated at 457,000 in 2013. In 2011, there were 303,300 private sector employees compared to 101,200 public sector employees. Currently, the extent of Leeds' debt stands at 1.6 billion pounds.

In terms of unemployment; Leeds has the third lowest claimant rates in the country with 25,030 claimants, though the real level of unemployment is estimated to be approximately 41,400. 8.9% of Leeds inhabitants have not obtained any formal qualifications in 2011 (*Small Business Factsheet*, 2013).

Special characteristics

The Leeds district is at risk of flood from a variety of different sources but primarily from the network of large rivers in the area: the rivers Aire, Wharfe and Calder; and smaller rivers: Wyke, Wortley, Farnley Wood, Meanwood, Cock, Oulton and Collingham. There is significant surface water run-off from fields and open spaces as well as risk of flooding from reservoirs and from the large number of lakes in the region (Leeds.gov.uk, 2013d)

As a result of its increasing status as financial capital of the North of the UK, Leeds has seen an increase in urban sprawl as well as higher percentages of commuter living.

Leeds is one of the most culturally diverse cities in the UK; with Black and Ethnic Minorities (BME) communities making up 10.8% of the population. This is 3% higher than the national average. The largest BME group is of Pakistani origins with 3.5% of the population (Office of National Statistics, 2011).

Local Lifestyle

Leeds is a compact and walk-able city, with the core of the city primarily pedestrianized. Cycling in Leeds in recent years has seen an increase, and with it an increase in cycle paths and provisions for cyclists. Currently the city council is in the progress of making the city more cycle friendly with additions of and improvements to cycle lanes though a lot more work needs to be done to ensure the safety of cyclists and to promote alternative transport. Cycling initiatives and forums for cyclists to discuss with the city council also exist (Leeds.gov.uk, 2013e).

Leeds has a vibrant and active community voluntary scene with over 100 community groups acting on sustainability issues focusing on food production, conservation and climate change (Urbal.tv, 2013).

Key challenges and trends

Economic issues and trends

Within the scope of the research, it was identified that local businesses could take more actions towards energy efficiency and the reductions of emissions. A study undertaken at the University of Leeds and sponsored by the city council showed that the council could play a major role in facilitating energy reduction in SMEs as firms have a tendency to believe that government' emissions targets do not, or will not, affect them and over 50% of SMEs do not believe that their operations lead to significant GHG emissions. Most firms are unlikely to act independently and an absence of policies and regulations leads to a lack of action and therefore the retention of energy consumption levels within businesses and particularly commercial firms (Bradford and Fraser, 2008).

Social issues and trends

Due to Leeds' increasing status as the financial capital outside of London, as well as numerous universities in the city and high levels of cultural amenities, there is a steady inflow of migration of a diverse group of people.

Some small tensions can be observed between groups of migrants, primarily between Eastern European migrants and Black and Asian migrant groups. Generally, however, few problems exist with the migration population and it is generally viewed that the migrant population improves the variety of cultural amenities and specialised trades.

Environmental issues and trends

Leeds has experienced some flooding in recent years due to weather events and a number of waterways within the region. So far the floods have been small but significant enough to cause damage. There is a possibility of more severe flooding in the future and so actions need to be taken to manage these risks. A lack of coordination among the various organisations involved has created obstacles towards planning flood risk strategies for the city. The council has identified that without a clear statutory framework indicating the responsibilities of involved parties, the creation of a successful strategy is unlikely.

In discussion with members of the local government, it appears that there is a significant problem with the housing stock in Leeds regarding high levels of energy inefficiency that need to be addressed swiftly.

7.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Water in Leeds is provided by Yorkshire Water, a private company that is responsible for the collection, treatment and distribution of water throughout Yorkshire. Water is used from a variety of reservoirs, rivers and boreholes in the Yorkshire region to deliver 1.24 billion litres of drinking water per day. Additionally, Yorkshire Water is responsible for the collection, treatment and disposal of approximately one billion litres of wastewater into the environment (Yorkshire Water, 2013). There is an abundant supply of water for the Leeds region. However, Leeds uses up to 36% more than the national average of water *(Natural Resources and Waste DPD Resource Flow Analysis,* 2008).

Key issues

That the population of the city has a 36% higher than the national average of water usage may put significant pressure on the city's water reserves. Additionally, the high water usage will inevitably lead to higher volumes of wastewater, putting further pressures on Yorkshire Waters' ability to dispose of wastewater, as well as the existing infrastructure to cope with the demand.

The significant manufacturing industry in Leeds in the past shaped the infrastructure that Leeds still uses today. The water system was originally designed as larger than usual to accommodate the needs of the large industry present in the city. Over time the economy in Leeds has transformed into a service based economy and manufacturing has declined drastically and will continue to do so. The use of the specially designed pipe system is highly inefficient in delivering water to consumers with lower needs, requires more energy and results in more water loss.

Key actors/partnerships

There are very few key actors in Leeds regarding water, the biggest of which is the regional water supply company and few industries such as local farms in surrounding rural areas.

As a result of good quality water and accessibility to water for all sectors of society, few problems exist in Leeds if any, additionally there are no civil society actors involved in water issues surrounding quality and availability though some actors exist to maintain areas wetlands and lakes in order to protect local biodiversity.

Yorkshire Water

Yorkshire Water is a supply and treatment utility company servicing West Yorkshire, South Yorkshire, the East Riding of Yorkshire, part of North Lincolnshire, most of North Yorkshire and part of Derbyshire, in England. The company is one of ten regional water providers in England and was privatised in 1989 along with the rest of the UK. Yorkshire water is responsible for the delivery of water to 4.5 million people and 140,000 businesses in the Yorkshire region and is responsible for approximately 700 water and sewage treatment works, 120 reservoirs and 62,000 miles of water and sewage mains. The company is also one of the county's largest landowners, a significant amount of which is not only open to local communities but also protected in order to ensure the wealth and health of the water environment as stated in their mission statement (Yorkshire Water, 2013).

Water at Leeds

Water at Leeds is an interdisciplinary water research centre at the University of Leeds working locally and regionally with government, water providers and industries by knowledge transfer, training, innovation and research and development. Water at Leeds has been working with Yorkshire Water closely for the last 20 years to improve business practices and services.

Key actions/measures/initiatives

Yorkshire Water has developed one of the UKs largest underground drinking water reservoirs, costing £4 million with 85 kilometres of old pipes replaced recently to make the network more efficient and resilient.

Water Industry Act 1999

The Water Industry Act 1999 banned private water companies from disconnecting water and sewerage services for domestic customers who were in debit.

Energy

Availability, affordability and consumption levels

There are 15 energy companies in the UK, but the "The Big Six" dominate the energy market. Within Leeds, one of the biggest competitors is Scottish and Southern Energy (SSE) who work closely with Northern Grid to utilise their grid system.

On a standard consumer package, the annual estimated cost of electricity and gas (based on the average customer's typical annual usage: electricity: 3,300 kWh and gas: 16,500 kWh) is £1,230.99. Electricity costs for a year are £474.09 with a per kWh charge of 4.26 pence and the additional standing daily charge of 27.41 pence. A gas cost within the same package, per kilowatt is 4.61 pence, on top of a standing daily charge of 27.41 pence, equating to £756.90 (SSE, 2013).

SSE do not offer any green or social tariffs, but do participate in the UK governments "Green Deal" proposals, which is a government initiative aiding people to install energy efficiency measures in their properties with no upfront cost in cooperation with energy companies.

Leeds General Infirmary is the largest site in Leeds of decentralised energy, providing heating, cooling and electricity to the hospital and the University of Leeds. Small generators also exist, the most notable in the area being the hydroelectric plant in Otley, the photovoltaic panels on Park Lane College, a mix of technologies including biomass heating at the University of Leeds. A handful of civil society organisations exist in the area of energy awareness: becoming energy efficient, saving money on energy bills and environmental effects of energy use (Leeds.gov.uk, 2011).

The energy bill for Leeds in 2011 reached £5.4billion. This is projected to rise by 25% by 2020 to £7.2billion (Climate Change Strategy, 2012). Total consumption annually, in Leeds is 1778.5 Ktoe. Renewable sources account for only 0.25% of the total energy consumption in Leeds and there is very little energy production in the area. Whilst a study by the Government Office for Yorkshire and the Humber indicates that up to 22.5% of energy consumption in the region could be from renewable sources by 2021, in the ten years that the report has been written, little has been changed though the capacity for the production exists (Government Office for Yorkshire and the Humber, 2002).

The domestic sector in the UK is responsible for 30% of total energy use. This energy primarily consumed via home appliances; 60% for heating, 20% for hot water and lighting and other appliances use the remaining 20% (Leeds.gov.uk, 2011).

Leeds' CO_2 emission stands at 5.4 t CO_2 per capita which is relatively average for the UK and puts Leeds in the middle ranking of emissions within the top 20 most populated cities in the UK (Dixon, 2012). The city emitted 136,989 tonnes of CO_2 in the years 2008 and 2009 from a combination of buildings, street lighting, staff travel, and service vehicles. Since then, emissions have fallen by 10.7% and in order to meet the target of 40% reduction reductions of 90,000 tonnes need to be reduced every year (Climate Leeds, 2012).

Key issues

Production of renewable energy in Leeds is low, with their contribution to the regional target at 0.6%. A lack of potential sites for generating wind and hydroelectric techniques makes a big increase of Leeds' contribution unlikely. In discussion is the use of waste materials for biomass incineration, though this is only at the proposal stage.

Key actors/partnerships

A Scottish registered company, *Scottish and Southern Energy (SSE)* was established in 1998 and is one of the largest energy providers in the UK. It is the largest renewable energy producer, providing electricity to approximately 3.7 million homes, offices and businesses (SSE.com, 2013).

E.ON supplies energy to 5.3 million homes and business across the UK and are the UK's market leader in producing 'combined heat and power'. E.ON is currently working closely with the city council to upgrade city council buildings for energy efficiency measures. Estimations suggest that the upgrade could result in the reduction of energy consumption by 20% and lowering of emissions by 1,317 tonnes CO_2 (E.ON.com, 2013).

REAP Leeds

REAP Leeds is a community led organisation, started in 2007 by a group of concerned residents in the Roundhay area of Leeds. REAP Leeds aims to cut community carbon emissions and encourages local communities to reduce energy consumption by raising awareness of energy efficiency and how to cut fuel bills (Reap-leeds.org.uk, 2013).

Friends of the Earth Leeds

FOEL is the local volunteering group for Leeds of the international charity and is one of very few community organisations that continuously campaign for the LCC to invest in locally generated renewable energy.

Key actions/measures/initiatives

Leeds City Council has committed to reducing their emissions from council operations and across the city by 40% by 2020. In order to do so they have declared that annual reporting will be obligatory on budgets in place to reach the figure as well progress on achievements. This is one of the biggest commitments on CO_2 emissions reductions from any city council across the nation (Newsfeed.leedsvirtualnewsroom.co.uk, 2009).

Leeds is a part of the Low Carbon Cities Programme, which is a partnership programme between the city government and the Energy Saving Trust and Carbon Trust to devise and deliver city tailored carbon reduction strategies, which might include renewable energy schemes or tri-generation and energy saving measures. Key actors within Leeds from government, community and businesses will be involved and expected to contribute to the delivery and implementation of the strategy (Lowcarboncities.co.uk, 2013).

In January 2010 a Low Carbon Framework Pilot was introduced with financial support from the Department of Energy and Climate Change to support carbon reduction programmes in the local authority, however with the change in UK government in June of the same year, changes to local government

policies and priorities occurred and stalled the progress of achieving these indefinitely (Lowcarboncities.co.uk, 2013).

In June, 2013 a new initiative "Wrap Up Leeds ECO" was launched in partnership with the city council, local and international companies to replace household boilers or install cavity wall and loft insulation for free if the home is hard to heat or the boiler is broken, old or inefficient (Wrapupleeds.co.uk, 2013).

Green Doctor is a project organised by Groundwork Leeds, which provides advice to households on energy, efficiency, funding and environmental issues such as recycling. For individuals that qualify, the Green Doctor project also installs services such as energy efficient light bulb installations, reflective radiator panels and draught excluders for free.

Green Spaces

Availability, affordability and consumption levels

Green spaces within Leeds are a strong point for the city since the introduction of the Parks and Green Spaces Strategy in 2008. Throughout the interviews it was observed that the quality, quantity and diversity of green spaces are celebrated among all sectors as being excellent. The parks service within the LCC is responsible for 40 km^2/4000 hectares of parks and green spaces in Leeds including seven major parks, 73 community parks, 94 recreation grounds, 22 cemeteries, 96 allotment sites, 156 nature conservation sites and 170 woodlands (Green Space, 2007). In the years 2005-2008, the parks renaissance programme invested an extra £3.7 million into developing and improving green spaces in the city (Leeds City Council, 2007). Heritage Lottery Fund also invested 8.2million into the development and restoration of two of Leeds' biggest parks. Within Leeds' private sector, Yorkshire Water owns a significant amount of green space and the majority of this is accessible to the public for recreational use. Public green spaces within the city centre have been increasing; however there is a lot of pressure on the council to develop on the green belt surrounding central Leeds to accommodate the need for housing.

Key actors/ partnerships

There is a degree of collaboration among the different actors in Leeds regarding green spaces. In particular Leeds City Council works very closely, both with private and third sector actors. There is some partnering between private and third sector groups, for example National Grid and The Conservation Volunteers work together as a joint partnership for an educational centre in Leeds, which supports volunteers in conservation. The third sector in Leeds works closely with each other, a number of organisations exist which support and partner with community groups and associations both through funding as well as mentoring and guidance. Additionally there are a number of forums and advisory bodies to assist with vocalising local concerns and facilitating communication among and between sectors. Feedback during research indicated that most participants were satisfied with the extent of input towards green spaces from other sectors as well as the level of cooperation among them.

Leeds City Council Planning Department

The Planning Department within Leeds City Council receives a lot of pressure as a result of the local governments mandate and from central government to encroach on the green belt to ensure that land is available for housing. This is a contentious area for the council as local community groups are quite vocal in their opposition of this.

Leeds Parks and Green Spaces Forum

The forum is a voluntary organisation in Leeds consisting of citizens, groups and organisations involved in protecting, improving and maintaining the green spaces in the city. The forum works in close collaboration with Leeds City Council and acts as a consultation and advisory body to influence park policies. Leeds Parks and Green Spaces Forum also aims to raise funds to benefit the green and open spaces in the city and to support the work of local groups (Leeds.gov.uk, 2013f).

Groundwork Leeds

Established in 1986, Groundwork Leeds, the local branch of a national charity, is a community-based initiative responsible for the running and partnering of projects with the aim of improving green spaces and providing training to volunteers. Groundwork Leeds works with local unemployed and youth not in education to provide training in horticulture, countryside management, landscape construction, art and media, giving them practical experience as well as qualifications. Some programmes are also partnered with schools and educational institutions in order to educate children on environmental issues and tackle climate change, which is a core component of the work of Groundwork Leeds. Groundwork Leeds also creates and maintains new or derelict green spaces and aims to transform land use by creating and promoting activities within the green spaces to maximise use (Yorkshire.groundwork.org.uk, 2013).

The Conservation Volunteers

A national organisation established in 1950, with over 2,000 community groups in the UK, The Conservation Volunteers (TCV) are quite active in reclaiming land in Leeds and transforming this land back into green spaces. There are two centres for TCV in Leeds both of which focus strongly on education and training programs and work closely with both the LCC and National Grid (The Conservation Volunteers, 2013).

Urbal TV

Urbal TV is a website dedicated to “green groups” in Leeds for the purpose of promoting and linking citizens and communities together to work on shared interests. Urbal TV lists all known groups according to focus area, provides links or contact details and maps out where each groups/association works within the city on an interactive map (Urbal.TV, 2013).

Key actions/measures/initiatives

A Parks and Green Space Strategy is the strategy for Leeds’ green spaces in which key targets and priorities to be achieved by 2020 are outlined. Quality and accessibility issues are also addressed within the report.

The Quality Places and Spaces within the Leeds Chamber focuses on the quality of the urban environment in Leeds and aims to encourage more responsible actions in order to create spaces within Leeds of higher quality both for environment and society.

7.3 Governance and citizens´ participation

Multilevel governance

Governance in Leeds and its surrounding areas is a complex issue as it is both a city district and a metropolitan region. Leeds City Council makes all executive and legislative decisions regarding local policy, budget and council tax charges within the city limits and surrounding urban and rural districts where lower levels of government exist.

A number of networks and partnerships exist with the authorities of local regions and districts in order to improve local economic development. The Leeds City Region local enterprise partnership with 11 local authorities was established in 2008 and in 2012 a West Yorkshire Combined Authority was also set-up for decision making on transport, economic development and urban regeneration for which Leeds City Council is the relevant governing body. However competing priorities among the authorities can often hinder progress on decision-making.

Local

Leeds' local government is currently composed of the following numbers of politicians of the various parties:

- Labour – 63
- Conservative - 18
- Liberal Democrat - 10
- Morley Borough Independents - 5
- Green Party - 2
- Independent – 1

National

Due to a Labour majority local government in a Conservative national government, an uneasy relationship exists between the two. The priorities of national government often work against those of the local politicians and this creates complex issues. One of the interviewees found that due to a change in focus of their role there was no longer any room to look at how sustainability could be integrated into city policies. The change in government in 2010 redefined roles on a local level to mirror national interests; as a result of neglect, sustainability is not an overarching theme within the local government.

EU

The existence of policies making reference to EU directives and clearly defining where targets or incentives are directed from is few and far between. It was not noted during the research that EU directives were transparent or clear within local government policies.

Participation and bottom-up action

Citizen participation in particular is a major strength for Leeds. Specifically, groups and individuals are highly involved in the issues of green spaces: beautifying local areas, urban food growth and conservation groups are among the most popular. In this capacity groups tend to be well organised and well supported from funding organisations as well as from the city council. The rules and abilities of citizens to participate

are well defined and well understood, likely as a result of the numerous bodies that exist as communicative and advisory roles between the council and the community. As a result, networks of organisations exist that tackle green issues together. Feed Leeds for example is a network of groups that work on urban food growth throughout the city in place of flowerbeds, where pedestrians are welcome to harvest the produce. This project has over 30 partners involved in the planning and execution of its goals and has evolved from planting seeds to facilitating the creation of partner networks such as Leeds Edible Schools Sustainability Network and engagement of business community which shows the extent of citizen participation and the strength of the community in creating successful changes concerning green spaces.

This cannot be said for citizens' involvement in areas involving, specifically water and to a degree, energy. Water providers are private and regional and there is no room for competition. One company dominates a regional market and there is little room for consumer interaction, particularly as Leeds council has very little involvement with Yorkshire Water and rules and policies are not communicated to citizens. As quality and access to water is of a high standard, consumers have little opportunity to get involved and create their own initiatives. Similar issues exist around energy. During the course of the research a difference of opinions for the extent of citizens' involvements was noted, with participants believing that they are involved and some participants not seeing much involvement at all. This indicates that while citizens might be involved, their presence is not notable to the relevant actors and decision makers. Nevertheless, the areas in which citizens can partake are limited and therefore limited participation occurs.

There is legislation that involves the local community in planning, meaning that local groups can organise themselves and try to influence factors that affect them such as where houses or retail units are built. This can translate further into different areas involving energy and water, but a lack of interest from the community sees little action.

7.4 Conclusion

Short summary

Leeds City Council is taking huge steps forward towards cutting emissions and increasing energy efficiency. Their target to reduce their emissions by 40% by 2020 is one of the most ambitious city council targets in the UK and exceeds national and EU targets. The council itself has initiated a number of initiatives and they have supported a variety of community projects through funding and creating networks, in particular around the issue of energy efficiency. As a result, home-owners and tenants have been able to make improvements to their homes leading to lower fuel bills for citizens and have also improved energy efficiency and further reduced their emissions. Changes in transport policies may further help achieve these ambitious targets as so far, little work has been done to change citizen transport behaviour. Despite pressures to transform specific areas of the green belt into new housing stock, Leeds has maintained and improved its green spaces and this particular priority remains high for the council and citizens who celebrate Leeds for its quality, quantity and diversity of green areas, throughout and surrounding the city. Leeds does provide a high quality of life, in particular considering that it offers some of the highest weekly wages in the nation despite being hit hard by the recession. The financial burden upon the council has been hard and currently the city is in 1.6 billion pounds worth of debt. Despite assurances from the council that this is as usual and a figure not to be concerned about, it can be seen through cuts to services.

Key Challenges and trends

- Demand for housing increasing
- Increasing pressure to build on green belt
- Skills mismatch of established communities and newer sectors
- Increasing rates of in-migration
- Increasing cultural diversity
- Severe lack of council funding

8. UK- London

8.1 General city profile

Background information

Factual data

The capital city of the UK and the financial centre of the country, London is the largest city in the country with an area of 1,572 Km^2. The city consists of a large profile of urban and metro areas, which is the most populous region in the UK, having a population density of approx. 5,300/Km^2. With a total population of 13,614,409, London has the largest metropolitan area in the EU (GLA, 2014)

The climate of the city, as the rest of the country is oceanic climate, where summers are generally warm and sometimes hot with average high temperature of 24 °C and chilly winters with temperatures seldom falling below -4°C. London receives an annual precipitation of 601 mm, which is considerably low, despite it being a rainy city. The heat index of the city is considerably higher in summer due to its urban topography and urban heat island effect (MetOffice, 2013). London is located in the South-East of the country, with a number of rivers running through it, in particular, the River Thames is the largest of the rivers, which leads to the English Channel.

Basic government/administrative structure

After the creation of new Greater London Council with respect to political administration in 1965, Greater London has been divided into 32 districts. Many parts of the UK have 2 tiers of local government, i.e. country councils and district, borough or city councils. London has unitary tier of local government where London boroughs and metropolitan boroughs are responsible for providing all the local services. There are parish, community and town councils operating at a level below London boroughs, which help on a number of local issues (GOV.UK, 2013).

For 2013/14, Greater London Authority, the Mayor of London, Boris Johnson has approved a budget of £231 m in local places and infrastructure and net expenditure for 2013/14 for the Mayor is £177.2 m (GOV.UK, 2013).

Economic conditions

Over the course of 30 years London has seen a decline in its manufacturing employment, which used to be a strength for the city and has instead experienced growth in professional and business support services. The city's specialities are in finance and insurance, scientific and technical services, information and communication as well as real estate. It is estimated that the number of jobs in the city will rise from 4,896,000 (2011 levels) to 5,757,000 by the year 2036, this is an annual growth of 35,000 jobs annually and approximately 850,000 more jobs by 2036 (GLA Economics, 2013). With London's increasing business activities in construction, manufacturing and services industries, in Q1 2013 London's annual employment growth rate was higher than in the rest of the UK (Greater London Authority, 2013) and the city suffered much less during the bulk of the recession than the rest of the UK. Employment is currently rising and projected to do so. Current levels of unemployment are 8.5% and the employment rate for London is a record high at 70.9% (Office for National Statistics, 2013).

Special characteristics

London hosts a variety of ethnic groups from several countries worldwide, where people practice more than six religions, and the city is established as a world cultural centre. Over a third of the population of the city are from a Black, Asian or ethnic minority background. Approximately 3 m people in the city were born outside of the UK, the largest group being from India. These statistics are changing continuously, over the last few years, Romanian communities have significantly increased and more increases from migrants are expected in the coming years.

Local Lifestyle

The lifestyle in London, as an urban and metropolitan area, is sustainable in terms of 'quality of life'. Transport for London (TfL), the local government body is responsible for the transport system in London. London's transport consists of traffic network of road, rail and air networks. London has the first metro system in the world with more than 6,000 traffic signals, where it has reliable network of SCOOT (Split Cycle Offset Optimization Technique) and pedestrian countdown whereby freight movements and deliveries are managed online by Surface Transport and Traffic Operations Centre (Mayor of London and Transport for London, 2010).

With regard to environmental sustainability, a study shows that London can meet international greenhouse gas targets without a massive shift in its citizen's local lifestyle. The London Climate Change Action Plan aims at reducing CO_2 emissions up to 60% by 2025. Energy consumption in London for transport, domestic, industrial and services sector is mainly based upon fossil fuels, natural gas and electric supply. The Department of Energy and Climate Change of Greater London is currently focusing on research for energy efficiency through alternative resources to sustain the local lifestyle and environment of London city.

Key Challenges and Trends

Economic issues and trends

The rapid growth of globalization has left global economies with several consequences and the economy of London is also affected by it. In the 2000s, there was a huge drop in employment and services industries. However, London has been able to retain its global economy with the help of strategic actions and plans. The unpredictable nature of the energy sector is a threat to London's local economy. Variation in labour and property market is viable to affect London's productivity and GDP growth in comparison to its European peers. However, the city specific economic strength of City of London, Westminster and Tower Hamlets has been helping to improve London's both local and global economy with increase in employment rate, housing industry and infrastructure, which has developed business confidence and economic growth (Oxford Economics and City of London, 2013).

Social issues and trends

A recent problem in London's economy has been aroused by the trend of urban gentrification and housing industries, which might affect the pace of the city towards sustainable development. Due to the gentrification of many areas in the city, much of its poorer population has been pushed further and further out of the city, towards its outskirts.

Like most other cities in the UK, London is experiencing a shortage of housing, at the moment, there is few housing being built for lower income residents. Considering that in the capital one in three people use almost 50% of their income for rent, this puts considerable strain on residents financial capabilities (Giurgiu, 2014). Due to the cost of high rents many London residents experience fuel poverty and are unable to use heating during the winters. As a result, the city had the highest winter mortality rate in 2011/2012, when there were more than 2,500 winter deaths registered (London Assembly, 2012).

It is estimated that the amount of jobs in the city which require an ordinary or higher degree will be 53% by 2036, with the proportion of jobs with no qualifications reaching less than 5% by this year (GLA Economics, 2013).

Environmental issues and trends

London experiences water shortages. However, it could not be confirmed that either the Greater London Authority or the regional water company, Thames Water are acting to address this issue. In addition, London is also at risk of flooding due to poor flooding defences. Furthermore, London experiences high levels of air pollution. A study, commissioned by the mayor Boris Johnson estimates that up to 4,300 death are caused by poor air quality every year (Vidal, 2010).

8.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

About three-quarters of London's water supply comes directly from the rivers, which feed reservoirs near Staines and Heathrow, and those down the length of the River Lee. The current demand of water supply in London for household purposes is 161 litres per person per day; this is more than the English average, i.e. 150 litres per person per day (Environment Agency, 2013). The cost of water per m^3 for residential use ranges from as low as $ 0.72 to $ 2.47 (Council of the City of London, 2013). In 2008/9, household consumption in London was 1,217 million litres per day or 71% of total consumption. A further 492 million litres per day (29%) was non-household consumption (commercial and industrial water use). However, consumption itself was about 74% of the total ‘demand’, with 26% leakage (Environment Agency, 2013).

Water consumption in London is expected to decline up until 2018, but it is predicted to increase after that (Environment Agency, 2013). The local government is developing an innovative approach to the local water cycle, for example: rainwater harvesting, where appropriate, and the use of sustainable drainage systems. Encouraging the use of metering systems in homes and reducing water leakage can make water supply effective and efficient. The local government is on its way to developing a water strategy with sustainability appraisal.

Key actors/ partnerships

Thames Water as the largest water and wastewater services company in the UK serves approximately 27% of the UK population in Greater London, the Thames Valley and a variety of Southern counties. Per day, Thames Water is responsible for the provision of 2.5 gigalitres of drinking water and the treatment of 4 gigalitres of wastewater (ThamesWater, 2013).

Recently Thames Water has begun the process of collecting biogas from its vast sewage network and producing renewable energy. Approximately 12.5% of its energy requirements were produced in this way. Additionally, the discovery of numerous 'fatbergs' (large build-up of fat within the sewage network, some over 15 tonnes) within the sewage networks has prompted Thames Water into building a generator to use the deposits as fuel (BBC, FATBERG website). Thames Water has recently declared their intention to build solar farms, and have set targets of 20% of their total energy use to be from renewable energy sources to be achieved by 2015/2016.

Thames Water has a Biodiversity Action Plan to outline their responsibility towards the environment, which organisations they will work with and in what way and how they will protect biodiversity across their sites. Additionally Thames Water has a five year Climate Change Strategy, released in 2010 to explain how Thames Water will reduce their contributions to climate change, their intentions to reduce CO_2 emissions and their strategy for climate change adaptation (Thames Water, 2013).

Waterwise is a London based, not-for-profit organization that focuses on water efficiency throughout the UK. Waterwise conducts research, undertakes communication campaigns and promotes water efficiency across various sectors. The organisation also undertakes audits, and conducts training and educational work in order to reduce water consumption levels (Waterwise.org.uk, 2013).

Key actions/ measures/ initiatives

Securing London's Water Future, published in 2011 by the Mayor for London, this strategy identifies key actions to safeguard water sources for the capital. The document details a six-point plan with the aim of reducing the city's water demand. The following main points are made within the strategy to safeguard the city's water:

- Through investing into water management and sewerage system designed to ensure security of water services.
- Supporting and promoting practical actions to save water, targeting London residents.
- Encouraging saving energy and money on utility bills
- Aiming to reduce greenhouse gasses by developing clean energy sources within the city, with the use of London's sewage.
- Developing green spaces in the city by partnering with the Mayor and borough councils.
- Managing flood risks in the city.
- (Greater London Authority, 2011)

Hosepipe Ban 2012

Thames Water issued a hosepipe ban within the city in 2012, stating that hosepipes were not to be used for watering gardens and cleaning property, among others. This ban was however lifted in June 2013.

Energy

Availability, affordability and consumption levels

The primary sources of energy in London are: fossil fuels, natural gas and electricity supply. Energy use in the United Kingdom stood at 3,252 kilograms of oil equivalent per capita in 2010 compared to a world average of 1,852. In 2012, total electricity consumed was 27,307 thousand kilograms of oil equivalent.

Demand for electricity in 2012 was 35.8 GW on average, and 57.490 GW at its peak. In London, the price of gasoline is about £ 5 per gallon and electricity costs from ¢ 12.4 per KWh at On Peak to ¢ 6.7 per KWh at Off-Peak (London Hydro, 2013). Total energy consumption in 2011 was 134,346.6 GWh, of which 37.53% was consumed by industry and commercial sector, 41.42% was consumed by domestic sector and remaining 21.05% was consumed by transport sector (GOV.UK, 2013).

To remain a globally competitive city, while making the transition to a low carbon economy, London will need to become increasingly resource efficient and self-sufficient in energy. This will require London's infrastructure, buildings and consumers to adapt to changing demand and supply conditions, making use of both primary and secondary sources of energy to deliver lower energy costs, resilience and environmental sustainability (Mayor of London, 2013). The Department of Energy and Climate Change is carrying energy research in alternative energy resources like: nuclear power, wind power, biogas and secondary heat.

Key actors/ partnerships

EDF Energy is a privately, French owned energy utility company in the UK and one of the big six companies operating in the UK. By providing 5 million consumers with energy, it is the largest energy provider in the UK. EDF Energy own and operate eight nuclear power stations with a combined capacity of almost 9,000 MW. The company also owns three gas- and coal-fired power plants with a total capacity of 4.8 GW 20 onshore wind farms produce the total renewable energy production of the company, whilst an offshore energy production project is in the preparation stages, aiming to be complete by 2015 (EDF Energy, 2013). EDF Energy claim to be the largest renewable energy generators in the UK.

Repowering London is a not-for-profit organisation that specialises in facilitating the co-production of community-owned renewable energy projects. They are a constituted community organisation with a team of dedicated employees working collaboratively alongside passionate volunteers. As the only community organisation within the city that has produced and harvested its own energy, Repowering London is at the forefront of community energy production.

Green Spaces

Availability, affordability and consumption levels

London has abundant green spaces consisting of five Royal Parks, a number of small garden squares, council parks and other green spaces such as commons and greenways, which are scattered throughout the city centre and the rest of the city. The abundance of green spaces within the capital, make it the greenest city in the UK. Most popular is the Hyde Park with an area of 140 ha, and is a traditional location for mass demonstration and public gatherings. These parks also have reservoirs, which distribute water at high pressure to the fire hydrants in the city. Some of the garden squares have restricted access to the public/residents, yet they have served as public open spaces to the city and largely helped to maintain the microclimate of the city. It is estimated that there are approximately 3000 urban green spaces of varying size and quality.

With urbanization and increasing demand for housing spaces, serious issues on defending the depletion of green spaces of the London city have arisen. The crisis in urban planning in London has put at stake, an ideal of England's 'green and pleasant land' (Woodward, 2011). Nevertheless, there are thinkers as

environmentalists, architects, historians and other activists/groups who are in continuous campaign of saving green spaces and urban ecology of London.

Key actors/ partnerships

Cultivate London is a social enterprise based in West London. Cultivate London is an urban farm that is dedicated to transforming derelict urban spaces into green, food production spaces. To do so, they train local unemployed youth in horticulture and food production methods. Their three aims are:

- generation of job opportunities and providing training to unemployed youth
- increase of locally grown and harvested produce
- conversion of vacant urban spaces
- (Cultivatelondon.org.uk, 2013).

London Green Spaces Forum (LGSF) is made up of "Friends" groups working within local parks and green spaces across London. LGSF is made up of over 500 groups across the city, from all 32 London boroughs, though some boroughs are more present. The organisation works to protect and promote green space including accessibility, improve quality of spaces, access financial resources and create new green spaces in the city (London Green Spaces Friends Groups Network, 2013). Some of the groups can be very powerful, for example, the groups working within the Lordship Rec in Tottenham managed to obstruct the councils plans of letting the new community eco-hub building to a commercial café and instead has appropriated the hub for independent use by a local business and will reinvest the profits into the building so local user groups can use it for free. The same park also managed to acquire funding and push for the deculvertisation of the culverted River Moselle, which is the only example of this action occurring in London. Deculvertization not only requires massive funding, but also the engagement of powerful stakeholders; local water and wastewater companies, councils and local businesses. That the Lordship Rec managed to acquire the go-ahead for the project and engage such a wide range of actors to support it, considering the risks, is a big statement to how powerful the friends groups can be.

8.3 Governance and citizens´ participation

Multi-level governance

The governance of London city is based upon unitary tier of local government. London and metropolitan boroughs are solely responsible for services like: education, planning, social care, libraries, waste management, trading standards, tax collections, and housing. Some services like: fire, police and public transport, are provided through 'joint authorities', i.e. the Greater London Authority (GOV.UK, 2013). There is also a practice of multi-level governance through election of parish, community and town councils operating at a level below unitary authorities and these councils are responsible for local issues.

As a part of multi-level governance, local council members are included in decision making process where public can also attend most of the council meetings. There is a provision for public where they can have easy access to important decisions made and economic activities of the council, and they also possess right of opinion to influence the decision making process.

London has been practising multi-level governance in a participatory way, which has influenced UK´s domestic and international politics. There are several complications linked to some services in the boroughs, which is due to the conflict in operation of local level and higher level of governance. As co-

operative governance evolved, London has taken part in the Cities for Climate Protection (CCP) programme (Carter, 2003). Regardless, the councils of London and metropolitan borough are striving towards a sustainable approach to establish an efficient city and lifestyle.

Participation and bottom-up action

Community groups and third sector organisations are very common and active in the city. There is a vast range of areas covered by the third sector, not limited to energy, water, green spaces and cultural diversity. Many third sector actors were able to initially begin their work through the support of the council, both financially and through guidance.

There are a number of networks working throughout the city that aim to bring together interested groups and individuals. In addition, there are numerous forums where actors can voice their concerns, gain information and promote actions.

The rights and rules are transparent to community groups and this makes it much easier for groups and individuals to participate in their local areas. There is a significant number of groups operating in small localities; for a specific park or lake for example, as well as organisations working throughout the city and some national organisations as well.

8.4 Conclusion

Short summary

Many sustainability challenges are interconnected in surprising ways, requiring complex solutions. One example for London is in the area of traffic management. More efficiency here would improve the flow of vehicles and could potentially remove 0.1 Mt of CO_2 emitted, all of which would pay a higher return than the total investment. Similarly, although gas-powered CHP (combined heat and power) is currently the most promising decentralized energy generation technology for London, its utility depends on the carbon intensity of the alternatives available. A similar, but positive, connection is seen in waste: using advanced waste treatment such as anaerobic digestion not only reduces the need for landfill, but also reduces the methane emitted from dumps and creates biogas that can be used to replace other fossil fuels (Denig, 2010).

Today, sustainability is the ultimate question to London, as the shape and size of demographics is changing exponentially, and essential resources of water, energy and land are depleting day by day. Such scenarios in the past have brought about turbulence in domestic or international economy and have created friction and conflicts in governance. In this case, the efficient way to guide urbanism towards sustainability is through formulation of expandable water strategies, futuristic energy policies and appropriate urban planning.

Unfortunately, due to a lack of input from the Greater London Authority it is hard to assess the partnership between the councils and community or businesses from the councils' perspective. However from conversations with community groups and business the view is that the relationship is good and the council are heavily involved and supportive.

Trends and challenges for the future

- Creating a holistic approach throughout the city and its boroughs
- Severe water shortage that needs addressing
- Authorities do not impose penalties for water overuse or wrong actions that affect water.
- Increasing rates of in-migration
- Areas of increasing poverty (child poverty in particular)
- Gentrification occurring through many parts of the city
- Housing shortage

Eastern Europe

9. Czech Republic – Jihlava

9.1 General city profile

Background information

Factual data

The city of Jihlava is the capital of the Vysočina (Highlands) region, where 511,937 inhabitants live. On the 1st of January 2013 the city of Jihlava counted 50,598 inhabitants, which is almost 400 more than in 2004 (ČSÚ). Even though there was only a rise of 400 inhabitants in the last nine years, the ambition of the city is to have 10,000 more inhabitants in the next seven years.

The region of Vysočina as well as the city of Jihlava have, so to say, a strategic position in the Czech Republic, as they lie in between the two major parts of the country, Moravia and Bohemia, they also lie on the way (almost in the middle) between the capital, Prague and the second biggest city of the country, Brno. In the South, the region almost reaches the borders with Austria.

The Vysočina region is rather big in comparison to the other regions in the Czech Republic, but its population is rather small. More than 60% of the area is used for agricultural purposes and in this field mainly for growing potatoes (90% of this land) (ČSÚ).

Jihlava has a long history. It was already founded in the 13th century as a mining town focused on silver, and therefore it is one of the urban historical reservations (which influences attempts for modernization, reconstruction of streets in the historical city part, etc.). It became the centre of the Vysočina region only in 2000.

The climate in Jihlava is not much different from the other parts of the country, but it is a bit colder due to its higher location (Vysočina means highlands in Czech). “There is significant rainfall throughout the year in Jihlava. Even the driest month still has a lot of rainfall. The Köppen-Geiger climate classification is Cfb. The average annual temperature in Jihlava is 7.2 °C. About 661 mm of precipitation falls annually” (Climate data).

Nobig river flows through the city and in the absolute proximity there are only smaller rivers like Jihlava and Oslava, which are still significant enough for the region because the length of the first mentioned one reaches almost 200 km, and the water reservoir Dalešice is located on it. The water provision system is based in the region of Jihlava and is used also for the surrounding towns and villages.

There are several interesting sights in Jihlava, but the most visited place not only in Jihlava, but also in the whole region, is the local zoo (ZOO). It does not only attract people from the proximity, but also visitors from further located cities and even from abroad.

Basic government/administrative structure

The city of Jihlava consists of 18 territories, some of them being independent villages in the past. They are governed by 16 parts of the city but not in the sense of more or less independent city parts. They do not have their own governments. It is the members of the city´s government and people authorised by it who work as the “mayors“ of these parts.

The head of the city itself is the mayor, supported by five deputy mayors who together with other representatives create the city council, which is the executive organ of the city. The council is divided into 11 commissions and each of them is responsible for a particular area of interest (property, culture, sport, social, fund for housing development, citizens’ affairs, spatial/zoning planning and strategic development, traffic, environment, education, fund of health city project and local agenda 21).

The budget of the city for the year 2013 is 8,416,727,000 CZK (approximately 336,669,080 EUR) and the expenditures are 11,514,827,000 CZK (approximately 460,593,080 EUR). The biggest source of finance is the housing privatisation. The biggest cost is represented by sports, environment (waste management) and tourism (Rozpočet). Compared to the year before, the income has risen and the expenditure dropped, so the ratio is getting more towards the balanced state.

Economic conditions

The economy of the city and also the bigger city (surrounding villages) is mainly industrial, but also agriculture plays a significant role (mainly at the outskirts of the city). The unemployment rate is 7.08% which is almost comparable with the unemployment rate of the country which is 7.5%.

The biggest employers in the city are Bosch Diesel from Germany, Kronospan from Switzerland and from the Czech companies it is e.g. ICOM transport. The economy as well as the employment rate has been growing especially after the arrival of the foreign companies. People not only from Jihlava, but also from the surroundings come there for work.

The GDP of Jihlava and its surroundings is stably growing.

The growth, not only economic, but also in respect of size and especially in the number of inhabitants is one of the main objectives of the city. The local government supports this development very much. This development sometimes results in environmental problems with which local authorities then have to deal with. One of the examples is the above-mentioned company Kronospan, which is one of the biggest employers in the city and even in the region as such (there is a very strong tendency to commute to work from the surrounding villages and smaller towns). At the same time, parts of the population believe Kronospan also to be the biggest polluter in the city. Exact measures and numbers are however not available. Still, there are campaigns against this situation appearing. The current city government tries to find solutions and negotiate more anti-pollution measures to be taken by the company (a filter for the second chimney is currently discussed).

Local lifestyle

The lifestyle is based on the contrast between the size and the importance of Jihlava. On the one hand we can say that it is the capital of one of the Czech regions, which gives it a certain level of importance. On the other hand it is a city of fifty thousand inhabitants, which is not too much. Jihlava is a rather small town with only one university, founded quite recently (2005). Because of the lack of universities, young people

often leave the city to study elsewhere. Nevertheless, the local university tries hard to obtain a good position amongst the bigger and older competitors in other cities. It cooperates both with the local government and the non-profit sector and offers studies in foreign languages for students from abroad (VSPJ).

Due to the location of Jihlava, its inhabitants go for shopping and culture mainly to other cities –either Prague or Brno. The cultural events and shopping malls in Jihlava are on the contrary used more by the inhabitants of the city´s surroundings, the smaller towns and villages. The city representatives therefore try to promote Jihlava to its inhabitants as well.

Even though many inhabitants of Jihlava go for culture to bigger cities, Jihlava itself puts a big emphasis on culture and sport. The local government strongly supports both amateurs and professionals, mainly soccer and hockey clubs, which tend to be rather successful. As for culture, Jihlava organizes the International festival of documentary films (MFDF) on a yearly basis. It is an important cultural event bringing thousands of people to the city. Another big event is the festival of Gustav Mahler (Mahler 2000). There is also a rather big professional theatre in the city, which is not very common in towns of a similar population.

There is also a starting initiative in favour of better biking conditions, which is actually led by the mayor of the city. The first cycling path was built in 2001, and since then about 10 km were created. However, bikes are not very popular in Jihlava, probably mainly because of its hilly character.

Key challenges and trends

Economic issues and trends

The main challenges are bound with the attempts to transform Jihlava into a bigger, more interesting and more prosperous city:

- Transport – due to the location, there is a lot of traffic going through the city. The major highway D1 (from Prague to Brno) passes through Jihlava.
- All the goals of the city are focused on the growth of the city and on attracting more people. Therefore, there are attempts to build more houses, attract investors, new companies – this is sometimes happening at the expense of green spaces as well as the environment.

Social issues and trends

The following trends have been observed:

- The contrast between the size and importance of the city on the one hand and its ambitions on the other hand.
- Inhabitants want to have a combination of the privacy and peace of living in the countryside and the comfort of living in the city. This trend can be observed in the interviews. It means that people are against big changes in the city structure, its growth, building roads, etc., but at the same time they expect more to be going on in the city, more professional sport facilities, better shopping centres, etc.
- Growing importance of clashes between the majority population and the Roma people moving to Jihlava from other places in the Czech Republic. The issue of cohabitation of the major population

and the Roma minority is the same in all cities and towns in the country. Political instruments are missing and the situation is not getting any better.

Environmental issues and trends

According to the air quality control report of the region, the air situation is stable in Jihlava. (Kraj Vysočina). The biggest part of the emissions is caused by the traffic, namely by highway D1 leading from Prague through Jihlava to Brno. It is hardly possible to limit this traffic flow.

The second biggest polluter is assumed to be the locally based company Kronospan. No official data is available, so it is difficult to deal with the situation. The situation is also complicated by the fact that the factory is located close to the highway, and therefore it is difficult to measure the pollution from these two sources separately. Nevertheless, there are initiatives led e.g. by the local green party for installing a filter also on the second chimney of the factory. (Zelená Jihlava).

9.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The most important river in the region carries the same name of the city: Jihlava. Nevertheless, this river is not used as a source of water provision in the city. The water for the city of Jihlava and its surroundings is coming from the reservoir Hošov, which lies several kilometres outside the city. The construction was finished in the 1970s, and it is based on the Maršovský potok (brook).

In general, in the Czech Republic the availability and affordability of water is good as well as its quality. The price is 82.04 CZK per m³, which is about 3.20 EUR.

Key issues

The availability and quality is satisfactory for all actors and therefore there are no major issues in this field.

Jihlava as well as other towns and cities in the region are endangered by the thread of floods, which was proved to be true also this year. Surprisingly enough, it does not seem to influence the perception of the water topic which is seen as completely non-problematic.

Key actors/partnerships

There are two main actors, both private even though in different terms. One of them is Vodárenská akciová společnost Jihlava, which takes care after the water provision in Jihlava together with Jihlavské vodovody a kanalizace, which is owned by the city of Jihlava, but acts as an independent private company. The Vodárenská akciová společnost is based in Brno, but has local divisions in several cities mainly in the South-Moravian region (Jihomoravský kraj) and also in the region of Vysočina (Highlands), where also Jihlava lies. This company was asked to cooperate on the water provision relatively recently, because only on the 31st of December 2012 the city left the group called SVAK, which was the association of the water providers in the Jihlava region. In 2013, after this event, Jihlava city also decided to employ the second-mentioned company, Jihlavské vodovody a kanalizace.

Vodárenská akciová společnost is not only mainly based in Brno; there is also not even a director of the Jihlava branch. It is managed by the manager of the Žďár nad Sázavou branch. The relationship with the city government apparently is not from the best as the competing company became the main water provider.

Key actions/measures/initiatives

As the water situation in Jihlava is generally good, there are no complaints in society. The quality, as well as availability and the prices are generally acceptable, and no issues have arisen.

Even the floods do not represent a big threat in that region. So there is not much going on in this field. There are no initiatives focused on water and not even NGOs focused mainly on the topic of water.

Energy

Availability, affordability and consumption levels

The availability of energy is generally good in the Czech Republic, which counts also for Jihlava. It is one of the cities (together e.g. with Brno or Znojmo), where energy prices are the lowest, and the consumption level does not differ from the country average.

Key issues

There are basically no regional/municipal issues in Jihlava. The biggest issue in the field of energy is basically the same everywhere around the country. The most often mentioned topic is solar energy. Around 2009 / 2010 there was quite a big boom of the installation of solar panels due to very generous subsidies from the Czech government. The subsidies are the main problem because they are in favour of big-scale producers and give those established before 2010 extremely favourable conditions guaranteed for twenty years. The conditions were set by temporary laws concerning renewable energy sources. The problem therefore is that firstly, there is no control mechanism and regulating option for the energy production and secondly, the subsidies and high prices guaranteed for 20 years make this kind of energy much more expensive than any other one, which is the source of criticism as well. The proper law was issued only in January 2013 and set the conditions favourable for all renewable sources of energy, but in the same manner for all of them.

Key actors/partnerships

In the whole Czech Republic the main energy providing companies are ČEZ and EOn. In each city or region there is a local producer/distributor or at least the company responsible for the heating of the buildings is located there.

In Jihlava, the energy company is called Jihlavské kotelny. It was founded by the city in 1994 and is 100% owned by the city. In 2000, it became a member of the Energie Steirmark concern. The main activity of the company is heating in the city. The innovation part came last year when also biomass started to be used.

The situation concerning the non-profit /non-governmental sector is a little bit better than in the case of water. The most important NGO is EAV (Energy agency of the Highlands) which was established in 2001 with the help of the European SAVE program. It organizes various conferences and seminars and tries to

spread information about renewable energy sources, and it also helps the administration around the Green Savings program (Zelená úsporám).

Key actions/measures/initiatives

There is basically no local initiative in Jihlava or its surroundings. The initiative which affects also Jihlava is the above-mentioned Green savings programme (Zelená úsporám), which is a quite famous programme focused not only on renewable energy sources but also on passive houses and efficient insulation. The Czech Republic has raised funds for this programme from the sale of emission credits under the Kyoto Protocol on greenhouse gas emissions.

Green spaces

Availability, affordability and consumption levels

In general, one can say that there is a sufficient amount of the green spaces in Jihlava. It is not a very big city and the population level does not rise rapidly, even though the town hall representatives would wish it did. Therefore, in general there is not much need to limit the green spaces. There are many of them not only in the city itself but also in its surroundings. The reason why the green spaces are cut down, if it happens, is the "development" of the city – new roads, airport, etc. There are 3716.65 acres of city forests, divided into seven parts. There are several parks of which the most important one is called Heulos (also Březinovy sady), 35 acres big.

The availability and access is generally good and equal as they are public green spaces, although managed by a private company.

Key issues

There are no big issues in Jihlava concerning green spaces. Not one issue identified during the interviews and during filling in the questionnaires was connected to the development of the city. Since the city has expanded, the question of ownership/management of new spaces has arisen. The newly attached green spaces do not have a clear owner, and therefore there is no one taking care of them. This issue is not very significant at the moment but might be of bigger importance once there will be more of such areas.

Another issue which arose during the interviews were allotment gardens. They are in private ownership and situated a strategic position for building new factories. The municipality therefore tries to move them elsewhere which is not accepted by everyone.

Key actors/partnerships

The main actor in the field of green spaces is the private company Správa městských lesů, s.r.o (the city´s forests management company), which was established in 1994 and which is 100% owned by the municipality. Nevertheless, it still acts like an independent private company. It does not only manage the city´s forests, but also parks, cemeteries and other green spaces.

Basically, there is no further actor than the above-mentioned company.

Key actions/measures/initiatives

There are no big actions regarding green spaces. The idea to establish city gardens with the purpose of bringing something new and interesting to the city and to make it nicer is currently arising. However, no definite steps have been taken yet.

The issue of allotment gardens and their possible removal do not seem to be an important topic as there is not a word about it on the website of the allotment gardens´ organization.

9.3 Governance and citizens' participation

Multilevel governance

Jihlava is the centre of one of the Czech regions and therefore has certain decision making autonomy. Even though the decision making framework comes from the upper governmental levels, in general the regions and the municipality have a relatively autonomous position; relatively, because not all actors are happy with the framework as set by the national or the EU level.

The problem in Jihlava is that it is a rather small city and the question of sustainability is understood more in the sense of a way to survive, not to let the city die out, but to try and make it bigger and attract more people. Therefore, the question of sustainability related with the three analysed topics does not lie in the centre of the focus, and the municipality does not take many steps in this respect, even thought it would have the option to do so.

Participation and bottom-up action

Participation does not have a strong tradition in Jihlava, which might also be caused by the fact that the city, or more precisely speaking the citizens, do not have a long common history and therefore no historical common points. Basically, still during the so called "First republic" (1918-1938) a significant number of citizens was of German origin, and only after World War I. more Czech people were coming to the city. Therefore, there is not a strong multigenerational tie to the city, which might cause smaller interest in the local issues and therefore a smaller participation level.

In general, people do only get involved in the issues that affect them strongly, such as lack of kindergartens, the waste incinerator or building development plans.

9.4 Conclusion

Short summary

Jihlava is the capital of the Vysočina (Highlands) region and is a strategic point between Brno and Prague, the capital. It is not a very big city and does not have a long and compact history. Therefore, the biggest issues and concerns of the municipality focus on the development of the city, attracting more people, which means the need of more employers, new houses and good facilities. The development of the city sometimes clashes with its environmental sustainability and therefore might create tensions between the municipality and the citizens.

Jihlava seems to be in an early stage of transition towards sustainability, which is probably caused mainly by the development needs. Nevertheless, the city starts to approach several environmental and sustainability issues and gets oriented towards them.

The general problem is the political instability and discontinuity even on national level. Even though Jihlava is not in the centre of the political clashes, the changes at the local governance level create obstacles for focusing on particular issues.

Trends and challenges for the future

- Housing: building new houses – issue of the areas, risk of losing green spaces or building to close to factories, etc.
- Pollution: ongoing negotiations about more careful approach of companies.
- Traffic: as the city lies between the two most important cities of the countries, there is a huge amount of traffic and the current highway and access situation is not ideal.
- Waste management
- Lack of places in kindergartens

10. Czech Republic –Praha

10.1 General city profile

Background information

Factual data

Prague is not only the capital and the biggest city of the country; it is also a region itself, which makes it rather special from the point of view of the hierarchical structure of the Czech Republic. It lies in the Western part of the country, Bohemia, which together with Moravia and Silesia forms the country. It is the 15th biggest city in the EU. It is as well the seat of the president and the government. The rest of the important institutions, like judicial courts, are spread around the country.

Approximately 1,246,200 people live in Prague, but the number is steadily dropping, as in the whole country, because of the low birth rate. Nevertheless, there are always people moving to Prague for work reasons. People move there not only from within the borders of the country but also from abroad.

The climate is more or less the same as in the rest of the country. "Weather in Prague varies according to the four seasons. On the one hand, the warm summer season (June to August) sees comfortable maximum temperatures of 22 to 25 °C. On the other hand, Prague weather is known to be fairly cold in winter (December to January) with average highs of 1 to 3 °C. Spring (March to May). Autumn (September to November) can be cool, but there is less rain at this time" (World Weather Online).

The biggest Czech river runs through the city – the Vltava (Moldau) river as well as Labe, Ohře and Sázava flow close to the city, which gives the city enough water but also causes floods.

Prague is a very well-known European city, and lots of tourists come to visit it. It has a rich cultural life and a wide offer of good universities. Its history is very long: the first settlements of the city character were made there in the 6th century, therefore there are many areas and buildings of historical value, and they are protected by national law. The protection of the historical buildings often causes problems because of the restrictions for reparations, insulation, etc.

Basic government/administrative structure

The city of Prague is divided into 22 city parts, and some of them are also responsible for other city units, which still have their own local government. Altogether there are 57 units and each of them has a local government, the smaller ones are subordinated to the major 22 ones.

The head of the city is the mayor, the executive power is represented by the Board (Rada) which has ten members and is elected by the Council (Zastupitelstvo). The Council (or representatives of the city) is elected by the inhabitants of the city for a period of 4 years and has 63 members.

The Council and the Board give some of their power to the City hall of the whole city. The City hall (Magistrát) has many divisions divided by the sphere of interest. The 42 divisions are formed in five groups (each run by a director: finances and property; city management – including e.g. green spaces; education, etc.; state administration – e.g. transport; spatial planning including management of historical buildings, etc.).

The budget (resources) of Prague as the capital city in 2013 is 5,791,670,970,000 CZK (approximately 231,666,838,800 EUR) and the expenditures are planned for 6,644,524,300,000 CZK (approximately 265,780,972,000 EUR). Approximately half of the income is represented by the value added taxes and far the biggest item on the expenditures list is traffic and transportation, which represent almost half of all the costs. Compared to the previous year, the local government had bigger resources, but also higher expenditures, so the balance stayed more or less the same. Transportation and traffic is traditionally the biggest cost of the city. The city parts (Rozpočet) have their own budgets and are more or less independent from the city as such. Even in cases in which the city is the official owner of buildings and land of the city parts, they can manage and even sell it freely (up to the value of 30 million CZK – 1,200,000 EUR).

Economic conditions

Prague as the capital of the country is the most international of the Czech cities and as for work it usually has the lowest unemployment rate, which is currently 5.02% (more than 2% below the country average). Wages are noticeably higher than in other parts of the country, but the prices as well. The most significant economic sector is the third one: services. As there are more jobs in Prague than in the rest of the country, it is also normal that people move or commute for work there.

Some of the most important Czech companies are based in Prague, e.g. Benzina (focused on fuel), Zentiva (nowadays already an international pharmaceutical company) and beer producer Staropramen (CzechCZ).

Local lifestyle

Being the capital, Prague is the most international city in the Czech Republic; therefore it is also more open and prepared to communicate with foreigners.

Not only foreigners but also young Czech people move to Prague for work. The wave of young people migrating to the city brings also new ideas and perceptions and willingness to discuss sustainability issues.

Prague is a very important tourist destination and traditionally one of the most visited cities in Europe. 5,397,531 tourists visited the city in 2012 which was 6.5% more than the year before. Most of the tourists come from abroad and mainly from Germany and Russia (Prague welcome). Tourism does not only have a significant impact on the city´s budget but it also influences local lifestyle. The historical city centre and the city part of Prague 1 basically became a domain of foreigners. Local people hardly ever go there. They do not live nor work there and it is also an outing place mostly for foreigners.

Prague is also the cultural and political centre of the country, and therefore it attracts the attention of culture seekers. There are many theatres, galleries, operas, etc. Regarding the political institutions, it is necessary to mention that there is the seat of the president and the government.

Key challenges and trends

Economic issues and trends

The economic situation in Prague is rather good and stable. The problems currently lie more in the political instability of the country and herewith connected lack of political continuity and therefore lack of continual focus on certain issues, lack of agreement, etc.

The biggest problem of the city is the traffic, constant traffic jams, accidents, road problems. The city offers valuable alternatives of public transportation, which is, compared to other cities in the country but also compared to abroad, close to perfection. The metro, buses and trams run frequently and connect all parts of the city. But not all the inhabitants are willing to use it, as it is sign of 'lower class', therefore there are some clashes concerning transportation, parking, etc.

Transportation is surely the biggest challenge or at least the most visible one. There are basically no bicycle paths, roads are crowded with cars, pedestrians are not taken into account as much as they could be, etc. The problem lies not only in the traffic itself but also in all related fields like parking, etc. Some city parts have already started to look for solutions while others have other priorities. The general approach of the local government as such is not always very progressive.

In general you can say that the citizens are becoming more and more aware of the situation and current challenges and are more and more interested in the on-going issues and are calling for cleaner energy and air, safer roads and less cars. But apparently Prague still needs some time to be able and willing to hear all their voices and to undertake certain steps in this matter.

Social issues and trends

An increasing trend of immigration can be observed in Prague. Apart from Slovakia, most of the migrants come from Russia and other Russian-speaking countries and from Vietnam.

The biggest social issue is the same in the whole country, even though it is even more crucial in other regions, which is the cohabitation with the Roma community. The same counts also for Prague, even though the situation is slightly better than elsewhere.

On the contrary, Prague has the biggest number of homeless people, who tend to come to Prague from other regions and cities of the country as well as from abroad, mainly from Slovakia. Currently, there might be altogether around 4,000 homeless people according to official documents, but the number is growing. The local government has published a report containing the conception of the solution of the homelessness in Prague in the period of 2013 - 2020. The goal of the report "is minimizing the negative impacts of homelessness on homeless people themselves as well as other citizens and overall life quality in the city"(Kabický 2012: 5). It focuses on both prevention and on attempts to solve the already existing problems (social exclusion, health care, etc.). It also expects cooperation of Prague as a region and as a city with its city parts as well as with several actors both from the private sector and from NGOs.

Environmental issues and trends

The environmental situation in Prague is closely tied to the above-mentioned transportation topic. The city parts with the biggest traffic are also the ones with the worst quality of the air. Traffic (cars) is in general a very big environmental issue in the city, and there are various initiatives coming from various governmental or non-governmental actors to reduce it.

Apart from the traffic, there are no major polluters in the city, because industry does not play such a strong role as in other regions and cities. The bigger companies based in Prague have adopted the principles of the societal responsibility and try to preserve the ideas of sustainability (Top odpovědná firma).

10.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

In general, there is a high level of satisfaction with the affordability and quality of drinkable water in the Czech Republic, and Prague is not an exception. In 2013, the price of one m^3 was 74.35 CZK (approx. 3 EUR), including the 15% value added tax. The yearly consumption level per person is 40 m^3 (if only households and not the industry are taken into account).

The consumption has a decreasing tendency which is unfortunately compensated by rising prices. This causes lots of complaints as it does not motivate people to save the resource.

The sources of drinkable water are the Želivka, Kárný and Podolí rivers. Water from the Vltava can be used as a source for big companies but under different conditions. For example, companies have to install their own water cleaning equipment. Staropramen is the (unofficially) biggest consumer of water from the Vltava in Prague. The company gets the water directly from the river, which is normally used as recipient of the cleaned waste water.

Key issues

The demand can be easily satisfied both in terms of quality and quantity. The consumption level of the drinking water is decreasing due to the saving approach of the citizens. On the contrary, the price of the water is increasing, which causes dissatisfaction. Even though there is apparent dissatisfaction with such behaviour of the water provider, the price of water in Prague is below the country average.

The second key issue is the thread of floods. This year, 2013, was not the first year in which the city suffered from floods. Surprising is that none, except one interview partner, identified this topic as a key issue.

Key actors/partnerships

There are two major actors in the field of water provision in Prague. It is the PVK (Pražské vodovody a kanalizace) and the PVS (Pražská vodohospodářská společnost). PVK is a private company ensuring the water distribution not only in Prague but also in its surroundings in the central bohemian region. It is part of the Veolia Voda Group, which is the biggest part of the concern, Veolia Environment operating world-wide. The second actor is PVS, which was established in 1998 as a reaction to the privatization of the

national water provision company working until then. It is 100% owned by the city. The fact, which makes it possible to be classified more as public than private is that it is only the administrator, not the owner (not 100% independent) of the water-related property. The property is rented to PVK by the city government. The rent contract is valid until 2028. PVK does not provide water as such, but takes care of the water provision system and the infrastructure. Therefore, these two actors have to cooperate as none of them is able to provide water without the help of the other one.

A significant actor concerning water consumption is the beer producer Staropramen, which is unofficially the city's biggest consumer of water from the Vltava. The situation of Staropramen is special, as it does not use water from the city water provision system, but it takes water from the Vltava river and cleans it itself. The prices of water therefore are much lower for this company, but it is also more than anyone else dependent on the good quality of the water from the Vltava river and therefore it is rather sensitive when it comes to the floods, because then the company has to either take water from the city´s provision system or stop working for a while, as it happened also this year.

Key actions/measures/initiatives

In the whole country, there has been the trend to ask for tap water in cafes and restaurants in recent years. Veolia voda, mentioned above, started the initiative called Čerstvá kohoutková (fresh tapped) which promotes such initiatives and cooperates with restaurants and bars mainly in Prague (Čerstvá Kohoutková).

Energy

Availability, affordability and consumption levels

The price levels as well as support to the use of renewable energy sources is regulated by the national institution of ERU (Energetický regulační úřad - the Energy regulation office). There is not much electricity produced directly in Prague, it is 230.3 GWh compared to the consumption of 6,367.9 GWh in 2012 (ERU). The use of gas is rising in Prague, and in 2012 the consumption was 948,463,000 m^3.

The price level depends on the producer/distributor. There are two major national/international actors in the field of energy distribution, ČEZ and EOn. ČEZ is the biggest energy provider not only in Prague or the Czech Republic, but even in the whole central and Southern Europe. In the Czech Republic it runs two nuclear power plants (Temelín and Dukovany), several coal power plants, and it produces also energy from renewable sources (2,633 GWH in 2012, a vast majority of which is solar energy).

EOn, together with ČEZ, is the strongest energy provider team, even though EOn is more popular in South Moravia and South Bohemia.

These two companies are also the most expensive ones. ČEZ price is 4.56 CZK and Eon's is 4.60 CZK/kWh in Prague. The cheapest providers in Prague start at 4.36 CZK/kWh. The price of the gas lies between 33,818 and 42,903 CZK/year (price calculated for a house with a consumption of 26 MWh).

The availability is generally good and the affordability strongly depends on the chosen provider.

Key issues

There is no relevant energy production in the city area (in the surroundings there is), and therefore there is a strong competition amongst the providers for energy from other sources. The key issues are:

1) Price, because different providers offer different prices.

2) Renewable energy sources. The topic that is mentioned most often is solar energy. Approximately, in 2009 and 2010 there was quite a big boom of the installation of solar panels due to very generous subsidies of the Czech government. The subsidies are the main problem because they are in favour of big-scale producers and give those established before 2010 extremely favourable conditions, guaranteed for twenty years. The conditions were set by temporary laws about renewable energy sources. Therefore, the problem is that firstly, there is no control mechanism and regulating option for the energy production, and secondly, the subsidies and high prices guaranteed for 20 years make this kind of energy much more expensive than any other one, which is a source of criticism as well. The proper law was issued only in January 2013 and set the conditions favourable for all renewable sources of energy in the same manner for all of them.

Key actors/partnerships

Apart from national/international actors, there are also regional/local providers of energy. One of them is PRE (Pražská energetika), which provides energy for Prague and the town of Roztoky close to the capital. It is an important player in the field of energy provision and serves 2,150 big consumers and more than 720 thousand smaller ones. The prices are lower than those of the two above-mentioned companies (PRE).

The second key player in energy provision is PTAS (Pražská teplárenská) which distributes heat energy from 37 sources to about 37.5% of the households in Prague and its surroundings.

Besides the energy providers, more key actors can be named. There is, for example, Pražské služby, which is responsible for the waste energy use, as well as some consultancy companies as Ekowatt (Centre for renewable energy sources), SEVEn or Novatrix.

Key actions/measures/initiatives

In general, there is a tendency towards increasing the interest in renewable energy sources, but people are often discouraged by the higher price of such energy. The local government in Prague therefore started a subsidy project (Čistá energie Praha 2013), which offers subsidies for those customers who commit to use renewable energy (Čistá Energie Praha 2013).

The second biggest motivation to use renewable energy, to save energy, to insulate buildings and to build passive houses is the national programme called Zelená úsporám (green savings). The Czech Republic has raised funds for this programme from the sale of emission credits under the Kyoto Protocol on greenhouse gas emissions (Zelená úsporám).

Green spaces

Availability, affordability and consumption levels

As most of the capital cities, also Prague has problems with the availability and preservation of green spaces.

In the area of the city, there are 237 described green spaces – parks, forests, gardens etc. (Praha Zelená). There used to be many forests in the past, which were dramatically reduced because of the development of the city. Nowadays, forests cover around 9% of the city surface, which is approximately 4 880 ha. The most famous one is Kunratický les (Přírodní poměry). There are also quite a few city parks of which the most significant ones are Královská obora and Petřín, both located close to the historical part of the city, leading towards the famous Petřín watchtower and accommodating also fruit tree orchards and a rose garden. Covering 2.5 ha, they are registered as part of the Czech cultural heritage.

Basically, all green spaces in Prague are public, and therefore there is equal availability of all of them and for everyone.

Key issues

Due to various reasons such as growth of the capital, there is a risk of the reduction of available green spaces. Such behaviour meets strong disagreement of the city population that wants to keep the green spaces.

Key actors/partnerships

The main actors can be divided into three groups: local government, private management of the public green spaces, NGOs and active citizens.

- The involved parts of the local government are the city planning department and the department of green spaces. Both departments are tied by regional and national laws on construction and nature preservation. They can act only within limits given by the higher instances. Their competences, even though to a limited extent, are shared with the city parts, which are responsible for the care of the green spaces in their area.
- Basically, all the green spaces are public, but the local government hires private companies to manage them – especially the forests. The main company providing such services is Fine Dream, which manages also the forests in most of the parts of the country. It is responsible for cutting and selling wood as well as re-cultivation and growing new trees.
- Due to the disappearing green spaces, or even just single trees from the city, there is a broad spectre of organisations and initiatives to preserve them. There are some NGOs covering the whole city like Arnika or Pražské matky and there are also initiatives taking only singular areas like park Parukářka or brook Botič into account.

Key actions/measures/initiatives

There are many local initiatives to preserve the green spaces in Prague. Most of them are limited to the city parts scales. Such initiatives are e.g. Koalice Parukářka (Koalice Parukářka), supporting one of the oldest city parks in Žižkov city part, which was supposed to be reduced for building purposes.

10.3 Governance and citizens' participation

Multilevel governance

Multilevel governance in Prague is absolutely a special case within the Czech Republic. This is caused by the fact that Prague is not only perceived as city as such but also as a region. Therefore, even though competencies are spread across all government levels, Prague has the opportunity to set a lot of rules for itself, because it represents also the regional level.

Due to the size of the city (in the context of the Czech Republic), the city parts and their own governments are also independent in a quite significant manner and can decide almost about everything relevant to their area. They are responsible for schooling, buildings, property management, green spaces, etc. Their competencies are of course limited by the higher governmental levels especially in the areas of transportation or social affairs, because the city part does neither have the budget nor the credit to take care of such issues by itself.

Participation and bottom-up action

It is mainly the city part´s governments which are the closest to the people, because they deal with the issues in the proximity of their place of life, to which people are obviously the most attached. The degree of involvement of the citizens depends on the discussed topic as well as on the approach of the respective city part´s government or the city´s government.

In general, it seems that the trend is in favour of the involvement of citizens. The local governments tend to organize more and more public hearings, online surveys, voting sessions regarding the reconstruction of sites, etc.

Another side of participation is the interest of the citizens themselves. Not everyone is interested in everything, and therefore there are topics awakening more emotions, like parking, transport, appearance of the buildings and on the other hand there are areas which are not of such interest for the inhabitants.

10.4 Conclusion

Short summary

Prague has a very special position in the Czech Republic. Not only that it is the capital, but it also plays the regional role. Due to the size and number of inhabitants, Prague is divided into relatively autonomous city parts, which can create own policies and develop the approach they desire.

As the capital of the Czech Republic, Prague is the biggest and richest city in the country. It has more job opportunities and bigger salaries to offer, lots of cultural life and in general good living conditions. Therefore, more and more people not only from the country but also from abroad move to Prague. Therefore it is, in the Czech context, a relatively multicultural city. The possible growth of its population brings also more future challenges.

Trends and challenges for the future

- Traffic limitation within the city
- Lack of parking areas
- Improvement of the public transport – new metro line currently under construction
- Improvement of pedestrian safety
- Creation of better biking conditions
- Protection of green spaces needed
- Immigration and demographic change
- Concentration of homeless people
- Floods (Vltava river)

11. Poland – Krakow

11.1 General city profile

Background information

Factual data

Cracow is the second largest and one of the oldest cities in Poland. From XI to XVI century it was the capital of the country. It is located on the Vistula River, in a valley at the foot of the Carpathian Mountains in the Lesser Poland (*Malopolska* region), 219 meters above the sea level, and comprises an area of 327 km^2. The city has always been situated at the crossroads of important trade routes, and it has traditionally been one of the leading centres of science, culture and art. Cracow's historic city centre was declared UNESCO world heritage in 1978.

The city has an oceanic climate with average temperatures in summer ranging from 18 °C to 19.6 °C, and in winter from -2.1 °C to 0 °C. The average annual temperature is 8.9 °C. Due to the fact that Cracow lies close to Tatra mountains, the occurrence of foehn wind (*halny*) with adjacent rapid temperature growth (i.e. temperatures can reach 20 °C in winter) is typical for this city.

There are 5 nature reserves with a total area of 48.6 ha, and around 40 parks. At the same time, Cracow is ranked as the fourth industrial city in Poland with dominating industries being metallurgic, tobacco, and pharmaceuticals. The economic development of the town has been strongly linked to the extractive activities in the neighbourhood of Cracow, i.e. salt mines, zinc and lead mines, and coal mining. The introduction of heavy industry to Cracow resulted in creation of a district of Nowa Huta (New Steel Workers), which moved the development axis of the city and unbalanced its natural urban shape.

In 2012, the city was inhabited by 758 334 persons with a density of 2319 persons per km^2. The number of inhabitants both in Krakow and in the Malopolska region has been gradually increasing over recent years.

Basic government/administrative structure

Cracow is divided into 18 administrative districts. The City Mayor (since 2002: Jacek Majchrowski) fulfils his duties with assistance of the City Council, city managers and city inspectors. The local government seat is the City Hall. The city administration structure is built by 23 thematic departments and several supporting offices. With regard to sustainable development of the city, the following departments are of importance: Architecture and Urban Planning, Geodesy, Waste Management, Environmental Management, Investments Planning and Monitoring, City Development, and Societal Issues. Since 1991 every city district has been having its own Council. The responsibilities of the District Councils are public matters of local interest.

In 2012, an international rating agency Standard & Poor's confirmed the grade A attributed to Cracow, as it did in the years 2008-2011, which means a stable financial perspective. In 2012, the city budget revenue reached 3,445,907,817 PLN – 3.38% more than in the previous year; and city budget expenditures amounted to 3,488,358,626 PLN (an increase of 5% compared to 2011). The value of the assets of the Municipality of Krakow in 2012 was equal to almost PLN 55.9 billion gross. In spite of optimistic rankings,

Cracow has considerable debts. In 2012, the debt allegedly exceeded the limits set as acceptable. If the loans taken by public companies were included in those calculations, the figures would be aggravated.

Economic conditions

Cracow has a significant proportion in the formation of the GDP not only of the region (over 40%), but also of the whole country. In 2008, it worked out 3.1% of the national GDP, following Warsaw with a share of 13.2%. For several years, an improvement of the situation on the local job market has been observed. In 2010, in Cracow there were almost 285 thousand people in employment, which is 1.5% more than in the previous year. This increase was facilitated mainly by the expansion of the private sector. In 2010, most of the employed worked in the service sector (42.8%). A worrying trend is the rising of unemployment rates. In 2010, there were 18.7 thousand persons registered as unemployed, which was almost 17% more than in the previous year, but 26% less than in 2005. By the end of 2010, the unemployment rate stabilized at the level of 4.7%, which made Cracow the fourth big city in Poland with the lowest unemployment rate (the first was Warsaw with 3.5%). Cracow is the oldest academic centre in Poland and the local students constitute an important labour force.

Key challenges and trends

Environmental issues and trends

All post-communist states in Central Europe share the experience of increase in the use of urbanized land, as well as continuously growing numbers of city dwellers. This leads to modifications of city climate and a deterioration of air quality. Two related unfavourable phenomena discovered in Cracow are: deficit of solar radiation occurring in densely built-up areas and having negative effects on health, as well as temperature inversions which shape the air pollution dispersions. The air pollution is seasonally so high that the recommendations not to spend time in the open spaces are released. Recently, the City Council has adopted an anti-smog resolution. Moreover, the region of Lesser Poland implements an “Air Protection Programme”, as in the recent years the allowed concentrations of nitrogen dioxide, sulphur dioxide, PM10, PM2.5 and benzopyrene were exceeded.

11.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The oldest waterworks in Cracow were built in 13th century and resembled Roman aqueducts. More technologically advanced water supply facilities have been designed over the succeeding centuries. In 1898, the City Council adopted a resolution, the first postulate of which was to build a pumped water system with maximum capacity of 16 thousand m^3 daily and supplied with the ground water of Bielany (district of Cracow). The official bringing into service followed in 1901. Commensurate with the increasing demand for water, new ideas for waterworks were presented. One of them was to construct a gravity fed water system supplied by the mountain springs in Tatra. However, the idea has never been implemented.

In 1950 for the first time in the modern history of the city, a shoal of dead fish was observed in the Vistula River. Four years later, the contamination degree of the river was so high that the water was not usable for consumption. This immediately instigated new plans for additional water supply trajectories and water

treatment plants. In spite of this, the most severe shortage of water was yet to follow in the eighties. It was countered by the launch of additional river water treatment plants. In addition, due to insufficient groundwater resources, new surface water intakes from Vistula tributaries (Sanka, Rudawa, Dlubnia, and Raba) were explored and integrated in the system. Each of these surface water sources supplies a different water treatment plant. For this reason, the tap water in various districts of the city may significantly differ in quality. Today, the water supply system meets the basic needs of the city dwellers and industry, with an exemption for the Northern part of Cracow where the lack of necessary infrastructure (water supply pipes and reservoirs) still accounts for deficits in water availability. In Lesser Poland, the exploitation of groundwater resources at the end of 2011 amounted to 624.2 hm. In the years 2007-2011, water consumption by the national economy and population in Lesser Poland decreased by about 34% (from 750.5 hm^3 in 2007 to 496.3 hm^3 in 2011). The most water is utilized by the industry (66.5% in 2011). It is estimated that the yearly demand for water in Cracow amounts to 100 million m^3. In addition to groundwater and surface water sources, Cracow is famous for its spring waters which are spread both around and within the city.

Key issues

As a result of city expansion, increase in population, and erection of new buildings, some newer parts of Cracow face issues with water availability. This is also true for adjacent villages, i.e. Michałowice, where around 100 houses, in particular those erected higher above the sea level, lack access to water.

Due to its location, Cracow is naturally exposed to the threat of floods. In this area, precipitation and outflow rates significantly exceed average values for Poland, mainly due to the mountainous character of this part of the country. Cracow is the first Polish city implementing a “Small Retention Programme”. It contributes to the improvement of rainwater management by offering funding for creation of rainwater reservoirs by the city dwellers. This is to prevent flooding and to use the collected rainwater as a substitute for tap water, i.e. for garden watering.

Key actors/partnerships

The main actor responsible for the water management in Cracow is the Municipal Water and Sanitation Authority (MPWiK) which cooperates with other municipal authorities (i.e. respective departments of the City Council) and is supervised by regional and national institutions.

Key actions/measures/initiatives

Recently, an initiative encouraging people (living in the city and in the neighbourhood, as well as visitors and tourists) to consume tap water has been launched. The tap water in Cracow is promoted as healthy and ready to drink without previous boiling. As stated on the MPWiK’s website, the water supply meets the Polish and European high quality standards and Cracow's waterworks is one of the five companies supplying the best quality water.

Another important action is the programme “Hot water for household use” (“*Ciepła woda użytkowa*”). The aim is to re-think the process of acquisition of hot water in households and to shift towards water heated by the central system rather than to heat it individually (with gas or electric heaters).

Energy

Availability, affordability and consumption levels

The **heating system** in Cracow is based on three main energy sources: Power Plant Krakow (Elektrocieplownia Krakow S.A., named also EDF Krakow), Power Station Skawina (Elektrownia Skawina S.A.), and ArcelorMittal Poland's Unit in Kraków (Siłownia ArcelorMittal Polska S.A.). The energy supplied by these sources is managed by the Urban Heat Power Company (Miejskie Przedsiębiorstwo Energetyki Cieplnej SA, MPEC).

EDF Poland - branch in Cracow is engaged in production of heat and electricity supplied to most of Krakow households, businesses and institutions. The production process is continuously upgraded, which contributes to minimization of the environmental impact of coal burning. The total capacity of this power plant amounts to: heat – 1118 MWt, and electricity – 460 MWe. The generated heat energy is supplied to the district heating network in the form of heating water (used for home heating) and process steam (for industrial plants and hospitals). The main recipient of heat energy is the Urban Heat Power Company (MPEC).

In the bituminous coal-fired power plant in Skawina both electricity and heat are produced. The plant has a generating capacity of 492 MW and it supplies heat and hot water to the city of Skawina and the Western part of Cracow. The power station in Skawina currently has over 20% market share in Cracow's urban heating. However, the plant has higher technical and technological potential. The whole system allows producing about 3,000 GWh of electricity per year, as well as heat and water. In recent years, the power plant has been a subject to multiple investments with the aim to comply with environmental and sustainability standards and to increase the production efficiency.

ArcelorMittal Unit in Cracow has a total capacity of 1111 MW. The plant also has 4 heating batteries, three of which work exclusively for the heating needs of ArcelorMittal buildings and business premises in their immediate neighbourhood. The fourth one is used to supply the municipal heating system in Cracow. The power ordered by the Urban Heat Power Company (MPEC) amounts to around 54 MW. There are efforts undertaken to double the city supply (to the level of around 120 MW).

Once bought by the Urban Heat Power Company (MPEC), the heat is distributed in the city by four main channels which extend in various directions (resembling sun beams) from the Power Plant in Cracow, as well as by a channel connecting the urban system with the Power Plant in Skawina. The four heating mains have a nominal flow of 13,200 t/h. All distribution channels are connected with each other building a ring system. This allows for various supply routes (from different sources and directions), and enables steady energy flow in case of failure of some elements of the system.

The customer portfolio of MPEC comprises two groups: residential sector (60%) – housing associations, communal building sector, individual consumers; and institutional customers (40%) – businesses, schools, health facilities, etc. As the energy system in Cracow has considerable reserves, it is easily possible to connect to it every interested user.

Cracow also has an extended **gas infrastructure**. Gas is supplied both to residents and the industry. With increasing intensity it is used for heating purposes. The gas comes in about 70% from imports and is transported in four high-pressure gas pipelines, extending in the direction East-West. An important gas distribution company in the region is Karpacka Spolka Gazownictwa. The **electricity sources** in Cracow

include: traditional energy sources (the above mentioned power plants), renewable energy sources (water plants in Dąbie, Przewóz, and Kościuszko), diffuse energy sources (Barycz- biogas from waste, Kujawy – biogas from sewage). The company Tauron Dystrybucja is a local monopolist in the electricity distribution.

The total power capacity of Cracow can achieve more than 1100 MW. In recent years, a trend of stabilized growth of the demand for electrical power has been observed. However, the adherence to quality standards of electrical power supply is questionable. There is a potential for improvement which requires new investments in the infrastructure. In particular, in the city centre and in the area between rivers Vistula and Rudawa, the possibility of electrical energy supply is limited (mainly due to lack of suitable energy sources or transformation stations). While there is a clear increase in supply from the network with medium and low voltage, the drop in demand for high voltage electricity is observable.

Key actors/partnerships

According to the Polish Energy Law, it is the task of municipality to meet the collective needs of the community. In particular, this means the obligation to supply electricity, heat and gas.

In Cracow the idea of energy democracy has gained a widespread attention. In the past, there were meetings organized during which the energy policies at national and local level were discussed by various stakeholders. The topics included: diversification of energy sources, renewable energy, new forms of ownership, local activism for creation of green jobs and development of green economy in the short-term perspective 2014-2020.

An important initiative was the creation of the Cracow's Energy Purchasing Group (Krakowska Grupa Zakupowa Energii) in 2012. The aim was to enable teeming up of individual institutions for the purpose of public bidding offers, i.e. schools, hospitals, museums, which can now participate together in one bidding. Before, every entity had to negotiate a separate contract with energy suppliers, which was more expensive and unfavourable due to less bargaining power held by single institutions.

Key actions/measures/initiatives

There are increased efforts to develop the renewable energy sources in Cracow. The most promising ones are the geothermal energy and biomass. In addition, solar collectors could be used in the city regions with the highest air pollution. Some scholars also see potential in cooperation of Cracow with neighbouring municipalities aimed at creation of an ecological area powered exclusively by renewable energy sources. At the moment however, Cracow uses the potential of renewable energy sources to a minimal extent.

In addition, there are activities undertaken which promote the abandonment of furnaces, coal boilers and other CO_2 intensive energy generation methods. They include subsidies for the installation of renewable energy sources and the Low Emission Reduction Programme. All local energy suppliers (Municipal Heating Company, EDF Krakow, power plant in Skawina, Tauron and PGNiG) and institutions (Marshal's Office and Provincial Environmental Protection Office) declared to undertake all necessary efforts in order to lower the emissions of GHG to the atmosphere, i.e. by offering concrete support for the city dwellers.

Green spaces

Availability, affordability and consumption levels

Spatial order and sustainable development have been deemed utmost priority in the Spatial Development Plan of Cracow from 2013. In accordance with this commitment, the principle of division between built-up areas and spaces excluded from investments is to be strictly followed.

In Cracow, there are 42 city parks with a total area of almost 397 ha. The most valued ones include Planty (21.83 ha), Jordana (19.97 ha), Krakowski (4.78 ha), Strzelecki (1.41 ha), Decjusza (9.69 ha), and Bednarskiego (8.24 ha), as well as the Botanical Garden of the Jagiellonian University (8 ha). However, the most special and distinctive green space in Cracow is Blonia – a grassland of more than 45 ha located almost in the very city centre.

In addition to the parks, Cracow also has: 3 Nature 2020 areas (387 ha), 5 wildlife reserves (49 ha), 3 landscape parks (4754 ha), 10 spaces for ecological use (105 ha), and 266 nature monuments. The forests cover an area of 1,431 ha (4.38% of the town). Distinct kinds of green spaces in Cracow are old cemeteries and monastery gardens, both of which are usually closed for the external visitors. In addition, there are many allotments and the Nowa Huta meadows, protected as the first special ecosystem ("*użytek ekologiczny*") in Cracow.

Investments in the field of urban greenery are carried out based on the ranking list prepared in 1998 and updated in 2002.

Key issues

While the green spaces in respective districts vary in numbers and size, in general their amount is considered insufficient in the city. According to the report about the condition of the city from 2007, the total area of green land in Cracow amounts to 4494 ha. This equals to 59.4 ha per person.

Key actions/measures/initiatives

An important role in the urban structure of Cracow is played by areas which were excluded from investments/building up. Some of those areas have already been marked as not available for investments in the Spatial Development Plan from 2003. In the opinion of some city dwellers, this is not compatible with the principle of "compact city". This clash of perspectives on the urban planning was clearly demonstrated during a recent protest against the establishment of a river park Młynówka Królewska. The opponents of the current urban policy of exclusion of some parts from building-up claim that the buildings density should be greater in order to avoid the spatial expansion of Cracow to the neighbourhood areas. An adverse situation, when the city municipalities planned an investment and the members of an activist group called Modraszek Kolektyw in 2011 protested against it, took place in the district of Zakrzówek.

11.3 Governance and citizen participation

Multilevel governance

Province

The Cracow Development Strategy is a document that defines the basic directions of socio-economic growth of the city in the long term. This document is a tailor-made specification of sustainable development strategies existing on higher governance levels: of the country and the EU.

In terms of decision-making, any local government is independent (the city does not depend on the district or regional level). However, it is dependent on the central government's decision in those matters which the government delegates to the local government. In those areas conflicts may occur, as government does not provide 100% of financial resources for the realization of delegated tasks.

The system of alignment of financial capability between stronger and weaker units of self-government in respect of revenue tax has been in force since 2004 in Poland. This system, defined popularly as "Janosikowe" is practical expression of realization of self-governed principle of solidarity and subsidiary. It has excited many controversies for years, especially for self-governments which have been obliged to execute yearly payment to the state budget. Due to the system of "Janosikowe", only 20% of financial resources are retained in the budget of Cracow. The rest is directed to the central level and then redistributed by the Ministry of Finance. According to the interviewees, the 20% does not constitute a considerable amount and is not adequate for the development of the city. Subsequently, if there were no European funds invested in Poland, the cities would not be able to fund some projects, i.e. the development of public transport.

National

In Poland, the principle of sustainable development gained constitutional status - it is enshrined in Art. 5 of the Constitution of the Republic of Poland. The definition of sustainable development is also explicitly included in the Environmental Protection Law. The implementation of sustainable development policies is facilitated by strategic documents: "Ecological Policy" (I from 1991 and II from 2000) and "Poland 2025 – Long-term Strategy of Sustainable Development". All activities undertaken at the local level have to comply with the provisions of the national law. Therefore, the national Renewable Energy Sources Law is awaited with great interest in Cracow.

EU

The monitoring of implementation of the EU's current sustainability strategy "Europe 2020" includes publishing of annual reports based on a set of indicators. The indicators cover employment, investment in research and development, CO_2 and energy emissions, education and poverty. All member states, including Poland, were obliged to set their corresponding national targets enabling the implementation of the EU sustainability strategy, and have to report the progress in the achievement of those targets.

Participation and bottom-up action

Participation

In order to make Cracovians acquainted with current investment plans and projects to be implemented in the city within the coming years, as well as to provide information on the public consultation process, and finally, to perform the consultations via internet, in 2008 a special internet service called “Social dialogue” was launched by the City of Cracow. The city authorities claim to be committed to the idea of participative governance and to be eager to exchange views with the society at large.

Currently the public consultations in Poland are not legally binding for the authorities. The consultation process is regulated by national and local laws. As on the national level there is no single law covering this issue, multiple provisions have to be taken under consideration. With regard to the local laws, respective regulations can be found in the city statutes. In the City Statute of Cracow, the issue of public consultations is not covered extensively. However, the city authorities passed additional resolutions regulating the principles and procedures for consulting the local community. Their scope is vast and multiple situations are taken account of, i.e. the resolutions foresee full and limited consultations, depending on the fact if the proposed investments are listed in the Preliminary Catalogue of Municipal Investments or in the Catalogue of Municipal Investments.

Some notable civil society initiatives in Cracow include: Cracow’s Anti-Smog Alarm (*Krakowski Alarm Antysmogowy*) which covers actions for the sake of clean and healthy air in the city, as well as Cracow’s Cycling Dialog (*Krakowski Dialog Cykliczny*) as a platform for engaging city dwellers in decision-making process on the shape of cycling policy.

Bottom-up action

For the future, the following issues will be important for the bottom-up participation:

- determining the days and hours of operation of retail trade, as well as gastronomy and service facilities,
- updating the “Guidelines for municipality supply with heat, electricity, and gas”,
- assessing the projects of new statutes for Cracow districts,
- debating on housing policy (there is a series of debates called Housing Roundtable – *Okrągly Stół Mieszkaniowy*),
- Urban and spatial planning.

The following groups are relevant for a transition to sustainability:

- excluded individuals and groups (or threatened with exclusion),
- youth,
- business entities,
- NGOs and public benefit organizations.

11.4 Conclusion

Short summary

Although in many areas Cracow is ranked as the second important (after Warsaw) Polish big city, there are still some reasons to be dissatisfied with the pace of its development. Accounting for the advantages of Cracow, the city should grow even faster and could make a better use of its attributes. In particular, the potential for development of a modern, knowledge-based economy has not yet been fully exploited. The city has two major advantages. First of all, it enjoys an excellent image - it is an attractive place to live, with a high quality of life, and high intellectual and cultural potential. Secondly, it has an enormous human capital - it is one of the best academic centres in Poland with well-educated population. All this will lead to even more efficient functioning of municipal institutions and a relatively well-developed infrastructure in the future. This should also be translated into excellent results in terms of socio-economic development, making Cracow a visible and dynamic economic and knowledge centre in Central-Eastern Europe. However, at the moment it is still an aspiration to be fulfilled, and the city has to make considerable efforts to utilize its abundant opportunities.

Trends and challenges for the future

The key trends and challenges can be defined in accordance with the recent Krakow Development Strategy. The Strategy sets specific long-term objectives to be achieved in order to facilitate the desired development vision. They include:

- Cracow as a family-friendly city and an attractive place to live in,
- Cracow as a competitive and modern business centre,
- Cracow as an important European metropolis in science, culture, and sport.

The achievement of these strategic objectives requires following actions (defined as operational aims), which can simultaneously constitute the trends/challenges for the future:

- Improvement of the natural environment,
- Greater access to education for all age groups, higher educational standards (in particular: environmental education),
- Greater sense of public security,
- Development of housing industry and land reclamation,
- High health care standards,
- Family protection and welfare,
- Appropriate social development conditions for individuals and groups under threat of exclusion,
- Development of local self-administration and enhancement of social awareness and participation,
- Creation of appropriate conditions for economic development,
- Improvement of transport,
- Development of technical infrastructure,
- Development of the SME sector,
- Support for greater competitiveness on the labour market,
- Making the city more attractive for tourists,
- Better working conditions for scientific institutions and cooperation between science and economy,
- Preservation of cultural heritage,

- Facilitation of cultural development,
- Improvement of climate for setting up headquarters and branches of international companies and organizations,
- Creation of appropriate conditions for sport, physical education and recreation,
- Construction of an incineration plant.

12. Poland – Lodz

12.1 General city profile

Background information

Factual data

The city of Lodz is the capital of the Lodz voivodship (region) and is located in the centre of Poland, only 30 kilometres away from the geographical midpoint of the country. It covers an area of 293.3 km^2 and is inhabited by 742,387 people. Lodz is the third largest city in Poland with regard to the number of registered inhabitants and the fourth largest considering its space. Founded in the fourteenth century, it has emerged as an important trade and industrial centre, in particular with regard to textile production.

Lodz lies at the altitude ranging from 162 to 279 meters above the sea level. There are 18 rivers and streams in the city. However, in most cases they flow in underground channels and are not visible. Lodz has a moderate climate typical for this part of the world.

The number of city inhabitants has been gradually decreasing over recent decades (i.e. 854 thousand in 1988, 817 thousand in 1996, and 790 thousand in 2002) and the observed trend is expected to continue in the future. An opposite situation had place in the 19th century when an impressive industrial development of the city was commensurate with an increasing number of residents. Within 100 years, this number was multiplied by 600. Such a quick population growth was incomparable across Europe.

Basic government/administrative structure

The city mayor (since 2010: Hanna Zdanowska) fulfils her duties with assistance of 6 thematic departments: Architecture and Development, Infrastructure, Asset Management, Social Matters, Administration and Support, Public Finances. In the administration structure there is also a special office designated for social dialog.

Lodz is ranked as the fifth most indebted city in Poland. Recently, the city authorities have decided to take a loan at the European Investment Bank in the amount of PLN 65 million. Last year the city took a loan of PLN 85 million, and in the years 2010-2011 – PLN 75 million. In addition, the emission of obligations worth PLN 130 million is planned. This should cover the expenses for new transport infrastructure. Lodz has relatively low incomes and expenses among all big cities in Poland.

Economic conditions

According to the latest statistics, around 114 thousand people are employed in Lodz in 2013. This is 1.7% less than in the last year. The sectors with decreasing numbers of employees include: construction, administration, trade, reparation of cars, industry, and real estate market. In June 2013, there were 42.5 thousand people registered as unemployed. This number was 3.7% smaller compared with March 2013 and 7% higher than in June 2012. The unemployment rate in Lodz in June 2013 amounted to 12.4% and was 0.7% higher than last year at the same time.

Due to favourable location, Lodz has a potential to establish itself as a communication hub. The textile industry, which played an enormously important role in the development of the city, has been losing in

relevance. The remaining textile enterprises are: Prochnik, Redan, and Teofilow. Currently, for the further economic growth of the city, three aspects are of paramount importance: new technologies, modern infrastructure (i.e. upgrade of the railway connection with Warsaw, modernization of highways, and revitalization of the airport), as well as investments in the areas of business process outsourcing, logistics, and white goods.

Special characteristics

Lodz has one of the lowest life expectancy figures in Poland (Lodz in 2009: around 69 for men, and 78 for women; Poland in 2009: around 71 for men and 80 for women). The distance to other cities is continuously increasing.

Local lifestyle

The research carried out in the framework of the "My government" project supports the overall opinion that Lodz is a relatively good place to live. Almost 71% of respondents confirmed this statement, 30% of which with full certainty. Those views were expressed despite the fact that single elements which define the quality of a city life are not at a particularly high level in Lodz (i.e. infrastructure, public space, education, security). The exception is the cultural offer which has considerably improved. In addition, it should be noted that the city residents often perceive Lodz worse than temporary visitors. This is a result of the permanent lack of promotion of the city among its inhabitants and of its underdeveloped identity. Although it is deemed a city with European prospects, substantial work is needed to unlock its potential. Currently, many revitalisation activities are perceived as of cosmetic and superficial character.

Key challenges and trends

Social and economic issues and trends

Previously perceived as an industrial city, Lodz has been undergoing a reorientation towards a cultural and environment-friendly centre, which implicates multiple challenges to be overcome by the city residents and the authorities. Together with the decline of a large part of textile industry, the problem of unemployment and social exclusion arose. Currently, driven by the lack of job opportunities in Lodz, many residents commute to Warsaw. Moreover, some young people decide to move permanently to the capital. This results in decreasing numbers of Lodz population, which is a serious demographic problem for a city striving to develop sustainably. The problems of social nature are partially solved through revitalization – the transformation of former industrial plants into hotels, shopping malls, and cultural centres. However, not all city dwellers are satisfied with those changes and the social dialog is playing an increasingly important role in reaching an agreement between opponents and proponents in these matters.

12.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The abundant availability of surface water was an important prerequisite for development of Lodz as an industrial city. Until today, many water springs have disappeared, multiple trajectories were covered, and some were turned into sewers (i.e. Łódka, Bałuctka, Karolewka, Jasień). Due to decreasing amount of

usable surface water resources, since 1980 water wells have been designed. However, in 1952 the lasting scarcity of water led to implementation of a formerly designed project of W. Lindley, an English engineer. This meant the construction waterworks to supply water from a neighbouring city – Tomaszow Mazowiecki where the river Pilica flows. It was the longest water pipeline built at that time in Poland. This enabled the city to be provided with more than twice as much water as before (40,000 m^3/24 h before and 52 000 m^3/24 h after). Yet, the extended water network has not met the needs of the city in a long term and in the following years the waterworks Lodz – Tomaszow Mazowiecki have been upgraded several times.

Currently, the Lodz region is supplied with underground and surface water resources. In the voivodeship of Lodz, the groundwater reserves are stored in 20 main collectors and amount to 126,579 m^3/h. The municipal water usage in 2005 in Lodz was equal to 120,764 m^3/24 h from underground resources and 15,988 m^3/24 h from surface resources.

Until 2003, Lodz has benefited from two surface water intakes in Bronislawow (from the Sulejowski reservoir) and in Brzustowka (from the Pilica river). The Bronislawow surface intake has been gradually replaced by the underground water in this area. In 2002, the city authorities decided to build a complex of deep wells in Bronislawow. As a result, since May 2004, the city dwellers have not been drinking the water from the Sulejowski reservoir anymore, as it was completely replaced with water from underground sources in Bronislawow.

The amount of wastewater in Lodz is gradually decreasing, partly due to development and modernization of the municipal sewage treatment system. At the moment, Lodz has one of the most technologically advanced wastewater treatment plants in Poland.

Key issues

As revealed by the interviewees, the sustainable development of water resources has been high on the city agenda for several years. While the infrastructure is modernized and developed on a systematic basis, the canals built during the rapid growth of the city around 100 years ago are now too small compared with the current development stage of the city, which is particularly visible in the rainy season when it comes to water outflows.

Key actors/partnerships

Lodz participates in the SWITCH project “Sustainable Water Management Improves Tomorrow’s Cities’ Health” which is carried out under the 6th Framework Programme of the European Union. Its main objective is to implement scientific, technological and socio-economic solutions to achieve sustainable development and efficient management of water resources in urban areas. The city was also willing to engage in the Raindrop project (Development of guidelines for stormwater management), but this cooperation has not been developed.

Key actions/measures/initiatives

According to one interviewee, the city authorities try to efficiently use the EU funds and to create more favourable conditions for local residents with regard to water availability and quality. In particular, this includes the upgrade of wastewater treatment plants in order to meet the EU standards and the construction of water reservoirs on rivers, so that the water surplus is captured there and a healthy microclimate is created for the city dwellers. A broadly unknown fact is that there are as many as 18 rivers

in Lodz. The goal of the city authorities is to build at least one river water reservoir per year. One of the projects is Life+, which is carried out in Arturowek in cooperation with the Ecohydrology Centre and under the auspices of UNESCO. There are also plans to design a Blue-Green Network along which the waters and the green spaces will coexist.

Energy

Availability, affordability and consumption levels

In 1999, the City Council approved "The draft guidelines to plan the supply of heat, electricity and gas consumption of Lodz". Due to several amendments to the Polish Energy Law, the guidelines have been modified. The latest changes were proposed in summer 2013. They concern mainly the reduction of CO_2 emissions and of air contamination.

The Lodz heating network is the second largest in the country. The leader among the local market heating companies is Dalkia Lodz. It co-generates heat and electricity, which is the most optimal energy production method. The company supplies around 60% of the city apartments, as well as industrial companies, public institutions, shops, etc. In addition, Dalkia invests in development of renewable energy sources, promotes an efficient energy use, and is a partner in a number of initiatives aimed at sustainable development of the local community, the city and the region. Another important player on the local energy market is the Polish Energy Group. A part of the Polish Energy Group, the Lodz Energy Company, each day supplies electricity to more than 500,000 citizens of Lodz and its vicinity.

Key issues

As a result of an agreement between the Ministry of Treasury and the international energy concern Dalkia, an 85% stake in the municipal Power Plant Group in Lodz was sold to the company. This transaction generated a serious conflict, as allegedly the decision of the Ministry was not consulted with the municipal authorities of Lodz.

The fact that the city owns most old tenement houses causes financial issues as it comes to their connection to the municipal heating network. Fortunately, the houses renovated in the framework of the project “Mia100 kamienic” are going to be included in the network at the costs of the company Dalkia Lodz.

Key actors/partnerships

As expressed by one interviewee, the issues related to energy supply are to a large extent influenced by the managers of infrastructure, as they provide the public decision makers with relevant information. The energy was deemed an auxiliary topic by the same interviewee. While respective national laws delegate this issue to municipalities, they in fact rely on the investment plans of network providers and cooperate/negotiate with them.

With regard to the development of renewable energy sources, the city authorities take efforts to engage in a dialogue with local resident communities. It is aimed at the exchange of experiences gained in the process of acquisition of financial support from the regional and national funds for environmental protection, as well as from the state-owned bank BGK.

Key actions/measures/initiatives

The key actions in the city are built around strategic objectives defined for the Lodz voivodeship and include: development of local energy markets, increased demand for final energy, and decrease in low-carbon emissions, combined production of heat and electricity, promotion of renewable energy sources, creation of competitive markets for fuels and energy, increase in energy efficiency. The actions include i.e. isolation of old tenement houses in the framework of the project "Mia100 kamienic" or of schools as part of the project "Miasto szkół", as well as exchange of public transport fleet in order to limit the CO_2 emissions.

According to several interviewees, the renewable energy sources are not well developed in the city, mainly due to the substantial financial investments needed. However, recently a group of advisors to the City Council has proposed guidelines for development of a local incinerator. The project is designed and operated by a private investor, but the city will be obliged to provide a building plot and constant waste supply (a total of 200 thousand tons of garbage per year). The construction of the incinerator is planned to be finished by 2020.

Last but not least, the potential of geothermal energy in Lodz is estimated at 10873 tpu, which accounts for the 33% of the total geothermal potential of Poland. The stakeholders are aware of the related emerging opportunities, and some approaches to develop this renewable energy source are under consideration.

Green spaces

Availability, affordability and consumption levels

Lodz has a considerable amount of green spaces. The most distinct one is the Lagiewniki forest – which counts among Europe's largest urban wood complexes and covers an area of 1205 ha. In addition to multiple forests, including Lagiewniki, the city is rich in squares, gardens, allotments and parks. Currently, there are 34 public parks in Lodz with a total area of 503.8 ha. Eleven of them are considered cultural monuments. While the formerly designed tree lines along the main streets in the city centre are not existent anymore, the peculiar gardens of former industrialists have been preserved. Although often neglected, those gardens still build green enclaves consisting of rare species of plants and reflecting the industrial leisure lifestyle. Together with historical buildings, the green areas around the city centre constitute a Green Circle of Tradition and Culture. In general, over the recent years the size of green spaces in the city has remained unchanged with an exception of parks and green spaces around buildings, whose number has increased. In total, the green space constitutes around 30% of the city area.

Key issues

The lack of a wide-scale spatial development vision seems to be an issue for Lodz. Currently, only 5-10% of the city space is subject to urban planning. It covers mainly the outskirts of the city, i.e. the Green Circle of Nature and Culture. According to some city residents, the expansion of Lodz should not occur to the detriment of the city centre. More efforts should be undertaken in order to restore the city´s inward green areas. The condition of green areas in the centre has been identified as a major environmental problem. The reasons for it are: the low level of social engagement and the low quality of maintenance of existing areas. In addition, the willingness and financial ability of the city authorities to invest in development of green spaces seems limited.

The condition of green spaces is also influenced by environmental conditions. They include poor retention of water in Lodz, resulting from investment preferences inconsistent with the principles of sustainable development (i.e. the coverage of environmentally crucial green spaces with asphalt). This problem is exacerbated by illegal discharges of sewage into the rivers. The extensive use of salt for snow removal during the winter periods also has a negative impact on water and green spaces.

Key actors/partnerships

As mentioned above, the level of social environmental engagement is not satisfactory. This indicates a low public awareness in this area. The awareness can be influenced by promotional actions conducted by public servants and NGOs. There is an evident lack of this kind of activities in Lodz.

Key actions/measures/initiatives

The accessibility of green areas is claimed to be very important for the city residents. Currently, a project Blue-Green Network is implemented in Lodz. Its aim is to ensure that every person is able to achieve a green area within 10 minutes. There are also „green corridors" designed which lead people to the nature-close spaces outside the city.

In addition, there is an emphasis on multi-functionality of green areas. According to the majority of city dwellers, they should serve simultaneously for recreation, culture, sport, entertainment, etc. In this respect, a resolution from 2011 which allows for barbecues in public green spaces was an important step.

In order to solve the problem of poor condition of greenery in the city centre, several initiatives have been proposed. They include i.e. "Participatory Management of Green Areas" and green policy based on competition. There are also some project proposals aiming at increased engagement of the society, i.e. a "green tram" which should promote the greenery in the city, as well as "Green it well", in the framework of which the interconnected issues of social awareness, governance effectiveness, and level of investment in green areas are touched upon.

12.3 Governance and citizens' participation

Multilevel governance

Province

With regard to the governance at the municipal level, an important document is the "Lodz Integrated Development Strategy 2020+". Accepted in 2012, it is the first comprehensive development plan for the city since 1994. The strategy is based on sectorial policies in three thematic areas: economy and infrastructure, society and culture, space and environment. In the framework of the third pillar (space and environment), the "Spatial development strategy" plays an important role. Until recently, the urban growth of only 5-10% of the city has been under control.

However, the fact that for many years the municipal authorities have lacked a long-term vision of development has caused inefficiencies in city management. Other municipal governance challenges include:

- political instability and a considerable rotation at strategic management positions;
- relatively poor condition of infrastructure (i.e. underdeveloped biking roads);
- Permanent deficit of financial resources available for sustainability projects, which results from a disadvantageous distribution of funds (which in turn is accountable to lacking prioritization of actions at the municipal level).

National

In Poland, the principle of sustainable development gained constitutional status - it is enshrined in Art. 5 of the Constitution of the Republic of Poland. The definition of sustainable development is also explicitly included in the Environmental Protection Law. The implementation of sustainable development policies is facilitated by strategic documents: “Ecological Policy” (I from 1991 and II from 2000) and “Poland 2025 – Long-term Strategy of Sustainable Development”. All activities undertaken at the local level have to comply with the provisions of the national law.

EU

The monitoring of implementation of the EU’s current sustainability strategy ”Europe 2020” includes publishing of annual reports based on a set of indicators. The indicators cover employment, investment in research and development, CO_2 and energy emissions, education and poverty. All member states, including Poland, were obliged to set their corresponding national targets enabling the implementation of the EU sustainability strategy, and have to report the progress in the achievement of those targets.

With an exception for infrastructure investments, many projects conducted in Lodz with the support of EU funds did not turn out successful. Often, the financial resources had either to be returned, or their efficient use was thwarted. One of the reasons was the governance style in the city. The new EU programming is based on inclusive and participatory decision-making and social dialogue, and Lodz has clearly lacked potential in that area.

Participation and bottom-up action

Participation

The civil participation in the governance of Lodz is moderate. The activism of NGOs, as well as the voter presence in elections are below the national average (according to estimates, only 52% of people usually vote in Lodz, while the national average is 56%). While the measure for social engagement for 11 biggest Polish cities has been estimated at 100, in Lodz it equals to 90.7. Around 76.8% of respondents declare an interest in the local events, and 22.5% are indifferent towards what is happening. In addition, 83% feel co-responsible for development of the place where they live. An important expression of willingness to participate in city governance was the referendum in the framework of which the previous mayor of Lodz was recalled. In Lodz, there are around 2000 registered NGOs. However, only few are widely recognizable and active.

Bottom-up action

For the future, the following issues will be important for participation through bottom-up actions:

- cultural development and further establishment of Lodz as an entertainment city (the city of culture and entertainment?), including social infrastructure (i.e. creation of new recreation and entertainment premises),
- a need to limit expansion of the city (with a decreasing number of inhabitants) which occurs to the detriment of the city centre,
- better financial management and long-term planning,
- greater accountability of the city authorities,
- job market, i.e. in order to stop the outflow of young people to Warsaw and other cities,
- Technical infrastructure, including roads, pavements, green areas, water channels, etc.

The following groups are relevant for a transition to sustainability:

- intelligence (people with higher education),
- NGOs,
- Young people (25-39 years old).

12.4 Conclusion

Short summary

The city has several weak points which have to be overcome in order to facilitate its long-term sustainable growth. Above all, there are serious efforts needed to enhance the human capital and social engagement, as well as the functioning of public institutions. The image of the city should be improved, which requires well-designed promotional activities. This would instigate the sense of belonging.

Although many indicators of Lodz development are still below national average, undoubtedly the city has begun to change. Unfortunately, the progress achieved within the last few years was not proportionate with the raising level of needs. The efficient use of available EU funds allowed for significant improvements of infrastructure, and future plans of the city in this area are quite promising. Unfortunately, a low level of investment attractiveness is a serious problem. Notwithstanding this indicator, it has been possible to attract several new investors in recent years, which in turn led to a better situation on the local job market. The noted increase of institutional and infrastructural capital together with the strong basis for financial capital development gives hope that Lodz will reclaim its prestige from the 19th century. The plans for revitalization and establishment of Lodz as an entertainment and cultural centre are brave and risky, but a positive perspective.

Trends and challenges for the future

- Support needed for a more organized activism and increase of social awareness,
- Development of human capital,
- Further improvement of investment conditions,
- Better functioning of administration and public services (i.e. security, education, health),
- More efficient utilization of the EU funds,
- Improvement of the quality of life,

Need to counteract the problem of aging of the society.

13. Poland – Lublin

13.1 General city profile

Background information

Factual data

The city of Lublin is the capital of the Lublin voivodeship. In terms of size it is the fifteenth biggest city in Poland and with regard to population it is ranked ninth. It is also the biggest Polish city on the right side of Vistula River. Lublin has always been an important gateway between East and West. It is inhabited by nearly 350 thousand residents. A large group of population, officially not counted in the statistics, are non-registered students. According to estimates from 2012, the total number of students reaches around 80 thousand. The largest population in Lublin was recorded in 1999 (359 164). Since then, the number of inhabitants has been systematically decreasing.

The city is located on the Lublin upland and crossed by Bystrzyca River. The average annual air temperature is 8.0 °C. The hottest month is July, with an average temperature 18.7 °C, the coldest - January with -5.0 °C.

The Lublin region had the lowest per capita GDP in the EU until Bulgaria and Romania joined the community in 2007. The reason for that is the fact that Eastern Poland has benefited less from the economic transformation after 1989 than the rest of the country. The unemployment rate in 2010 was equal to 9.4%. Most people are employed in market services (45 992), followed by non-market services (42 721), industry and construction (25 071), agriculture/hunting/forestry/fishing (1 734).

Basic government/administrative structure

The organizational structure of the city comprises seven departments: Mayor of the City; Investments and Development; City Management; Social Issues; Culture, Sport, and External Relations; Organization and Administration; Finances. The current Mayor of Lublin, Mr Krzysztof Żuk, has been appointed for this post in 2010. In addition to the above mentioned departments, the city authorities cooperate with various advisory bodies. With regard to sustainable development, the following ones are of utmost importance: Urban Employment Council, Municipal Commission on Urban Planning and Architecture, Council for Local Entrepreneurship, Council for Cultural Affairs, Social Security and Public Order Council, Council for the Spatial Culture.

Lublin is a highly indebted city. At the end of 2012, the debts reached PLN 890 million. Over the past six years the indebtedness has risen by nearly PLN 700 million. By the end of 2013 it is expected to have reached nearly PLN 1 billion.

Economic conditions

Despite the crisis, the economic growth indicators in Lublin have reflected positive trends over the recent years. For example, the number of business entities registered in Lublin increased by 4.5% in 2010 compared to 2009. This was one of the best results achieved in big Polish cities and concerned mainly the SME sector. In addition, in 2007 a Special Economic Zone (Euro-Park Mielec Subzone Lublin) was

created, in the framework of which 19 enterprises acquired permissions to conduct their businesses on advantageous terms. Many of them benefit from the academic potential of Lublin. In addition, a quick development of tourism can be observed. As a result of extended cultural offer, and due to the participation of Lublin in the contest for the European Capital of Culture 2016, the interest in the city as a touristic destination has increased.

Special characteristics

Lublin is the only metropolitan area in the Eastern Poland. Due to its location and development potential, it can be a bridge between Western and Eastern Europe, as well as a springboard to the countries located further in the East. The underdeveloped industrial sector, the strong academic institutions delivering well-educated and skilled labour force, as well as the very good condition of natural environment, are all very promising with regard to the development potential of the city. Moreover, Lublin has a well-developed public transport and it is one of four cities in Poland with trolleybuses.

13.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The first water network in Lublin was built in 1506 and provided the city with river water. Over three hundred years later, engineer Adolf Weisblat designed a new supply system, consisting of three artesian wells, two pumps with steam boilers, an engine, a water tower, and 8.5 km of pipes. In the 20th century, the American "Ulen and Company" built in Lublin a modern water supply network, which was the extension of the Weisblat's system. During the occupation water was delivered to the city without interference. After the war, the network was further developed and new water intakes were incorporated: "Dziesiąta" (1951), "Sławinek" (1960), "Bursaki" (1970), "Prawiedniki" (1971), "Zemborzycka" (1977), "Wilczopole" (1990). In 1975 the first wastewater treatment plant "Hajdów" was brought into service. Over the years, the plant has been modernized, i.e. in 2000, the first gasifier was installed. It is a device which transforms the energy from combustion of biogas into electric energy and heat. The electrical power of the gasifier is estimated at 320 kW, and its thermal power at 440 kW. Another identical gasifier was put into operation in 2004.

In 2010, research on "The shaping of water consumption indicators on the housing estates in groups of cities with a population between 50 001 to 500 000" was conducted. Water demand analysis was carried out for 16 estates in 6 cities, including Lublin. With regard to water consumption per household per year in Lublin, the weighted average from the years 2004-2008 was calculated as 0.128 m^3 /M·d.

According to one interviewee and the main water supplier, the quality of drinking water in Lublin is good. Only 2 out of 7 plants are involved in water treatment (more specifically: in the process of deironization of water). The water meets the requirements of water intended for human consumption in line with the Regulation of the Minister of Health dated 29.03.2007 (with later amendments).

Key issues

Although some problems with water availability may occur in the newly expanded city areas, in general there are no issues with regard to water quality and security in Lublin. What is more, according to an interviewee, within the next 10 years no problems should be expected. Resources are adequate, especially since water consumption compared to the 90 has fallen dramatically.

Key actors/partnerships

The main actor responsible for water management in Lublin is the Urban Water Supply and Sewage Company (MPWiK – Miejskie Przedsiębiorstwo Wodociągów i Kanalizacji). Its primary activity is to produce, distribute and sell fresh water, as well as to collect and treat the wastewater. In addition, MPWiK also administers the municipal landfill in Rokitno.

The Urban Water Supply and Sewage Company in Lublin is one of the best enterprises of this kind in the country. The MPWiK was the first in Poland to implement an innovative computer monitoring system enabling the ongoing control of water supply network. In addition, it developed a mathematical model to predict the consequences of supply failures and to choose the best policy options.

The water distribution system is subject to ongoing improvements. In recognition for the efforts undertaken by the MPWiK, in 1999 it was listed among the most innovatively managed enterprises by the Minister of Economy. The strong position of the company is also confirmed by multiple awards, i.e. "Leader of Entrepreneurship", "Pantheon of Polish Ecology", and "Employer of the Year".

Key actions/measures/initiatives

In 2007 the European Commission approved the "Operational Programme Infrastructure and Environment" for the period 2007-2013. Its total budget amounts to EUR 37.56 billion. It is the biggest operational programme in Poland and the EU contribution is approximately 41% of the total EU support for Poland under the cohesion policy 2007-2013. It is also the biggest-ever operational programme in the whole EU. In its framework, the project “Development and modernization of water supply and sewage disposal in Lublin” has been realized. It aims at achieving both quantitative and qualitative results. They include: to connect 7108 persons to the sewage system and 82 users to the water supply system, to maintain the quality and reliability of water supplies (including the reduction of water losses in the system), to eliminate sources of pollution of groundwater and surface water, to reduce the negative impact of the sewage system on groundwater, to increase the reliability of the wastewater treatment plant “Hajdów”, to improve the quality of life in Lublin, to enhance the overall efficiency of water supply and sewage system, and to facilitate the economic development of areas surrounding Lublin.

The project has been realized in the years 2008-2015. While the total costs have been estimated at around PLN 340 million, the EU contribution is almost PLN 162 million.

Energy

Availability, affordability and consumption levels

The history of the energy supply of Lublin can be traced back to 1927. At that time, the erection of the first Lublin Power Plant was set off. In addition, in the early twenties a number of small plants in various locations were built, mainly in the neighbourhood of industrial areas. In 1935, an inter-municipal

electrification association “Lubzel” was created. Two years later it received the governmental authorization to produce, process, distribute and sell the electrical energy in the Lublin region with the aim to enhance and accelerate the electrification process. Until the outbreak of the Second World War, the electricity network had been developed to a total length of about 320 km, and it supplied 36 settlements. The Lublin Power Plant in its initial form had served the residents until March 1993, when it was converted to a single-shareholder state company. After joining the Polish Energy Group (PGE – Polska Grupa Energetyczna), it was renamed to PGE Lublin Power Plants S.A. (PGE Lubelskie Zakłady Energetyczne S.A.). As a result of further mergers/acquisitions, since 2010 the company has been functioning as PGE Obrót S.A. Branch in Lublin.

The electricity infrastructure network in the metropolitan region of Lublin consists of: one transmission line with the power of 400 kV, 3 lines with 220 kV, and two subsystem stations with 400/110 kV and 220/110 kV.

While in the years 2002-2006 the electrical energy consumption in Lublin voivodeship raised by 5%, in the Lublin province the increase amounted to 104%, which was related to the fast expansion of human settlements and industrial areas around the city.

The main gas distributor in the Lublin metropolitan region is the Carpathian Gas Company (Karpacka Spółka Gazownicza) with its seat in Tarnów. It cooperates with the Lublin Gas Plant in Lublin (Zakład Gazowniczy w Lublinie). In the Lublin area there are 10 drilling sites localized in Mełgwia and Ciecierzyn where the natural gas is exploited. The amount of extracted gas constitutes 50% of the total gas production in the whole Lublin voivodeship. However, it satisfies only 10% of gas demand in the voivodeship. In the years 2002-2006, the gas consumption in the whole Lublin voivodeship increased by 9% and only in the Lublin province by 58%. In general, the gas network in Lublin area is poorly developed.

The distribution of heat in the city region is the responsibility of the power and heat plant Lublin-Wrotków, as well as other communal, industrial, and company plants. In Lublin the heating network is centralized. In the years 2002-2006, a decrease of 16% in the heat supply was observed in the Lublin region. It can be attributed to the progressing thermal isolation of buildings, modernization of the heating network, and a decrease in the number of customers. The main source for heat production is coal (around 80%).

Key issues

In its current state, around 50% of the electricity infrastructure in the Lublin metropolitan region requires modernization. In addition, the existing network is to a major extent powered by external and not-diversified sources, which endangers the energy security of the city. In addition, the fact that the heat production is powered mainly by coal is a serious threat to the environment due to extensive CO_2 emissions.

Recently, a conflict has emerged, as a foreign investor has been planning to erect a new biomass combustion plant to produce heat. As there is heat oversupply in the city, new investments in this area can be questioned.

Key actions/measures/initiatives

In the framework of the above mentioned "Operational Programme Infrastructure and Environment", the project “Reconstruction of district heating network in the city” has been implemented in Lublin. The main objective of this project is to improve the energy efficiency system of the Lublin Heating Company (LPEC – Lubelskie Przedsiębiorstwo Energetyki Cieplnej) by reducing heat loss along energy distribution networks. Furthermore, additional targets are going to be realized, i.e. demineralised water loss reduction, reduction in the failures occurrence, improvement of the security of heat supply to the consumers, reduction of operational costs, decrease in primary energy consumption, improvement of the quality of urban air (reduction of CO_2 emissions). The total costs of this project are equal to around PLN 46 million and the EU contribution amounts to PLN 22.5 million. The time framework for the realization of this project is 2009-2014.

Another project is “The hot water for Lublin”. Its purpose is to replace the current methods of obtaining hot water with solutions basing on the central heating system of LPEC. This requires an extension of the existing heating network.

There are also plans for cooperation between the Technical University of Lublin and the Public Transport Company (MPK Lublin). They are going to work together to enable a partial powering of public buses by solar energy. This would reduce the fuel consumption and significantly cut emissions in the city. The total project cost is more than PLN 4.6 million, of which 3.8 million will come from the National Centre for Research and Development, and the rest will be funded by the MPK Lublin.

Green spaces

Availability, affordability and consumption levels

Within the city borders there are three forests:

- Las Dąbrowa: this biggest forest in Lublin which is located in the Southern part of the city; together with the lake Zalew Zemborzycki it constitutes an important recreation area for city inhabitants; in total this forest covers an area of 12.3 km^2, of which a space of 11.7 km^2 belongs to the city;
- Las Stary Gaj: it is located in the South-Western part of Lublin and has an area of 460 ha; as part of this forest a wildlife area (Rezerwat Przyrody Stasin) was delimited to protect the rare species of black birch;
- Las Rudki (also called Prawiedniki) in the Southern part of the city.

An important green area in Lublin is also the hills Górki Ciechowskie – a system of ravines and grasslands covered with rare species of plants. In general, the ravines are a unique element of the city landscape. In addition, from the South towards the North-East the river Bystrzyca crosses Lublin. In the administrative city borders 24 protected species were identified and 33 nature reserves were created

There are also multiple gardens and parks in the city, including: Garden Ogród Saski (the oldest park in Lublin covering an area of 13 ha), Park Bronowicki, Park Ludowy (the biggest park covering 32 ha; in its Eastern part there is the International Fair Hall), and others (including i.e. a botanic garden, a student campus, etc.). Moreover, new green areas are designed.

In 2012 Lublin was awarded the title of Patron of Polish Ecology. Taking into account some urban development decisions which are strongly contested by green activists, this distinction caused mixed feelings among the local society.

Key issues

Lublin is picturesquely situated among several hills and ravines. They not only provide perfect conditions for various kinds of vegetation, but also enable a natural circulation of fresh air in the city. However, these green areas are strongly desired by developers who aim at meeting the demand for houses situated in beautiful scenery. This activates strong opposition among ecologic groups in the city.

Not all ravines have been successfully saved. The areas of Poloniusza, Rogińskiego and Poligonowa were buried or built-up. In order to prevent this kind of damage in the future, the city authorities are going to develop a protection programme for ravines.

Key actors/partnerships

In 2011, the Council for the Spatial Culture (Rada Kultury Przestrzeni) was created as an advisory body to the city president. It is an open group of socially active city residents and it serves as a platform for exchange of views and for organization of various initiatives promoting proper spatial planning in the city.

13.3 Governance and citizens´ participation

Multilevel governance

Province (Voivodeship)

One of the most crucial documents on this governance level is the Development Strategy of Lublin voivodeship. According to the Strategy, the competitiveness of the whole region should be based on the relative importance of Lublin as an academic, scientific and cultural centre, as well as on its role in East-West relationships. In this respect, the development of transport infrastructure to enable easy access to the city and its good connectedness (East-West and North-South) is of utmost importance. Other documents relevant for sustainable development of Lublin include: Regional Innovation Strategy, Social Policy Strategy of the Lublin Province, Sustainable Agriculture and Rural Development of the Lublin Province, Development and Revitalization of the Cities in the Lublin Voivodeship, Spatial Development Plan of Lublin Province, etc.

National

Lublin as an administrative, academic, and cultural centre belongs to the 10 most important cities in Poland and is the only metropolitan area in the Eastern part of the country. According to the national Spatial Development Concept of Poland until 2030, Lublin plays a key role as an “engine of development” for Eastern Poland. Other national strategic documents which influence the development of Lublin include: National Regional Development Strategy 2010-2020, Long-term National Development Strategy 2030, Medium-term National Development Strategy 2020, as well as the Strategy of Socio-Economic Development of Eastern Poland until 2020. All of these documents set a framework for the activities undertaken on the municipal level.

EU

Lublin to a large extent benefits from the Operational Programme Development of Eastern Poland (OP DEP) which is financed from the European Regional Development Fund and covers five most disadvantaged Polish regions. The main objectives of the programme include: stimulating development of knowledge based competitive economy, development of selected metropolitan functions of voivodeship cities, enhancing the role of sustainable tourism, etc.

A number of EU supported projects have already been successfully started or even completed in Lublin, i.e. it has been possible to refurbish the New Theatre, to restore the Centre of Culture, to erect several prestigious academic facilities, or to build the Lublin Airport, as well as the transport infrastructure. However, some sources suggest that EU funds could be used more efficiently still. Current challenge is to prepare for the new financial perspective 2014-2020 which calls for integrated methods of development management. The Lublin Development Strategy 2020 is an important step to comply with this requirement.

Participation and bottom-up action

Participation

The principle of social participation is an important element of the Lublin Development Strategy 2020. It includes monitoring of the needs of city dwellers, planning procedures, public consultation process and openness for initiatives proposed by the society. It also means cooperation without hierarchical order. The city promotes participation of every interested person, regardless their education, professional carrier and managerial skills. The mixed composition of decision-makers is prioritized (so called collaborative design). In addition, efforts are undertaken to create an institutional environment supportive for implementation of high-risk innovative projects.

Recently, a project “Lublin system of social participation” has been started. It is co-financed by Switzerland in the framework of the Swiss programme of cooperation with new EU Member States. The aim of this project is to increase the engagement of Lublin inhabitants in the city governance.

Bottom-up action

For the future, following issues will be important for participation regarding bottom-up actions:

- Environmental preservation and protection,
- Need to determine development strategy which better takes into account the strengths of the city,
- Better use of the EU funds,
- Improvement of conditions for investment,

The following groups are relevant for a transition to sustainability:

- Youth,
- Students,
- Scientists,
- Businessmen,
- Every interested person, even when lacking managerial and leadership skills,
- Experts in respective areas of expertise.

13.4 Conclusion

Short summary

Lublin has bright prospects for development. One of its most significant characteristics which the city could build on is being the regional education centre. However, the city is not very recognizable in the international arena.

Lublin is the only metropolitan area in Eastern Poland. Therefore, there is an enormous potential for its further development and, at the same time, an urgent need to remove remaining barriers. Above all, the incentives for domestic and foreign investors have to be strengthened and the financial management in the city, including the use of EU funds, must be improved. In addition, efforts have to be made to develop the city infrastructure.

In this context, an important guide for development is the "Lublin 2020 Development Strategy" which was passed by the City Council in February 2013. Its value consists in a holistic approach. Rather than to focus on single sectorial policies, the strategy builds on the identification of synergies and on the principle of dynamic optimization of a network of interconnected objectives.

Above all, Lublin should make greater use of its geographical location. By improving the conditions for foreign investments, the city could become a strategic hub for companies which plan to expand their business activities in the East, i.e. in Belarus and Ukraine.

In spite of existing room for improvement, the city has considerable strengths. The efficiency of public institutions, as well as activism of non-governmental sector and civil society are among them. The condition of the natural environment in Lublin, as well as the security in the city is very good, which is reflected in the high index of live quality. Lublin has also undertaken actions to overcome the weak image and to increase the number of cultural attractions.

Trends and challenges for the future

Based on the analysis of strengths and weaknesses of Lublin, in the framework of the Lublin Development Strategy 2020, the following areas have been identified as crucial and demanding further action:

- Openness: to improve external relations of the city and to create a positive image;
- Friendliness: to enhance the quality of life in Lublin, to extend the cultural offer, as well as to increase the level of satisfaction with living standards in the city, and to prevent/counter negative demographic trends (i.e. emigration);
- Entrepreneurship: to improve the economic importance of Lublin, which could then be translated in better living standards and wealth; this includes activities building on the geographical, social and environmental advantages of Lublin;
- Lublin as an academic city: to use the potential of academic institutions in order to increase creativity and innovation in all areas of development (individual and collective).

14. Romania – Giurgiu

14.1 General city profile

Background information

Factual data

Giurgiu is the capital city of the Giurgiu County, a Southern Romanian county, on the Bulgarian border. The city is located on the Danube, Southern natural frontier of the city and the country, which connects the city by fluvial means to the Black Sea and the North Sea. The city is neighboured on the Bulgarian side of the Danube by the larger city of Ruse, with which it has several interregional ties and projects[i].

Giurgiu is located in the Romanian Plain, in the meadows of the left bank of the Danube, at a 23-26 meters altitude (Giurgiu City Hall, 2002).

The local climate is a continental one: with cold winters and hot summers and harsh temperature contrasts (from daytime to night time and summer to winter). The annual average is 11.5º C, while the average rain fall is 500-600 ml/m^2. A climate factor of risk is constituted by the droughts which are caused by inconsistent rainfall.

The city is positioned in an area with solar energy potential; solar power exceeds 125 kcal/ cm^2 and causes a tropical-like climate for a period of more than 60 days a year (Giurgiu City Hall, 2002).

The municipality of Giurgiu, as well as the County, is one of the poorest in the country, due to its agricultural economic background and the disappearance of the pre-'89 industry.

According to the last National Census (2011), Giurgiu's total population is 61,353. The total number is, however, debatable, as another 2011 study conducted by the local Statistics Direction underlined that only 54,655 persons live in Giurgiu. Nonetheless, there is a serious decrease in the total population, as in 2002, Giurgiu had 71,899 inhabitants. The drop in population is explained on the one hand by emigration (economic migration to other EU countries) and migration towards the rural areas of people who formerly worked in the industrial and service sector (Giurgiu City Hall, 2013a).

Basic government/administrative structure

Giurgiu City Hall is the executive branch of the local government, while the Local Council is in charge of creating the local legislative measures to be put in practice by the local administration.

The Mayor is part of the PSD party (Social Democratic Party), being temporarily the President of the county´s PSD organization, while one of the Vice Mayors belong to the PP-DD party and the other to the PNL Party (National Liberal Party); for all of them the present mandate, starting in 2012, is the first one (Giurgiu City Hall, 2013a).

The Local Council has 21 members and presently the political local map is the following: the majority of the members (10) belong to the PP-DD party (*Partidul Poporului Dan Diaconescu* – Dan Diaconescu

People's Party), 8 members from the PNL and 2 from the PSD). The Council is organized into 6 specialized commissions.

"The political factor" is often invoked as a challenge by local representatives of the administrative, private and non-profit sectors. The *political factor* can be understood as a general lack of coherence at the national level – the fluctuation of strategies and instability in the ministries which affects the local level -, but also as a challenge at the local level – as a discouraging aspect for investors.

As a general remark, most of the major local projects (in particular infrastructure-related) run by the City Hall are co-financed by European funds.

Economic conditions

The Giurgiu Free zone was opened in 1996 in order to promote trade and to stimulate foreign investments for the development of local industry. The total surface of the Free Zone is 160 ha and its profile is mainly industrial. From 2004 onwards, Giurgiu's Local Council has been the only shareholder (Giurgiu Free Zone, 2008; Giurgiu City Hall, 2010a). Along with the Free Zone, Giurgiu is equipped with an industrial platform in the Western part of the city.

Nonetheless, investors are scarce in Giurgiu and the city's economic trend is a negative one. To put it in the words of one of the interviewees: *Giurgiu's only chance is European funding*, in order to promote a socio-economic development at the local level.

For 2012, Giurgiu's local budget was of 67,138,000 RON (approximately 15,014,648 EUR) (Giurgiu City Hall, 2011).

The unemployment rate at the city level was 3.4% in October 2013 (AJOFM, 2013), with an increase compared to the previous year – when unemployment was 2.8% November 2013 (AJFOM, 2012).

Special characteristics

One of Giurgiu's characteristics is its position in the Romanian capital's proximity (64 km) (Giurgiu City Hall, 2002). On the one hand, the vicinity to Bucharest has been a disadvantage, most economic opportunities in the region being taken by the capital; while on the other hand, it constitutes an opportunity to be exploited in the future, once infrastructure will be improved.

Another particularity which can turn into a local opportunity for sustainable development is the position on the Romanian border and on the Danube. The potential offered by the Danube is recognized by representatives of the local government, who are very interested in benefiting from the European Danube Strategy[ii]. Moreover, Giurgiu is placed at an European crossroads, linking Bucharest to Sofia by train as well as by road; the bridge over the Danube is Romania's main gate on the North – South axis (SC ACZ Consulting SRL, 2011).

In recent years, Giurgiu has approached the neighbouring city of Russe – a larger more developed port on the Bulgarian side of the Danube – and the two cities now share a Master Plan for Development.

Local lifestyle

As in most Romanian cities, before 1989 traffic volumes had been low in Giurgiu, and buses and bikes were popular for transportation within the city. Interestingly enough, the practice of riding bikes is reserved by older men, while, for the younger generation, the personal car is the preferred mode, as it has acquired the quality of status indicator.

Moreover, for the most part of the city there are no bicycle paths, in spite of the small size of the town, which makes it ideal for using the bicycle as an alternative mean of transportation.

Although Giurgiu has suffered, as most Romanian towns, a hasty process of development in the pre-'89 period in which neighbourhoods of apartment-buildings were constructed, there is still a considerable part of the population living in houses. This can have an impact on the general lifestyle, on the quality and quantity of local green areas – as every house also has a small garden or vine arch – and on the energy patterns of consumption (in some cases water heating solar panels were installed).

Key challenges and trends

Economic issues and trends

In spite of the presence of an industrial platform and of the availability of all utilities for investors, the interviewees invoked several times the *political factor,* which drives investors away.

The city of Giurgiu could in the long term profit from the development of tourism services which would exploit the potential in the region, especially as cruise ship tourism ongoing on the Danube already use Giurgiu as a port. The city could benefit from this tourism flux, which currently only touches upon the city and continues towards Bucharest, by developing a touristic port and proposing touristic circuits to the regional natural attractions (natural reservations, among which a Natura 2000 site at the Bolintin Forest).

The local government aims to develop Giurgiu into a real transportation hub by benefiting from its position on two European routes: Corridor VII – Danube and Corridor IX – North – South.

Social issues and trends

One of the consequences of a lack of local opportunities on the job market is that a considerable part of the active population works in Bucharest and commutes on a daily basis. In addition to this, as there are no local universities, young people who continue their education in Bucharest tend to remain in the capital. Giurgiu is, therefore, undergoing a process of population ageing and shrinking.

The only available data on poverty and social exclusion risk can be found on regional level. In 2011, the South-Muntenia region, of which Giurgiu is part of, had a poverty or social exclusion risk of 43.1% (Eurostat, 2013) and an absolute poverty rate of 3.4% in 2009 (Ministry of Labour, 2009).

Environmental issues and trends

The evolution of air quality in the first 10 years after '89 revealed a decreasing pollution in Giurgiu, not necessarily as a consequence of environmental protection actions, but rather because of the restructuring process the local industry went through (Giurgiu City Hall, 2002).

Pollution of the Danube is another aspect which has to be taken into account, even if the episodes of pollution do not take place in the municipality. Nonetheless, low pollution is still one of the positive factors at the local level, as the present situation could constitute an opportunity to maintain a low negative impact on the environment by industrial factors.

No longer functioning, several areas which used to be the motors of economic life in Giurgiu before '89 have been closed down and constitute sources of pollution: the chemical plant, the Dockyard, the sugar factory, Giurgiu's South station and other closed down industrial areas in the North, West and South of the city (ACZ Consulting, 2011).

Another source of chemical contamination is the ground of the old landfill, while the development of the city towards the West is carried out without installing a proper green buffer zone between new housing and the CET thermal central in the West of Giurgiu (ACZ Consulting, 2011).

Due to the administration's low funds, as well as due to the general situation of the local economy, only minor environmental actions have been taken locally or at the county level, such as the „Integrated System of Solid Waste Management in the Giurgiu County".

14.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The local water and sewage company is S.C. Apa Service S.A. (Water Sewage Ltd.); the company was founded in 2007 and replaced the older local public administrative structure providing water and sewage locally. The company is a regional operator, delegated by the "Health through clean water" Association for Intercommunity Development.

The duality of a public service provided by a commercial company aiming for profit (even if the main shareholders are the Local Councils of the localities it operates in) can generate tensions between the management of S.C. Apa Service S.A. and Giurgiu's local government.

Water comes from only one source: underground and is extracted in 49 water wells and 15 deep-water wells, situated around the city (Giurgiu City Hall, 2010c). Good quality water is widely available in Giurgiu, as the initial system was designed for a greater consumption (industrial one), which is no longer present. SC Apa Service SA provides water to 98% of the Giurgiu and Slobozia population (71,043 locuitori), and partially other localities as well (SC Apa Service SA, 2013). The price for a m^3 of drinking water is 2.70 RON, VAT non included (SC Apa Service, 2012) – approximately 0.45 EUR. Giurgiu has a local water treatment plant, with a total capacity of 1540.8 mc/h (428 l/sec) and an exploitation capacity of 270 mc/h (75 l/sec) (SC Apa Service SA, 2013).

Although no recent data was available, a large part of Giurgiu's population – most of the inhabitants who live in houses – have, in parallel with the local water system, their own well in the yard: data from 2002 shows that more than 10,000 people have an alternative to the local water provider (Giurgiu City Hall, 2002, p. 29), and as an interviewee pointed out, it is a current practice to use the well water as much as possible.

Key issues

While water is widely available, the great challenge Giurgiu faces is that of a decreasing population, with low income, which cannot afford to sustain a proper price for drinking water. The other facet of the challenge is to find a way to increase demand – developing local industry.

Although smell of chlorine was noted by one of the interviewees, all of the respondents testified to the generally good quality of water. In addition, respondents have underlined the risk of draughts due to increasingly visible climate change.

Key actors/partnerships

The main actors in Giurgiu´s water sector are the local government and the local operator – SC Apa Service SA.

There are no NGOs active in the water domain at the local level, from the part of the civil society the interview was carried out with the representative of an ecologist NGO involved in sustainability and ecological agriculture projects in the rural areas of the Giurgiu County.

Key actions/measures/initiatives

The main action in the water sector was a project-run through the SOP Environment 2007 – 2013, „Extension and rehabilitation of water and sewage networks in Giurgiu County", the project being one of the major works of infrastructure at the local level (City Hall, 2013b). The total value of the project was 71,576,418 EUR, with 57,812,282 EUR financed by the Cohesion Fund.

Energy

Availability, affordability and consumption levels

The Romanian energy system is undergoing a long and complex process of de-centralisation, aiming in the near future (2020) to achieve regional and local autonomous energy systems. Currently the energy system, its legislation and the market are regulated by a central institution: ANRE (Agentia Nationala de Reglementare in domeniul Energiei – Romanian Energy Regulatory Authority). Gradual measures to diminish the national regulation of energy prices are being taken (e.g. identification of vulnerable consumers and subsidies for these categories, consumer information regarding market liberalization) (ANRE, 2012).[iii]

In Giurgiu, electricity has been supplied since 2006 by a regional private company – Enel Energie Muntenia, which split in 2007 into two parallel companies: Enel Energie Muntenia – in charge of the supply – and Enel Distribuţie Muntenia – in charge of distribution.

The electricity price is still a nationally regulated price, yet there are minor price differences from one region to another[iv]; the price of low tension electricity supplied in Giurgiu by the electricity provider is 0.4344 RON / kWh.

Key issues

Giurgiu has a high potential of solar energy production, according to the study conducted under the PGVIS project and supported by the European Commission, the annual average irradiation is 1500 –

1550 kWh/m^2 (Giurgiu City Hall, Ruse City Hall, 2012). Yet, in the municipality of Giurgiu there is no solar power plant, while in the County there are several projects in different stages of development.

The low level of renewable energy production in the city is due in part to the insufficient funds of the local government, while one of the interviewees also mentioned a lack of skilled human resources in the domain.

Another issue regarding energy is the efficiency, or rather the lack of, as the centralized heating system of the city was initially designed for the much larger energy demand (in particular for industrial actors) and it did not undergo a modernization process; there are, hence, considerable energy losses.

A local tension regarding energy was mentioned by the respondents: it involves setting the price of energy by the local steam power plant. As the heat provider tries to increase the price, the local government's representatives intervene on the general population's behalf and negotiate a better price or offer a subsidy from the local budget.

Part of Giurgiu's population (about 20,000) is not wired to the central system of heating, hence the necessary thermal energy is either received from the natural gas provider or independently – most likely from wood-based heating. (Giurgiu City Hall, 2009)

Key actors/partnerships

The main actors on the local energy scene are:

- Electric energy provider – Enel Energie Muntenia, which supplies in Southern Muntenia Bucharest and the Ilfov and Giurgiu Counties, summing up 1,100,000 clients (Enel Energie, 2013).
- Natural gas has been provided in Giurgiu since 2008 by the regional private company SC Wirom Gas SA, a private company with shareholders Wintershall Erdgas Handelshaus Zug AG (51%) and GDF Suez Energy Romania SA (49%).
- The old steam power plant of the city was privatized in 2010 and presently the heat and hot water is provided by Global Energy Production S.A., part of the Global International 2000 (Global International 2000, 2013).
- The local government – City Hall and Local Council – as well as county level actors (County Council and Prefecture), whose support is generally required by the local level actors for major projects.

Key actions/measures/initiatives

Giurgiu´s City Hall is member of the Romanian Energy Cities (OER - Oraşe Energie România) and of the Green Twinning network.

The local government has tried to approach the renewable energy sector, and here are some of the initiatives:

- Feasibility studies and analysis on local solar potential and renewable energy (e.g. the *Pro-STO Project – Good Practices In The Implementation Of Solar Thermal Obligations*, funded by the IEE 2007 Program)

- After 2000, Giurgiu City Hall has installed solar panels on a series of public buildings (schools, sport centres) and on a few apartment-buildings; each of these actions were subject to a Local Council's decision (*regulation*) (PROSTO).
- Local energy-related regulation designed and approved by the Local Council supports energy-efficiency initiatives: *Building Tax Exemptions For Owners Of Housing Units Who Carried Out, On Their Own Expenses, Energy Rehabilitation Works On Their Houses* (Green Twinning, 2012).

On the civil society's part there is no organized initiative in the energy domain.

Green spaces

Availability, affordability and consumption levels

The total surface of the municipality (including the built and not built areas) is 5233.31 ha (Giurgiu City Hall, 2010b), with a total green space surface of 50 ha, out of which public parks and gardens summing up to 10 ha (Giurgiu City Hall, 2013). The surface of the terrain dedicated to agriculture is 1,663 ha.

Giurgiu suffers of a deficit of green spaces: its' average of 12 m^2 per inhabitant is lower than the national average of 13 m^2 (Giurgiu City Hall, 2010c). There are various areas in Giurgiu, presently *deserted* industrial ruins, which could be transformed into green areas or green terraces.

Key issues

The main local challenge of the city is to increase the size and to improve the quality of green spaces across the city. Also, in spite of the decrease in population, the number of personal cars present in the city has increased and parking spaces have taken up public space which could have been used for the extension of green spaces (as noted by one of the interviewees).

Another issue is the uneven distribution of playgrounds across town.

One of the possible developments in green spaces is to capitalize the Danube's presence and its surrounding green (some of which are protected).

Key actors/partnerships

There is virtually no private influential agent in the green areas sector in Giurgiu (except of a few florists' shops); the main activities are coordinated by the local government and its subordinated structures:

- City Hall, Chief Architect Department – in charge of urban planning and construction authorization
- SC Intretinere Peisagistica a Spatiilor Verzi SA (*Landscape Architecture Maintenance of Green Spaces*) – local commercial company, with the Local Council as main shareholder; this company is practically an extension of the local government.
- Although the two main local NGOs are not strong enough to influence decision-making regarding the green spaces sector, they could, nonetheless, develop projects in the sector.

Key actions/measures/initiatives

Although there were a few initiatives regarding green spaces coming from the local government's part, to quote one of the interviewees, *more could have been done in this sector*. Here are the main actions in the sphere of green spaces in Giurgiu initiated by the local government:

- Creating a new park – Newly Weds park, where young couples who get married are invited to plant a birch; so far the park counts up to 80 trees (Giurgiu City Hall, 2013)
- Transformation of roundabouts in green spaces
- Modernization and cleaning of Alei Park (the main local park)

14.3 Governance and citizens' participation

Multilevel governance

Subnational institutions work well in general with the municipality, nonetheless the quality of the collaboration of local government with County institutions – County Council and Prefecture – has been noted to depend on the political colour of the two levels.

Another remark underlined during the field research is that the *political* factor is determinant in decision-making and that national instability (multiple changes of Ministerial structure or replacements of Ministers) generally has a negative impact on the local level.

Province

Prefecture and County Council play a considerable role in developing major local and regional projects, especially in the area of infrastructure and environmental aspects. Should Giurgiu try to develop the tourism sector, this strategy can only make sense at the County level.

National

The Southern Counties are not only the most rural, but among the poorest of the country as well – they are underdeveloped because of the previous artificial industrial development and an inefficient management of the agricultural potential. An efficient regional strategy for development is required and reclaimed by the Giurgiu municipality.

Another national aspect to be underlined is that the legislative and institutional framework is still unstable in many sectors.

EU

Giurgiu municipality representatives base most of the local long-term strategy on the development of infrastructure at a European level, hoping that Giurgiu's position will eventually turn the tides of the city, allowing it to prosper into a regional hub (by fluvial, railway and highway transport).

The major investments Giurgiu municipality plans for the future are possible only with European co-funding.

Participation and bottom-up action

Participation

Citizens´ participation is minor, national projects or initiatives rarely attract Giurgiu's inhabitants and even when they do, they are rather punctual interventions. A culture of involvement needs to be stimulated. Local structures such as the Pensioners' Council and the Youth Council were created by the local administration in order to stimulate participation, but the impact was not significant.

Collaboration between the local government and the few representatives of the local civil society is required in order to educate the public in the spirit of involvement and to encourage the citizens to participate in a sustainable life of the city.

Bottom-up action

One of the main impediments of bottom-up action is the small number of non-profit associations, as well as of civil representatives in Giurgiu.

For the future, the following issues will be important for participation resp. bottom-up actions:

- Stimulation of involvement, bottom-up action and local entrepreneurship initiatives
- Increase in the standard of living
- Visibility of local NGOs and collaboration of associations with the City Hall

The following groups are relevant for a transition to sustainability:

- Young generation
- NGOs
- Local companies

14.4 Conclusion

Short summary

Giurgiu is the capital city of Giurgiu County, one of the poorest and less developed (agricultural) areas in the country. The city is situated on the Danube on the border with Bulgaria and had a prosperous history as a port, now facing the consequences of deindustrialization (lack of employment, youth leaving the city or commuting, and shrinking population).

The city's sustainable actions are only punctually sustainable and are not part of a coherent long-term strategy. The municipality hopes to exploit the opportunities coming out of Giurgiu's position on several European strategic transport routes (on the Danube, at the Bulgarian border) and to transform Bucharest's proximity from a disadvantage into an opportunity.

Trends and challenges for the future

The main challenges which Giurgiu is facing are:

- Attracting investors in the industrial, service and agricultural sector, in particular agricultural industry investments
- Offering more opportunities (employment, education and leisure) to the young generation
- Improving the general population's ecological education
- Stimulating and supporting civil society and association's initiatives
- Countering the pollution coming from the future development of the transport sector with environmental measures
- Implementing the project proposed by the Giurgiu County Forestry Direction aiming to generate a green barrier (forest) around the city
- Countering the decrease of population

- Slow development of the tourism sector – especially because of the ecological tourism potential in the area (several Natura 2000 sites and Protected Areas in the County)

[i] The Ruse - Giurgiu Euro Region Convention was signed in 2001.

ii During the period of time in which the field research was taking place, the subject of the Danube Strategy was very popular in Romania: in Bucharest the 7th Conference of the Executive Council of the Danube Cities and Regions took place, as well as the 2nd Annual Forum regarding the EU Strategy for the Danube Region (27 and 29 October 2013).

iii The introductory paragraph is common to the three Romania study cases, as the local energy systems need to be analyzed in a larger frame – the national energy system which is undergoing decentralization process.

iv In Romania there are 8 traditional providers of energy, inheriting the 8 regional branches of the Electrica company. Three of them are state-owned (North Muntenia Electrica Supply, North Transilvania and South Transilvania Electrical Supply), while five have been privatized: CEZ, E.ON Energy, Enel Energy Muntenia, Enel Energy Banat and Enel Energy Dobrogea (Ager Press, 2013).

15. Romania – Sibiu

15.1 General city profile

Background information

Factual data

Sibiu (known as Hermannstad to German-speakers) is the capital city of the Sibiu County, in the central part of Romania, within the historical and cultural province of Transylvania. The city was founded in the 12th century by German colonists and cultural and confessional diversity have always constituted one of its main characteristics (Nitulescu, 2009).

Sibiu is situated in the Cibin depression, a hilly plane, crossed by the Cibin River. Its surroundings include to the East the Târnave Plateau and to the South-West (10 – 20 km.) the Lotrului, Cibin and Făgăraş mountains, part of the Southern Romanian Carpathians (Sibiu City Hall, 2004).

Given the location of the city, its climate is a typical temperate continental one, with minor influences (wind direction, landscape and built environment) and a yearly temperature average of 8.8 º C and a 662 mm average yearly rainfall (idem).

Historically, the city has developed progressively, in particular in the last four centuries, with dense constructions in the heart of the city, protected by exterior walls (Nitulescu, 2009), which now are set in the central area of the municipality and are well exploited from a touristic and cultural point of view. This historical part of the city is set in the interior terrace, on the right side of the Cibin River, split into an Upper City and a Lower City.

Due to its central position in confront to the other major Romanian economic centres, Sibiu is a transport hub, benefiting from the presence of an airport, train lines and road infrastructure.

The city has suffered a decrease of population in the last years, from 151,967 in 2007 (Planwerk, 2009) to 137,026 in 2011 (Census, 2011a). Although the fluctuation of the population is not a major aspect of concern for the Sibiu administration, as it has been noted during the interviews, the local economic development has been a pull factor for an internal migration – commuting to or temporary residence in the city from the county or the region, as well as an increase of students from the area, such as the Southern county of Vâlcea.

Basic government/administrative structure

The city is governed by the City Hall, which constitutes the executive branch, and by the Local Council, in charge of establishing local regulations.

Klaus Johannis, Sibiu's Mayor since 2000, re-elected twice, constitutes the main political figure and is attributed an essential role in the positive transformations the city has undergone in the last 10 years. Initially part of the FDGR (Federatia Democrata Germana din Romania – German Democrat Federation of Romania), in 2013 he has joined the PNL (National Liberal Party, member of the USL Alliance) (PNL, 2013).

The Local Council of Sibiu is an autonomous administrative deliberative authority, composed of 23 members, elected for a 4 years period, and structured into 6 commissions (Sibiu City Hall, 2010). The particularity of the present political distribution within the Local Council is the predominance of members of the FDGR (German Democrat Federation of Romania) – 15 compared to the number of other parties representatives (2 for the PDL – National Democrat Party and 6 for the USL – Social Liberal Union), given the size of the local German community (less than 1500).

The City Hall's budget for 2013 is of 371,656,800 RON (roughly 83,650,000 Euro), 6% bigger than the one established in 2012 (Rondul de Sibiu, 2013).

As a general mention, several of the major local projects (in particular infrastructure-related) run by the City Hall are co-financed by European funds.

Economic conditions

The 1990s represented a period of transformations, mainly by the restructuring of the local industry which meant a growth of the unemployment rate; at the same time, the infrastructure was in need of renovation (Greg & Ilie, 2011).

Presently, the main local industry is the automotive one, followed by logistics and packaging, food and textile industries, commerce and trade production, while in the recent years electronics and IT have developed (Sibiu City Hall, 2008).

Special about Sibiu is that it managed to develop a long-term branding of the city – betting on its *cultural* card (Greg & Ilie, 2011) – and obtaining the European confirmation for this cultural strategy of municipal development in 2007, when the city became European Capital of Culture, in parallel with Luxemburg.

The culture-focused strategy of development was doubled since the beginning of the 2000s by an aggressive investors hunt, which during 2003 – 2004 turned into a dynamic economic development, as the Industrial West zone (the city's first industrial platform built after '89) became a magnet for companies, especially foreign ones (Sibiu City Hall, 2004). Meeting the investors' needs, the local administration has undergone a series of infrastructure – related projects (water, sewage, roads – rehabilitation and extension).

A natural consequence of the two developing strategies, but especially of the touristic capital Sibiu won in 2007, is the boom in tourism. In addition to this, a sense of long-term strategy regarding tourism is noticed in the local administration's measures (currently there is an infrastructure project of extension of the historical centre, by rendering the Lower City accessible and presentable for mass tourism).

The unemployment rate at the county level was at the end of August 2013 of 4.37%, one of the lowest in the country (Adevărul, 2013), with a similar rate for the municipality of Sibiu as well.

Special characteristics

One of the characteristics of the city, as well as the surrounding region, is the historical ethnic diversity – Romanians, Germans, and Hungarians.

The fact that a considerable part of the population is German-speaking (either as first or second/foreign language) has been an advantage in the last years, attracting in particular German investments.

A special mention is due to Mr Klaus Johannis, Sibiu's Mayor since 2000, as his role has been underlined by absolutely all interviewees and respondents, which confirmed a nationally shared opinion about his renowned city management skills.

Local lifestyle

Mobility

Sibiu has undergone in the last 25 years a major transformation regarding its mobility: before '89, cycling and public transports were preferred, while traffic volumes remained low until cars became affordable and public transportation less and less popular (primarily because of a lower comfort level). This lead to a higher air and noise pollution, as well as to worsened traffic conditions (SISUT, 2009).

Recently, the city was equipped at the initiative of the City Hall with bicycle paths, and, although riding bikes is visible to a certain extent in the historical centre, there is still work to be done in attracting the population towards this mobility practice and surpass the recreational purposes it has now.

Another local measure was the regulation of traffic by transforming a number of streets in one way streets, a measure which, apparently, has aided the fluidization of traffic.

Sibiu's universities attract an increasing number of students, as the evolution from 1999 to 2007 shows: a doubling of the student population, which now surpasses 26,000 (Planwerk, 2009).

Key challenges and trends

Economic issues and trends

The West Industrial Platform is the main area of development of the city, for which the general urban plan of the city has scheduled the extension of the Economic Centre and the residential West area (Planwerk, 2009a). At the same time, in the recent years the city developed its Eastern industrial area, the two areas summing up to more than 200 ha.

Modernization and rehabilitation of infrastructure is reaching an end, but as the city develops, new works will be required (e.g. as one of the interviewees pointed out – Actor 14 – there is a gap between the water and sewage systems, in the detriment of the sewage system which is smaller in size than the other, and which will require to be extended in the future in order to function properly).

An important sector of the local economy is tourism, which will become a strategic priority in the future, especially in the context of a high employment rate of the local labour force specialized in industry. A special mention is due to the impact of the 2007 status of European Capital of Culture, which was immediately visible in terms of tourism tax revenues, growing by over 70% between 2006 and 2007 (Alexa & Lache, 2011).

Social issues and trends

The city population stayed stable throughout the 2000s: 154,892 inhabitants in 2002 (Sibiu City Hall, 2004), 151,967 inhabitants in 2007 (Planwerk, 2009b), but registered in the last period a decrease: 137,026 inhabitants in 2011 (Census, 2011a), in spite of the general economic development of the city.

An obvious positive evolution took place in the employment domain, standing witness to the development of the economic sector (in particular in industry, but in services and tourism as well): 7.8% unemployment rate in 1997, increase to 12.3% in 1997 (Sibiu City Hall, 2004), and a steady 4% - 5% in the last years.

The main direction of investment from the City Hall was in the cultural domain – cultural events, in particular – which on the one hand directly attract tourists, and on the other maintains the status of cultural capital.

Although it might not be visible at a statistical level, there is an influx of population from the surrounding area, as well as from the region. As Sibiu offers more work and education opportunities (presence of several Universities) than other regions, it hosts a temporary population which might become permanent in the future (commuters, increasing student population).

Environmental issues and trends[i]

The city of Sibiu is affected by the emissions coming from economic agents, as well as the increasing traffic, due to transit of the area; but the biggest impact on the environment came until recently from nearby the area of Copsa Mica, where until 2009 functioned the most polluting factory in Europe – Sometra SA (zinc and lead factory), which now operates at only 20% (Sometra, 2009) and its total closure in envisioned in the near future.

With regard to waste management, there are some measures being taken locally (closing down of an old, not ecological, landfill) and regionally (an integrated waste management project, which will start next year and cover the Sibiu municipality as well). Yet, as information from civil society (local associations) shows, the measures in this domain are rather punctual. Also governance aspects and the communication with the public could be improved (e.g. in the case of selective waste collection).

In addition to this, illegal waste depositing on river banks or other green areas are known to happen from time to time, as the City Hall representatives point out.

Concerning energy consumption, the main aspects which constitute an improvement of the energy efficiency are tied to initiatives of the population, usually intermediated by the local associations of apartment-owners. The first action is the disconnection from the central heating system (permitted by the municipality in the last years of the 1990s) and installing independent household gas systems, while a more recent one, conducted without the support of the City Hall, is the insulation of most the houses and apartment-buildings in Sibiu, which has contributed as well to the energy efficiency.

15.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

S.C. Apa Canal S.A. (Water Sewage Ltd.) was established in September 1998 and is the provider of water and sewage services in Sibiu (Sibiu City Hall, 2004).

The status of the Apa Canal Sibiu is that of a commercial society, designated by the Intercommunity Development Association “Water Sibiu Association” as a regional operator of the water and sewage system. This functioning system can create a certain ambiguity and leave place for pressures from the

local administration, as the company's shareholders are the Local Councils of the municipalities it operates in the localities and the Council of Administration of the company is constituted of the Mayors of this localities.

As there aren't any underground water sources exploited in the Sibiu municipality, the main sources of water are surface sources: dam with plug at Gura Râului, dam with reservoir Gura Râului and plug – flight channel Centrala Hidroelectrică Sadu II (Sadu II Hidroelectrica Plan), on Sadu river (Sibiu City Hall, 2004). There are two water treatment plants (Dumbrava Water Factory and Lunca Stezii Plant) (Apa Canal, 2013) and, for Sibiu's needs, a used water treatment plant between the neighbouring localities of Selimbar and Mohu.

Water system coverage is up to 99% of the municipality's territory, while the sewage network coverage is up to 96.5% of the municipality (Planwerk, 2009b).

The price for a m^3 drinking water is 3.45 RON (out of which 24% is represented by the VAT), approximately 0.70 Euro. Sewage and used water treatment prices for the general population, public institutions and non-polluting economic agents is priced at 1.95 RON per m^3, approximately 0.22 Euro (price which includes the 24% VAT.

An essential role in the modernization and extension of the water and sewage services is due to the massive project, approved in 2002 and financed through ISPA funds: *Rehabilitation of Sibiu's water supply and sewage system.* The works started in 2004 and their total value was 37,588,000 Euro.

Key issues

In 2009 the Apa Canal company extended the area to which it provides services, now providing for more than 240,000 inhabitants in the region. By providing services to other cities in the county (Cisnadie, Avrig), but as well in the neighbouring county of Brasov (in the city of Fagaras), Apa Canal became a regional operator.

The quality of drinking water, as well as its availability, is good, according to the three representatives of the local water sector (private, administrative and non-profit), while the provider mentions no major problems concerning water quality or availability in the Sibiu municipality.

On the other hand, the regional nature of the company implies a series of various challenges to be faced; although, perhaps Sibiu is not directly facing water pollution as challenge, the company which provides its water supply and sewage services is facing this matter in one of the other localities it operates in.

The absence of groundwater does not constitute an issue, as it is countered by the possibility Sibiu has to be supplied from several surface sources.

A major aspect which was invoked by all of the respondents is the need for a more restrictive regulation of water use, by introducing a set of differential tariffs to discourage overconsumption for the general public.

Key actors/partnerships

Besides the Apa Canal company, Sibiu's water and sewage system is affected by the following actors:

Sibiu City Hall – Is an important actor, both administratively – as several departments have direct ties to the water system (e.g. the Resources Management Service) – and politically, as the Mayor, Klaus Johannis, is the president of the Intercommunity Development Association described below.

Intercommunity Development Association "Sibiu Water Association" was created in 2008, through an Environmental SOP (Sectorial Operational Program) program (2007-2013), in order to be able to develop the present system for local and regional water provision. The Association is represented by the Local Councils and it is the concessioner of the local public water and sewage system, which it delegates to SC Apa Canal SA to operate regionally.

"Romanian Waters" National Administration - is a national structure, with regional and local branches with a series of functions managing national water resources. Apa Canal buys the surface water from the *Romanian Waters* National Administration. This institution has also been involved in cleaning the areas surrounding the waters.

Key actions/measures/initiatives

The main action in the water domain was the implementation of the above mentioned project *Rehabilitation of Sibiu's water supply and sewage system,* but beside this major project, the SC Apa Canal SA invests annually in infrastructure (e.g. in 2012, it has rehabilitated certain portions of the water and sewage network, extended in the West Industrial Area) (Apa Canal, 2012).

Minor initiatives stemming from the local or regional NGOs involve projects in the cleaning of areas close to various water sources (lakes, rivers).

Energy

Availability, affordability and consumption levels

The Romanian energy system is undergoing a long and complex process of de-centralization, aiming in the near future (2020) to achieve regional and local autonomous energy systems. Currently the energy system, its legislation and the market are regulated by a central institution: ANRE (Agentia Nationala de Reglementare in domeniul Energiei – Romanian Energy Regulatory Authority). Gradual measures to diminish the national regulation of energy prices are being taken (e.g. identification of vulnerable consumers and subsidies for these categories, consumer information regarding market liberalization) (ANRE, 2012).

Electricity is supplied by a regional state owned company (Electrica Furnizare - Supply) and distributed by another parallel regional state owned company (Electrica Distributie - Distribution).

The electricity price is still a nationally regulated price, yet there are minor price differences from one region to another[ii]; the price of low tension electricity supplied in Sibiu by local state-owned company, Electrica Transilvania Sud is 0.4876 RON (Euro) / kWh.

Key issues

The main issue is the lack of independence of the local energy system, due on one part to the fact that all major legislation is national and there is very little space for local manoeuvre or initiatives at a municipal level, while locally produced energy goes back into the national energy grid.

Moreover, information from the local energy provider indicates that local production of electric energy make up only about 15% of the primary energy use in Sibiu municipality.

Key actors/partnerships

Electrica Transilvania Sud – Supply and Distribution – described above

E.ON Gaz – regional private gas supplier. Gas use is very wide spread in Sibiu, due to the fact that many consumers have disconnected from the central heating system and installed gas home centrals (systems). Gas prices for domestic consumers vary from 22.9 to 24.47 Euro/MWh, depending on the level of consumption (E.ON GAZ, 2013).

Sibiu City Hall – local administrative initiatives and partnerships in the energy domain, such as the Smart Sibiu project.

Sibiu Federation of Apartment-Owners Associations – intermediate structure which congregates the domestic users' initiatives (such as the individual consumers/households contribution to energy efficiency by apartment-buildings' and houses' insulation and household energy consumption monitoring).

Key actions/measures/initiatives

Smart City Sibiu Pilot Project – is a local initiative in cooperation with a major national specialized non-profit institution, The Romanian Energy Centre. The main objectives are: energy efficiency improvement – starting with the City Hall's edifice and continuing with a number of buildings belonging to the municipality (public services buildings) (CRE, 2013). The main modules include public lighting, cogeneration, energy infrastructure for measuring electricity, thermal and gas consumption. Most of the modules of the project are planned out to be co-financed by the EU funds and by the Municipality.

Green spaces

Availability, affordability and consumption levels

Sibiu's total green surface is 3,626,946 m^2 (Sibiu City Hall, 2013). Yet, the two main green areas of the city are both located in the Southern part of the city. The first one is *Parcul sub Arini* (Under the Alders Park) which stretches from the Southern central part of the city to the Southern outskirts up to where the Dumbrava Forest enters the municipal territory. Due to the historical development of Sibiu as a city enclosed within its walls and with a high building density in the centre, besides these two main areas, the availability of green spaces is low. In the recent years there has been an increase of the playgrounds' numbers, their importance being reclaimed by the local population.

Although the city's plan does not leave much manoeuvre for the local administration to add new green spaces within the city, there are still some opportunities to be taken advantage of – for instance, Cibin's

green bank are naturally green, not arranged for public use, their vegetation is spontaneous, but unwelcoming.

Key issues

Sibiu is confronted with a considerable deficit of the green spaces surface, lower than the national legislation imposes (26 m^2/inhabitant, 2007): 13.5 m^2/inhabitant (Sibiu City Hall, 2004). This figure improves when including the Dumbrava Forest, which however is not located closely to the city.

Availability is low especially in residential areas, where before '89 dense constructions of 8 levels high apartment-buildings were carried out.

Limited funds and personnel in the local administrative structures in charge of green space maintenance make it hard for an increase in the availability (surface) of green spaces, their quality and biodiversity.

A future challenge to be addressed is the lack of private, as well as non-profit initiatives in the green spaces domain, as the main actors are the City Hall and its subordinated service.

Although there were no major episodes of construction on public green spaces, the change of land destination in the detriment of green spaces remains a challenge at the local level.

Key actors/partnerships

The first two actors are the main ones in the domain of green spaces in Sibiu and both are part of the local administration, their relationship being a collaboration.

City Hall's Service of Resource Management and Environmental Protection – part of the Technical Direction, operates in the green spaces domain, but only in collaboration with the Public Service of Parks Administration and Green Areas.

Public Service of Parks Administration and Green Areas – subordinated to one of the Vice-mayors, is a separate structure which also operates from the City Greenhouses, which is their own nursery garden. This public service is the one who actually implements all measures regarding the landscape architecture in Sibiu.

City Hall's Territory Arrangement and Urban Planning Direction – in charge of the urban planning and development strategy, as well as in charge of the construction authorization and permits, which can directly affect the change of land destination;

Astra Museum of Traditional Civilization – set in the Dumbrava Forest, it is a very open cultural institution which contributes to the accessibility and diversity of uses (education, commerce, open air markets, craftsmanship).

Key actions/measures/initiatives

Improvement of green areas availability by the structures within or subordinated to the City Hall: transformation of cement roundabouts into green spaces, parking lots platforms try to integrate a minimal amount of green space and, in spring, an attempt to collaborate with the local civil society by offering seedlings to be planted in the neighbourhoods. In the urban planning sector, the municipality has

managed to protect the two main areas – Under the Alders Park and Dumbrava Forest – by not allowing any constructions on these sights and taking a local measure which prevents this in the future as well.

Astra Museum of Traditional Civilization has proposed a program which creates a connection with the civil society: each house present in the open-air museum is "owned" for the summer season by a pensioner who becomes the host (welcomes visitors and does minor gardening works in the yard surrounding the house).

Annual Flower Exposition – at its 16th edition, has been organized alternatively by the Environmental Agency and by the BIOS Club (local NGO). The exposition gathered most of the local florists and was an opportunity for business development in the green spaces domain, as well as an encouragement for local public to become more involved in the arrangement of their own green spaces.

15.3 Governance and citizens´ participation

Multilevel governance

Province

Subnational institutions work well in general with the municipality. Given the Romanian context, without proper regional structures, the subnational or province governance is, in fact, influenced by the county administration and government – County Council and Prefecture which, depending on the political colour can work with or against the municipal actors. In Sibiu's case it seems that the collaboration at the County level is a positive one, sustainability projects – such as the integrated management of waste – being implemented at a county level.

National

The national level is usually invoked with some resentment – as it is associated with two facets of the local autonomy: funds and total freedom for local measures. Some of the respondents hinted that both aspects might be eased by an expected new law on regional administration, which would allow more decision-making to take place at a regional level.

EU

The EU framework sets objectives – works as a stimulus which will help set goals in the future (as in the green spaces domain, where a European standard of green space quota per inhabitant is a reference point, even if met with difficulty). The general public, as well as administrative and political representatives, feel that there is a wide gap between Romanian realities and the *West*.

Participation and bottom-up action

Participation

Participation is usually manifested through involvement of some of the NGOs and associations in various punctual projects, while for most of the population the apartment-owners associations (or their federation) constitute the only mediator and involvement with the local administration. Civil society in general expects more opportunities for participation.

Compared to other regions/cities in the country, Sibiu has a bigger potential of participation and bottom up-actions, as the city is becoming a regional university centre, achieving a certain stand of living due to economic development and already accounting for various citizen involvement initiatives.

Bottom-up action

Bottom-up action is more present in cultural or tourism-related domains and only in incipient stages in other sectors – water, energy, ecology, urban communities etc.

In energy and water, bottom-up action is somewhat difficult to imagine in the current situation (except the two energy efficiency – related measures coming from the local public), more expression would be probably expected in the green spaces domain.

There is no tradition of allotment gardens, but the terrain from the periphery of the municipality is used for gardening purposes, even if it does not follow a formally organized concession from the local administration.

A local example sustaining the development of local community is the “Made in Sibiu Association” and it’s “You are also a Sibian” recent campaign.

In the future, the following issues will be important for the bottom up action and participation:

- Increasing the local visibility of civil society representatives and associations
- Stimulating the civil society initiatives and their cooperation with the local administration
- Mobility categories: students / commuters
- Education and civic culture promotion

The following groups and issues are important for the transition to sustainability:

- Increasing local autonomy
- Collaboration between local administration and county administration
- Investors – both in the industrial and services sectors

15.4 Conclusion

Short summary

Sibiu is the capital city of the county bearing the same name and is one of the main economic and cultural centres in Romania. As the city’s main infrastructure issues were resolved and industrial development has peaked, the local strategy is to attract investments in the services sector, in particular in tourism. The 2007 title of European Cultural Capital has opened the door to the development of tourism and meant the branding of the city as a cultural hub.

Sustainability-related projects are not a local priority for the moment, in spite of minor initiatives coming from part of the local government. Sustainability will gain more importance in the future, but will require following a long-term strategy and more local autonomy, as presently sustainable actions and measures are mostly punctual and not strategic.

Trends and challenges for the future

- General trend of economic development will stabilize
- Challenge to increasing the surface, number and quality of green spaces
- Development of tourism and services sector (Ager Press, 2013)
- Internal immigration and commuting, compensating the ageing process of the population
- Competition with other local urban centres in the area, in particular Cluj and Brasov, in the tourism sector, as well as in becoming a major university/cultural centre

[i] As recent data was not available, most information was provided by the respondents and interviewees.

[ii] In Romania there are 8 traditional providers of energy, inheriting the 8 regional branches of the Electrica company. Three of them are state-owned (North Muntenia Electrica Supply, North Transilvania and South Transilvania Electrical Supply), while five have been privatized: CEZ, E.ON Energy, Enel Energy Muntenia, Enel Energy Banat and Enel Energy Dobrogea (Ager Press, 2013).

16. Romania – Timisoara

16.1 General city profile

Background information

Factual data

Timişoara is the capital city of the Timiş County and the most important economic urban centre in Western Romania (in size and economy).

The city is situated 571 km from Bucharest and had a total population of 306,466 at the beginning of 2012, which represents 45% of the County's population. In spite of the historical cultural and religious diversity Timisoara was known for in the past, the majority is constituted by the Romanian (86.8%) and Orthodox (79.78).

The city is situated in the South-East of a monotonous plain, with altitudes of 87 – 110 m, the only rupture in this line being caused by the Bega River's canal (Timisoara City Hall, 2007).

Timisoara's climate is a moderate temperate continental one, characteristic for the South-East Pannonic Depression, with minor sub-mediterranean influences and significant precipitations. The annual average temperature is 10.6 ºC, while precipitations, with a peak in May-July and November-December, have an average of 592 mm/an, which makes the area favourable for agriculture (Timisoara City Hall, 2010).

The total surface administrated by the municipality sums up to 12927 ha: 7461 ha in built-areas and 5466 ha outside the built-areas. Presently, 34% of the total surface of the city is agricultural land (4438 ha), which constitutes a significant reserve for the future development of Timisoara (Timişoara City Hall, 2013).

Basic government/administrative structure

The city is governed by the City Hall, which constitutes the executive branch, and by the Local Council, in charge of establishing local regulations (Local Council's Decisions).

The Mayor is part of the USL (Social – Liberal) Union, being a member of the National Liberal Party and, together with the two Vice-Mayors (one from the same party and the other one from the Social Democrat Party), exercises his first mandate.

The Local Council is composed of 27 members with the following political distribution: 15 counsellors are part of the USL, 5 - PDL (Democrat Liberal), 4 – Timiş Union and 3 from the PPDD (Dan Diaconescu People's Party).

Economic conditions

The main industrial sectors which have a great importance in Timişoara are: automotive industry, chemical and petrochemical industry, electronics and electro-technics.

The industry of car components has intensively been developed in recent years and attracted renowned companies from the domain (Lisa Draxelmaier, Delphi Packard, Kromberg & Schubert, Contitech, TRW, Mahle, Dura etc.) (Timişoara City Hall, 2013).

Electronics and electro-technics are represented in particular by major companies and high-tech production (Flextronics, Zoppas, ABB Rometrics, Luxten Lighting, ELBA-Philips etc.), which in turn have stimulated the development of local companies.

The chemical and petrochemical industry in Timisoara is represented by major investments by Continental Automotive Products, Procter&Gamble şi Azur. (Timişoara City Hall, 2013)

The municipality owns the Industrial Freidorf Park, situated in the South-Western part of the city with a surface of 47 ha.

Special characteristics

The municipality is less than 700 km away from 13 European capitals, which constitutes a great opportunity for the socio-economic development of the city (Timişoara City Hall, 2013).

Timisoara is a transport hub and Romania's main gate towards Central and Western Europe: by means of train (it is situated at the convergence of 12 main lines, connected to Belgrade and Budapest) or highway (E 70 and E 671). The municipality could also benefit from the means of fluvial transport on the Bega Canal, as reactivating the circulation on it would connect it to the Danube – Main –Rhin (Timişoara City Hall, 2013).

Timisoara is also a member of various European networks active in different sectors: *EuroCities*, *Balcinet*, *Strasbourg Club*, *Alliance of Ioszef Cities*, *Euro Region Dunăre – Criş – Mureş -Tisa* (*DKMT*) (being the largest city of the region).

Local lifestyle

Timişoara is a bike-friendly city: bicycle paths are present everywhere in the city and, although only a minority of the population rides the bike on a daily basis, it is still a common general practice for all social categories.

The phenomenon of „brain-drain" – migration of young specialized and professional workforce towards Western Europe – was sensibly reduced by rising local opportunities and development. Therefore, the city possesses a specialized work force with a high level of qualification, as well as a very well developed university system (several universities present in the city). A specific feature of local development is the collaboration between the university/research sector and the private/industrial one.

Timişoara is a major cultural centre, which aims to be a European Cultural Capital in 2021 and there is local support for this action, visible also in the form of a local association *Timisoara European Cultural Capital Association.*

Key challenges and trends

Economic issues and trends

Timişoara's role as a *Pole of growth* for the Western region has been recognized nationally by the Government (H.G nr. 998/27.08.2008).

The evolution of the local economy is cyclical with a *boom* period in 2007, after which the turnover declined, as 2008 coincides with the beginning of the economic crisis; a certain improvement was observed in 2010, while in 2011 the turnover decreased again – constituting only 58% of the 2007 level.

Unemployment in Timisoara has reached its minimum in 2007 with 0.52% and its maximum in 2009 with a 2.54%. Starting with 2010, when unemployment was at 2.33%, the number of unemployed persons decreases significantly, reaching 1.03% at the end of 2012 for the 18 to 62 years old population (Timişoara City Hall, 2013).

Social issues and trends

The 2002 Census underlined the cultural diversity of the population – 17 ethnic groups and 16 religions – which reflects a higher degree of intercultural practices and tolerance than most of the Romanian cities (Timişoara City Hall, 2013).

Population in Timisoara followed an increasing trend in 2007, with a peak in 2009 (summing up to 312,113 inhabitants) and starting to decline from 2010: 311,428 in 2010, 306,854 in 2011 and 306,466 in 2012 (Timişoara City Hall, 2013).

The only available data on poverty and social exclusion risk can be found on regional level. In 2011, the West region, of which Timisoara is part of, had a poverty or social exclusion risk of 33.1% (Eurostat, 2013) and an absolute poverty rate of 3.2% in 2009 (Ministry of Labour, 2009).

Environmental issues and trends

It was reported that the urban and surrounding area of Timisoara has surpassed several times the level of PM_{10} particles. In 2010, the Timiş County Protection of Environment Agency initiated the elaboration of the *Integrated Program for Air Quality Management in Timis County*, and minor and major measures were taken locally and at the county level to reduce the pollution.

One of the present issues of Timisoara is the absence of a forest-barrier around the city, an aspect which is slowly being taken care of by the municipality which initiated a programme of planting such a defence against the dust brought by means of wind from the agricultural surrounding terrains.

Water quality in the municipal part of the Bega River is, from the point of view of biological elements, good (Timişoara City Hall, 2013).

In its search for a solution to the waste management issues, the municipality founded a joint stock company - S.C. ”INTERNAŢIONAL RECYCLING ENERGY” S.A. – as a mean to promote the „investment in the conversion in energy of municipal waste by conceiving and integrating an adequate installation within the CET South thermocentral of Timisoara”.

16.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

S.C. Aquatim S.A. is the local provider of water and sewage services and since 2010 it has acted as regional operator in the Timiş County, providing water to Timisoara and 71 localities.

The local prices for drinking water are 2.83 lei/m³ and 2.58 lei/m³ for sewage services, including VAT, offering one of the lowest prices for drinking water in the country. The local domestic consumption level is 114 l/daily/inhabitant (Timişoara City Hall, 2012a).

In 2012, the drinking water system coverage was up to 99% of the population and the consumption was of 21,288,496 m^3, split into the following categories: 13,634,543 m^3 population, 5,500,776 m^3 economic agents and 2,153,177 m^3 state institutions (Timisoara City Hall, 2013).

Timisoara's drinking water comes mainly from surface waters and to a smaller extent, 25% from underground sources.

In the municipality, there are 93 public wells drilled at over 100 m deep, which offer access to drinking water for the general public (Timisoara City Hall, 2013).

Key issues

One of the issues invoked by civil society representative was the price of drinking water and sewage, which, on the other hand, was pointed out to me by the General Manager of Aquatim that is, indeed, one of the lowest prices in the country.

To avoid expenses, part of the population prefers to supply itself with water from the public wells, which are not subject to the same strict daily monitoring as the water provided by the central system.

Key actors/partnerships

Starting in 2010, Aquatim extended its services in localities in the Timis County, becoming a regional operator with five branches (Timisoara City Hall, 2013).

- Water – Sewage Intercommunity Development Association Timis (Asociaţia de Dezvoltare Intercomunitare Apă-Canal Timiş), constituted by the Local Councils of the localities Aquatim operates it. The association delegated the operation of the regional provision of drinking water and sewage treatment to Aquatim
- Aquatim – local provider of water and sewage services
- City Hall, Office of Hidrotechnics within the Technical Direction – in charge of monitoring the water system
- FALT – Federation of Tenants' Association of Timisoara – collaborates on several occasions with the water and sewage provider (e.g. in cases of shut-down, losses)

Key actions/measures/initiatives

The main local action was the implementation of the "Extension and modernization of the water and sewage system in the Timis County" project. The total value of the project is of 118,871,000 EUR and the contributors were: local authorities (Timiş County Council and Timişoara City Council) 1.73%, state budget 11.30%, Aquatim SA 13.04%, non-reimbursable funds 73.93% from the EU Cohesion Fund (Aquatim, 2013).

In 2012, from the 22nd to the 25th of May, the municipality organized, in collaboration with the European Commission Environment Directorate General, the Green Week dedicated to water, with the following slogan: „The water challenge – every drop counts" (Timişoara City Hall, 2012d).

Energy

Availability, affordability and consumption levels

The Romanian energy system is undergoing a long and complex process of de-centralization, aiming in the near future (2020) to achieve regional and local autonomous energy systems. Currently, the energy system, its legislation and the market are regulated by a central institution: ANRE (Agentia Nationala de Reglementare in domeniul Energiei – Romanian Energy Regulatory Authority). Gradual measures to diminish the national regulation of energy prices are being taken (e.g. identification of vulnerable consumers and subsidies for these categories, consumer information regarding market liberalization) (ANRE, 2012).[i]

The electricity price is still a nationally regulated price, yet there are minor price differences from one region to another[ii]; the price of low tension electricity supplied in Timişoara by the electricity provider 0.4838 RON / kWh.

In 2011, the energy consumption was of 621 MWh, split into the following categories of consumers: 55% economic agents, 39% domestic consumers and 6% state administration (Timisoara City Hall, 2013)

Key issues

The main issue is the lack of independence of the local energy system, partly due to the fact that all major legislation is national and there is very little space for local manoeuvre or initiatives at the municipal level, while locally (in the Timiş County) produced energy goes back into the national energy grid.

Another challenge for the municipality is to improve energy efficiency and to renovate at the same time the largest patrimony in the country: 14,500 historical buildings, all of them constructed before 1940.

Key actors/partnerships

The Local Government is a local actor in the energy sector, not only as a possible regulator, but also as a producer and provider of energy, as it owns SC Colterm SA – the local provider of thermal energy (heating and hot water).

- The local government – by means of strategy and decision-making in the energy sector
- SC Colterm SA (946 employees) – is since 2004 delegated by the Timisoara City Hall to operate the central system of thermal energy and hot domestic water. The total power installed functions 46% on coal and 54% on hydrocarbons. (Timisoara City Hall, 2013)
- Enel Energie – is the electric energy provider for the whole Banat area (comprising the Timiş County, as well as 3 others), summing up 1,450,000 clients.
- Enel Distribuţie Banat - since 2007, this parallel company is in charge of the distribution of electric energy.
- E.ON Energie Romania – regional provider of natural gas
- ROSENC – Romanian Cluster for Renewable Energy – the association comprises members from the local administration, private sector, universities and research.

Key actions/measures/initiatives

The municipality took various actions in the energy sphere, along with the development of strategic plans for action, the main measures were:

- Improvement of energy efficiency – thermal insulation of apartment-buildings
- Regulation favouring local initiatives on improving energy efficiency

This November the International Trade Fair - Renewable Energy and Energy Efficiency in Constructions took place for the fourth time.

Green spaces

Availability, affordability and consumption levels

Out of the total surface of the city (12,927 ha), the green spaces (parks, squares, green spaces arrangements, playgrounds etc.) sum up to 525.21 ha (Timişoara City Hall, 2013).

Agricultural land in Timisoara's territory is mostly arable land: 4022 ha (almost 91%), while 9% is constituted by grazing land (151 ha), hay crops (251 ha), orchards and nurseries (6 ha) and vine nurseries (8 ha) (Timişoara City Hall, 2013).

Key issues

Integrating the Green Forest (or at least a larger part of the forest) into the municipality's territory is one of the administrative measures which would, indeed, increase the surface of green space/inhabitant, given the high population and construction density of the city and the scarce possibilities to generate new green spaces.

An option to increase the green surface of the city would be green roofs which currently do not benefit from popularity, in spite of the presence at the local level of a professional NGO – the Landscape Architects' Association West Territorial Branch – who could provide the necessary support.

Key actors/partnerships

The major actors in the green spaces sector come from the sphere of the local administration:

- Green Spaces and Playgrounds Service within the Environment Direction of the City Hall
- S.C. Horticultura S.A., belonging to the Local Council, has a total of 220 employees and is in charge of the maintenance of the green spaces in central Timisoara (Timişoara City Hall, 2012c)
- Timisoara Zoo, integrated in the Green Forest area in the North-West of the city.

Other local actors involved actively in the green spaces sector are:

- University of Agronomic Sciences and Veterinary Medicine of Bucharest Local Government
- Landscape Architects' Association – West Territorial Branch – acting as a local referee, publicly criticizing municipal initiatives in many interventions on green spaces.
- Eco Club Timisoara – association which collaborates very well with the Environment Department of the City Hall.

Key actions/measures/initiatives

One of the key actions the municipality plans to implement on the long term is the development of a protective forest barrier – planted at the outskirts of the city. So far, this *green wall* has a surface of 33 ha (out of which 17 ha planted with trees and 8 ha belonging to the University of Agronomic Sciences and Veterinary Medicine of Bucharest) (Timişoara City Hall, 2012d).

Timişoara has developed a biodiversity strategy through the BIOTOWNS project, financed through the Hungary-Romania Cross-Border Co-operation Programme 2007-2013 (Timişoara City Hall, 2012d).

In the last years, the main central parks in Timisoara have been renovated and currently there is a European-funded project for arranging Bega's green banks.

Multilevel governance

Province

Collaboration with the county level, with the County Council and the Prefecture, is generally good, and many projects in the sustainability sphere have been conceived and implemented at the county level (management of air quality, waste management).

National

More autonomy in decision-making, but also financial support was regarded by interviewees as a requirement for a sustainable development of Timişoara. The present discussion of the regionalization law is vague, as the terms of this possible regionalization are unclear, yet all in all, a greater degree of local independence in domains such as energy would allow a better local management.

In addition to this, local representatives have underlined the difficult access to essential data for a transition towards sustainability: in particular data regarding the energy sector, which the providers are reluctant to offer. National legislation or measures could ease this aspect.

EU

European regulations and standards are very useful, as they represent goals to be achieved and, as noted by some interviewees, a strict control from the European institutions offers an impulse and a guarantee of the implementation of certain measures.

Participation and bottom-up action

Participation

Participation in Timişoara has been organized according to the model of the Consultative Councils of the city of Mulhouse, France, twinned with Timişoara. The 19 Consultative Neighbourhood Councils play (at least theoretically) an important role in identifying and prioritizing issues at the local level.

There are two other local Councils, as well initiated by the local administration: the Seniors' Council of Timisoara (created in 2004) and the Youth Local Council of Timisoara (initiated in 2003).

Bottom-up action

Timişoara's associative landscape is, compared to the rest of the country, a very diverse and active one and collaborations between local non-profit initiatives and the City Hall have been generally successful.

Moreover, although general low citizen involvement does not support bottom-up action, there are non-governmental structures which represent their interest – the most active one being the Federation of Tenants' Associations of Timisoara.

Groups important for bottom-up action

- Local NGOs
- Eco-Schools
- Foreign investors / managers
- Universities – Academia is an important part of civil society, while students provide the critical mass of young educated people to engage in an socio-ecological transition

16.3 Conclusion

Short summary

Timişoara is the capital city of Timiş County, the largest and most developed city in Western Romania, with a population of 306,466 and a thriving automotive and electronics industry. The city and the County are situated in a plane and the climate is favourable for agricultural exploitation of the land; as the region benefits from a high solar potential, in the Timiş county there are several solar power plants (some active, others in implementation phase).

The municipality has shown initiative in the sustainability sphere: implementing certain local measures and supporting a sustainable development of the private sector. All in all, a strategic approach of development and sustainability is visible at the local level.

Local civil society, although lacking the political culture to promote bottom-up action, has shown initiative and can be an influential factor at the local level.

An interesting model of development can arise in Timişoara, if the present collaborations between the local government, the private sector and the universities and research facilities will be encouraged in order to flourish in the future.

Trends and challenges for the future

- Maintaining a high attractiveness level for foreign investments in the industrial sector
- Developing the tourism sector
- Creating a *green barrier* (forest) around the city
- Increasing the surface of green space/inhabitant
- Improving energy efficiency for historical buildings and inefficient apartment-buildings
- Stimulating the involvement of individuals and citizen groups in sustainable projects and in public matters in general

[i] The introductory paragraph is common to the three Romania study cases, as the local energy systems need to be analyzed in a larger frame – the national energy system which is undergoing a decentralization process.
ii In Romania there are 8 traditional providers of energy, inheriting the 8 regional branches of the Electrica company. Three of them are state-owned (North Muntenia Electrica Supply, North Transilvania and South Transilvania Electrical Supply), while five have been privatized: CEZ, E.ON Energy, Enel Energy Muntenia, Enel Energy Banat and Enel Energy Dobrogea (Ager Press, 2013).

Southern Europe

17. Greece – Larissa

17.1 General city profile

Background Information

Factual data

Larissa is the largest city in population and surface area in Central Greece and the capital of the Thessaly administrative region. Larissa is positioned on the highway Patras - Athens - Thessaloniki - Evzonon, which is the traditional development axis of the country, linking the two cities of Athens and Thessaloniki, and all the land and sea gateways/exits. Moreover, Larissa lies on the main railway line, being a principal transportation hub. The city participates in the under construction road E65, which will ensure the strengthening of horizontal connections of central Greece that are of national importance. The above characteristics, in combination with the fact that it has been a major agricultural centre, throughout the decades, make it one of the most dynamic urban areas of Greece. Larissa is located on the North-East side of the fertile plain of Thessaly, 80 km South of Mount Olympus. The river Pineios crosses the city, which actually receives its good quality water supply from 17 bores, located in the surrounding area.

Larissa is the 5th most populated city in Greece. In 2011, the municipality counted 165,250 inhabitants and 3003.78 acres and includes the city of Larissa with a population of 143,573 inhabitants covering an area of 1879.71 acres and the suburban settlements of Giannouli and Koilada. During the last twenty years, the population of the city of Larissa has grown in contrast to the population of Thessaly; 14% displayed increase from 2001 to 2011, while for the period 2001-2021 the population increase is estimated to be 21.2%. The city is developing a strong presence in relation to the decline of Thessaly, and is becoming autonomous within the region, reinforcing its presence and role at national level.

Larissa presents a transitional climate with cold winters and very warm summers. In winter the temperature rarely falls under zero, while sometimes thunderstorms or heavy rain can cause damage to agricultural land. In the summertime, temperatures over 40 °C may occur. The average annual temperature is 5 °C, the lowest average temperature around 8.7 °C and the highest average around 21.3 °C. The annual average precipitation is low, around 32.3 mm.

The main city area is heavily constructed; the net building density for the city centre is >100 inhabitants/acre, showing an increase in the last 15 years by 50%. The whole city has 22781 buildings: 19275 housing units, 1381 offices and 2125 differently used buildings.

Most immigrants are integrated into the Greek lifestyle/culture and speak the language. Within the municipality, there were 9355 immigrants of various nationalities that accounted to only 5.6% of the population in 2011. The majority of them are Albanians; 6989 inhabitants – 75%. There are no major conflicts in the interaction between migrants and the native population.

Basic government/administrative structure

The municipality of Larissa was formed in 2011, following the administrative reform of the country, due to the institutional framework "Kallikratis"[i] and the merge of the three, former municipalities of Larissa, Giannouli and Koilada, which became municipal units. The municipal unit of Larissa is divided into four city districts, 6 municipal and 8 local, suburban communities. The municipality has 13 divisions and 60 departments, in which 1096 citizens are employed (permanent or limited-contract). There is also a city council with 45 members and a representative from each community, and two committees on economic affairs and the quality of life.

The current administration, led by Mr Tzanakoulis, who has been the mayor for the last 18 years, aims to transform Larissa into a European, commercial and agricultural hub by deploying a vibrant, multi-level economy in combination with social cohesion and environmental protection. The municipality is committed to promote and preserve sectors that give a characteristic identity to the city, such as rural development, recycling, promotion of public space and cultural heritage. Even if the city manages well its financial resources, the debt in 2011 was 17.5 million Euros for the municipality, while in 2013 it is considered to have grown.

Economic conditions

The city relies on a multidisciplinary economic development that involves many activities of the primary and secondary sector, while the tertiary keeps the centre vibrant. In 2001, 51989 people were employed in Larissa. The share of overall unemployment for the city of Larissa was only 11% in 2001, but in 2012, and due to the financial crisis, the overall unemployment rate for the administrative region of Thessaly was 22.6% (16.8% in 2011 and 12.1% in 2010); the city follows the same trends in unemployment, which is even higher among women, up to 30.5% [Eurostat, 2013].

Many recent graduates decide to leave the city due to high rates of unemployment and quite low salaries in many sectors. The municipality still appears quite robust and not getting affected so much by the crisis, in comparison to other Greek cities at least, so these rates fall actually to the lower side of the national employment/unemployment spectrum.

Local lifestyle

The city has a vibrant cultural life and a busy commercial centre, helped by the large amount of pedestrianized streets, while recently it has filed its candidacy as Green Capital of Europe 2016. The policy of pedestrian and bicycle paths in Larissa is perhaps the most radical breakthrough within the organization of space and transport in the city, reshaping the centre entirely and giving another character to urban life. The whole city has access to free W-LAN internet, offered by the municipality.

Cycling has become very common in recent years. The city is completely flat, and the municipality has created 15 km of bike paths that connect the centre with the suburbs and, along with the large amount of pedestrians and squares, make cycling a fast and pleasant experience. Nevertheless, the use of private cars is still very extensive, and so are the problems that come together: traffic, air pollution, noise, illegal parking, and public space misuse. There were 283.5 private cars per 1000 inhabitants in 2007 [Egnatia, 2007]. The municipality plans to forbid the use of private cars within the inner city ring and to promote collective development of combined transport. The ultimate target is that in 2020, private vehicles will be

used only by 25% of the citizens, compared to 39% in 2010 [European Road Safety Chapter, 2010]. The modal split is: 42% pedestrians, 39% private cars/motorbikes, 13.5 public transport and 4.5% cycling.

Key challenges and trends

Economic issues and trends

Larissa is considered to be the capital of Thessaly and is projected to maintain a leading role in the hierarchy of regional settlements. Adopted principles and models of sustainable residential development are already in place. The last twenty years, many non-local enterprises have expanded their business activities around Larissa. According to the National Strategic Reference Framework, the Municipality of Larissa is called to develop as the third urban centre of the country, in the form of urban "dipole" in synergy with the nearby Municipality of Volos [Metaxas, Kallioras, 2004].

Contrary to the past, the municipality cannot rely on its own economic resources to proceed with the development of new projects, so they usually search for funding through EU projects or public-private partnerships. They also regularly ask the NGOs and self-organized initiatives of the region to provide them with volunteering hands.

Social issues and trends

The municipality of Larissa was, since the beginning of the crisis, the first to offering collaboration with the NGO Anthropomania: social grocery, clothing and footwear community bank, community medical practice and pharmacy, provision of food to hundreds of families in the city, municipal vegetable garden etc. The wider social policy involves preschool children, the youth and unemployed and all retirees and elders. Nowadays, Larissa is the second in nationwide rankings, after Athens, in number of kindergartens. There are also around 30 elderly clubs/centres, where the thousands of elderly city residents are enrolled and enjoy benefits, such as physiotherapy, medical care, recreational activities, etc.

Environmental issues and trends

A quite important problem involves the large amount of waste throughout the city in combination with insufficient recycling methods. There are problems with illegal waste disposal, poor separation of waste and deterioration of public space.

The quality degradation of the atmospheric environment is mainly caused by human activities such as urban, industrial and production (agriculture, livestock, fishery, tourism, etc.) and the excessive traffic within the city. The air contamination problem is also aggravated by the poor urban design, characterized by the lack of open spaces and the existence of high buildings in narrow streets (urban canyon phenomena of trapping pollutants by creating turbulence). The microclimate problem within the city centre is growing due to the creation of urban heat island effects. Another cause for the deterioration of air quality is the industrial district area at the North-Eastern side of the city and the local and seasonal operation of outdated heating systems (stoves, radiators). About 16.1% of households have a fireplace, and by a rough calculation the consumption of firewood is estimated at 66,352 t/year, while the maintenance of fireplaces by their owners is frequently poor.

The CO2 emissions for 2008 were: electrical energy 752364 t, natural gas 111078 t, diesel heating 188700 t and transportation 84984 t. The municipality owns 245 vehicles that produce 1933 t CO_2 per

year; there are plans to change them to more environmentally friendly cars. The per capita CO2 production is 7005 t per year, an amount that the city aims to reduce until 2020 to 5604 t, 20% reduction. In the city centre, the annual average rate of pollutants in 2012 was 43 μg/m³ for PM10, 27 μg/m³ for PM2.5, 44 μg/m³ for NO2 and 55 μg/m³ O_3 [GC2016, 2013].

17.2 Sector specific synthesis

Energy

Availability, affordability and consumption levels

The total energy consumption in thousands of kWh in the municipality of Larissa is: from household use 215,930, from commercial use 198,930, from industry 160,191, from agriculture 26,101, from public services 36,328 and from electric street-lighting 11,943. After 2010, the economic downturn has led to significant savings in energy, which is mainly explained by the increase in energy prices coupled with a reduction in income, which has the effect of changing energy behaviour of consumers.

The CO_2 emissions deriving from the consumption of primary energy (kWh/m²/year) for heating, cooling and hot water use of newly-built homes (after the application of KENAK on the first of October 2010) amount to 32.62 kg CO2 m²/year, 50% less emissions of 65.63 kg CO2 m²/year, coming from households erected with thermal insulation regulation of 1979, and 70% less emissions than households built before 1979 (107.59 kg CO2 m²/year). The same percentages apply to the consumption of primary energy. From 428.57 kWh/m²/year before 1979 to 264.4 kWh/m²/year for houses built after 1979 following the thermal insulation regulations and finally to 135.9 kWh/m²/year for dwellings erected after the application of KENAK [GC2016, 2013].

Following the launch of the subsidies programs for photovoltaic systems in households, 255 photovoltaic electricity generation systems were placed on roofs and terraces within the administrative boundaries of the municipality. The total production amounts to 2387 kWh with consequent benefit in reducing emissions by approximately 3500000 Kg CO2/yr [GC2016, 2013].

Key issues

The financial crisis has led to a significant reduction in the price of 1 kWh affecting the solar market potential. Many citizens invested in solar power, by installing PV in their houses or land; several licenses for solar energy in rural areas of Larissa were given, and the market for agricultural areas of high productivity was liberalized (solar parks of 100 KW) but these producers never got back the pay off and profit they were promised. Citizens are now sceptical and hesitant towards PPC and solar energy in general.

As came out of the interviews, the energy production from renewable energy resources at local level is around 10%, involving mainly smaller-scale projects. The climatic conditions definitely are encouraging since Larissa has sunshine during the vast majority of days, while there are some energy-intensive industries in the industrial area, in need of extra energy input. After spring of 2013 there have been major efforts to restart the PV market and develop conditions for penetration in electrical networks. A change in energy legislation is needed to achieve maximization of profit and larger financial capital. Currently, funding for a solar park does not exceed the 40%-50% of the overall price; prohibiting number for private producers.

Key actors/partnerships

Energy production in Larissa is dominated by the state-owned *Public Power Corporation S.A. (PPC/DEI).* The municipality of Larissa works in collaboration with PPC on projects mainly involving solar applications in public buildings, while many companies operating in the solar energy sector evolve but are mainly working on private projects. Self-organized initiatives focused on energy issues are not common because of this situation in which PPC actually controls all energy issues at the regional level. The association *"Thessalian Connection of Photovoltaic Parks"* represents all private solar energy producers to the state, mainly when demanding better kWh prices. The overall feeling among the interviewees is that transparency from the side of PPC could be improved. The company seems to operate well but the municipality and the citizens would like to have access to energy production/consumption data at local level.

Municipal Department for Electromagnetic Constructions and Maintenance

The department has taken over the implementation of the city's Action Plan to reduce CO_2 emissions resulting from any activities within its administrative area by 20% until 2020 in comparison to the 2008 levels. This can be achieved through collaborative action in various sectors, which actually form the Action Plan: reducing CO_2 emissions from energy saving measures in all municipal activities, energy efficiency in buildings and public lighting and electricity production from renewable energy resources by 20% until 2020.

EPA Thessalia S.A.

The Gas Distribution Company (EPA) Thessaly is owned by the DEPA group, and ENI Hellas spa, with stakes of 51% and 49% respectively. Its main scope is to supply the Thessaly region with natural gas through medium and low pressure networks. In Larissa, EPA works in collaboration with the municipality, in order to gradually replace the oil heating system with natural gas. The environmental benefits, from the so far entry of natural gas, amount to 89,400 t CO_2/yr [EPA, 2013].

Key actions/measures/initiatives

The municipality has planned and started to implement actions aimed both at saving energy in municipal buildings and with public lighting and at exploiting renewable energy resources. These actions are part of co-financed operational programmes such as "Saving energy at home" and "Saving energy in public buildings" organized and promoted by the Ministry for Environment, Energy and Climate Change.

The municipality has installed photovoltaic systems on 15 roofs of school buildings of power 15X10 KWp which have a production capacity of 219,000 KWh, while they reduce CO2 emissions by 321,054 t/year. Another large-scale project involved the implementation of natural gas connection in all municipal buildings, all kindergartens and all schools that have access to an active gas network. Future plans involve the implementation of solar panels on the roof of the closed market with a capacity of 438 KWp, a big solar park outside the city with power 20 MWp, energy refurbishment of all public buildings according to the new bioclimatic regulations applied by the new KENAK (Regulation of Energy Performance of Buildings) [GC2016, 2013].

Water

Availability, affordability and consumption levels

The water supply is received from 3 groups of bores (17 in total), is channelled into the reservoirs of Agia Paraskevi and Mezourlo and is distributed to the city because of gravity created due to height difference. The water supply clients are 208,500 and the length of the pipelines is 650,000 m. The annual water production does not exceed the quantity of 18,000,000 m^3. The water production (from the bores) in 2012 was 16,154,668 m^3, while the consumption was 12,168,635 m^3 and the losses are 24.7%. The water consumption per capita fell from 109 l/person/day in 2008 to 99.5 l/person/day in 2012.

The water is healthy, fully tested at the municipal laboratories that are equipped with state of the art technology. More than 90% of the citizens drink tap water, while the rest of 10% is divided between water filters and bottled water use. The price of water is ranging from 0.58 Euro/ m^3 for consumption levels 0-50 m^3 to 0.94 Euro/ m^3 for 51-100 m^3 and 1.12 Euro/ m^3 for consumption >101 m^3. These pricing differences aim to preserve the overall water consumption at such levels, so that the inventories of water sources will be functioning for the longest time.

Key issues

In the fertile plain that surrounds the city, due to extensive agricultural activity, problems are frequently created related to in-fertilization of soils, water abstraction for irrigation and burden of water by substances (fertilizers, pesticides). Also, during some very dry summers, issues were experienced concerning water supply interruptions, but the city was never left without water supply for more than a few hours a day, so these issues are not actually countable.

Key actors/partnerships

Municipal Water and Sewerage Company of Larissa (DEYAL)

DEYAL is the largest 100% municipal company in its sector. It has modern facilities and infrastructure which are maintained and upgraded all the time to provide high quality services. The sewerage network, which is 490,000 m long, can serve 180,000 inhabitants. The Biological Cleaning has a treatment capacity of 40,000 cubic meters of wastewater per day, with the possibility to serve 210,000 inhabitants. Since 1993, the company's projects are funded through the 1st and 2nd Cohesion Fund. In recent years, DEYAL has managed through their campaign to educate people about saving water, to actually reduce the overall water consumption of the region. The investment of DEYAL in a variety of activities from 1983 to the present amounts to 320,000,000 Euro [DEYAL, 2013].

"Friends of Pineios River and its cultural heritage"

The association was founded in 1994 and counts 800 members. It has shown constant presence in the local media, participates in recycling and community work projects, and collaborates on studies for the Natura 2000 regions and the management of the river's water. Goals: intervention for the protection of natural/cultural environment from the constant inhabitancy along the sides of Pineios, ecological development of the greater Pineios area, restoration of two ancient theatres, protection of the river against pollution and illegal littering, awareness raising and environmental education, constant monitoring/control of contamination/pollution levels through the observatory. The association is against the privatization of water, and in favour of the decentralization of management, considering the municipality as the ideal

administrative body to exercise policy and best water resource practices at the local level [Friends of Pineios, 2006].

Key actions/measures/initiatives

The municipality, in collaboration with DEYAL, implements actions to raise awareness on the protection of water resources and to inform the public about environmental protection and water management; schools of all levels and initiatives like the "Friends of Pineios" are involved (in festivals, conferences, tree-planting initiatives). Due to the size of the population that they serve and in response to a consistent course of business, on-time solutions as well as not only quantitative but also qualitative supply of the citizens, they manage water with environmental sensitivity for future conservation of existing boreholes to reduce at minimum the risk of water scarcity, especially during summer months. The result of the implemented, escalating pricing policy was that the percentage of households exceeding the consumption limits reduced from 15% to 1% in 10 years [GC2016, 2013].

The city's future plans include integrated management and reuse of wastewater for irrigation purposes (green spaces, fountains); there have also been some studies for the use of surface water dams at the North of the city, which will cover the water supply requirements until 2040.

Green spaces

Availability, affordability and consumption levels

Larissa has 8.5 square meters of green space per capita, and is therefore below the European Union standards; there are many trees (on sidewalks, streets and squares) throughout the city, fewer parks/green spaces with continuous vegetation, which all together lighten the grey colour of cement that characterizes the city. The quality of the existing green spaces is quite good, but they actually lack in biodiversity; even in the large grove of Alcazar, the variety of flora and fauna is quite restricted.

While the free public spaces (that could be turned into green ones in the future) within the city borders are exhausted, there is the possibility to create new ones in the suburbs, especially after the attachment of the former municipalities of Giannouli and Koilada. All the larger green spaces and the municipal vegetable garden are equipped with autonomous irrigation system.

Key issues

During winter of 2001, due to extensive frost, the municipality lost around 10000 trees; with major efforts they were replaced, through large tree-planting interventions within the urban fabric and in cooperation with universities and schools. The most important problem concerns vandalism and the downgrading of green spaces. The cost of damage is estimated to be over 100000 Euro/year. Recently, due to limited financial resources for maintenance, in case of vandalisms the damages cannot easily be restored. Most parks/green spaces are not gated or bounded by a fence; they are accessible to everyone and become gathering places for problematic groups, or easy targets for vandalism. There have also been conflicts on land transformation issues, mainly because of a lack of awareness and environmental education.

Key actors/partnerships

The municipal "Department of green spaces" is highly appreciated by the citizens and has taken over the maintenance of the existing green spaces, along with the construction of new ones through NSRF

projects. There are collaborations with initiatives and volunteers, as well as with universities, which prepare environmental impact and risk studies.

Municipal Vegetable Garden

The garden was established in 2012, covers an area of 22 acres, is located within the urban fabric and features fencing, sanitation, access routes and central irrigation. The area is divided into small gardens of 50 m^2 each, which are allocated without a fee by the municipality for two years to 156 unemployed and 60 retired citizens. No fertilizers or pesticides are used; the whole project is based on bio-agriculture. Main purpose of this experiment is to support social groups affected by the crisis. There are already plans of its expansion, in the Averof area. The growers have agreed to, but without being obliged, that 10% of production will be given to the council to sell at the "social grocery centre" and the rest, they will be able to keep for their own consumption or to exchange part of it with other products [Galanis, 2012].

"Hellenic Organization of Environment"

The "Hellenic Organization of Environment" is a civil non-profit company that works with local partners, institutions, governments and citizens aiming to promote action plans, protect the natural resources, minimize any negative impacts on climate caused by human actions at the local level, and improve the living standards of people. The "Hellenic Organization of Environment" deals mainly with projects on green spaces, with the management of natural resources and energy, as well as with social policy and employment issues; most of the time through European Union programmes and in collaboration with the municipality [EOP, 2013].

Dryas - Association for Environment and Culture

Dryas is an association established in 2001, which is quite active in the periphery and the city of Larissa. The association is based in Larissa, and primarily aims to the sustainable development of the areas that belong to the programme "Natura 2000" Lower Olympus, Mount Kisavos, Tempi and Delta of Pineios, with respect to the special heritage (natural and cultural) while its other relevant actions include informing and educating the local community on cultural heritage and environmental issues through educational programmes with cultural and scientific content [Dryas, 2013].

Key actions/measures/initiatives

The regeneration/redevelopment of the old Chatzichalar trench and its transformation into a large metropolitan park, within the Neapoli district of Larissa is a large-scale, ongoing project (2012-2013) with a budget of approximately 3 million Euros, which will create an urban green oasis in a deprived area of the city. The regeneration project is estimated to have a very beneficial effect on the region's microclimate, as it will reduce the large temperature difference that occurs between the agglomeration of Larissa and the suburban countryside. Before the approval of the project, the area was completely unformatted and degraded, showing a picture of abandonment not so far from the city centre.

The municipality systematically invests in tree-planting, because it is considered to be the solution to improve the microclimate of outdoor urban spaces and save energy in the surrounding built environment.

17.3 Governance and citizens' participation

Multilevel governance

The Municipality of Larissa is responsible for a large spectrum of areas: urban infrastructure, public transport, health care, environmental protection, cultural activities. The vast majority of laws and regulations of the state are in accordance with the municipality's processes. Due to the fact that in the last 18 years, the local government has been the same, and due to proven know-how on all city matters, the current administration is capable of being more autonomous in designing and delivering projects fitting to local characteristics and needs; at least in comparison to other cities of Greece. Constitutional problems, heavy bureaucracy and contradictory decisions at national level often obstruct progress.

Periphery of Thessaly

During the interviews, some conflicts came up; they concern the rivalry between the periphery and the newly-established decentralized administration on issues like the authorization and licensing of renewable energy projects in the rural area of Larissa. The abolition of the old Prefecture created hopes for increased responsibilities for the municipality but in fact what actually happens is a constant scrutiny by auditors appointed within the Decentralized Administration by the respective ministries.

EU

Municipality and NGOs participate in various EU programs; following an initiative of the local association of municipalities and communities, before the implementation of "Kallikratis", the municipality had held an office in Brussels with manpower providing updates to all the Mayors of Thessaly on the participation in a variety of projects or funding programmes.

Participation and bottom-up action

Larissa is more centralized in terms of its administration, management and addressing the problems that arise, while the existing self- organized initiatives rely more on partnerships and proven know-how and on second base on volunteerism. Some of the existing initiatives lack in organization, human resources and fostering of new ideas. Most interviewees would like to see more participation. Also a lack of awareness, distrust towards the government or interfering personal interests make the area of participation difficult. A lack of community spirit is sometimes perceived with regard to the treatment of public and green spaces.

However, there is smooth cooperation between local authorities and the existing sociocultural initiatives and environmental NGOs that operate in the region. There is advanced action related to social issues: unemployment, social exclusion, assistance to minority groups, immigrants, abused women etc. There are no major conflicts in the relationship between the local government and the existing self-organized initiatives, mainly because the roles are clearly distinguished, with the initiatives primarily focusing on environmental and social education and awareness. Finally, missing rural-urban linkages are often confirmed by the interviewees, something that can be actually problematic, since the surrounding agricultural area is very important for the overall, collective development of the region.

17.4 Conclusion

Short summary

Larissa is the largest city in population and surface area in Central Greece and the capital of the administrative region of Thessaly. It is a principal transportation hub and a major agricultural centre and, therefore, one of the most dynamic urban areas of Greece. The city relies on a multidisciplinary economic development that involves many activities of the primary and secondary sector, while the tertiary keeps the centre vibrant. The policy of pedestrian and bicycle paths is the most radical breakthrough in the organization of the space and the transport system. Cycling has become common in recent years, because Larissa is completely flat and the municipality has created 15 km of bike paths. Due to the lack of environmental awareness and education, illegal waste disposal, vandalisms and destruction of public space are common phenomena. Larissa has 8.5 square meters of green space per capita, there are many trees on sidewalks/streets/squares, fewer parks/green spaces with continuous vegetation and a municipal vegetable garden, which all improve the microclimate and reduce the large temperature difference between the agglomeration of Larissa and the suburban countryside. The existing self- organized initiatives rely on partnerships and proven know-how and additionally on volunteering. Most are destined to raise awareness and educate the citizens on environmental issues, while many are dealing with social issues: unemployment, social exclusion, help to minority groups etc.

For the future, bottom-up initiatives could be organized for:

- Traffic/transport management – alternative approaches
- Energy production from renewable energy resources in the rural areas (solar, wind)
- Waste management – biomass
- Social care, poverty in relation to financial crisis

The following groups are relevant for a transition to sustainability:

- Farmers – Livestock breeders
- Early pensioners (50-60 years old)
- Citizens' groups affected by the crisis

Trends and challenges for the future

- Emphasis on recycling, separation of waste in households
- Energy refurbishment of public buildings – bioclimatic city hall sets example
- Development of suburban green spaces to improve the microclimate (target: 2-4 degrees less in the summer of 2020) and increase the% green/inhabitant
- Tackling the traffic congestion problem and development of new parking spaces
- Introduction of public bike sharing system
- Development of "green" jobs to reduce unemployment rates

[i] Institutional Framework "KALLIKRATIS"

"Kallikratis", aims to strengthen decentralized governance and increase civil society participation. It reformed the administrative environment of Greece, redefined the boundaries of self-government units and yielded institutional responsibilities. The framework reduced the number of municipalities and legal entities by about 2/3, replaced the previous prefectures with 13 peripheries, established decentralized administrations and extended terms of office for all these entities from 4 to 5 years (PKM, 2013). It improved the situation for smaller cities, where villages were consolidated and economy of scale was realized, but in large, urban municipalities like Thessaloniki, it created further bureaucratic problems.

18. Greece – Thessaloniki

18.1 General city profile

Background information

Factual information

Thessaloniki is the second largest city in Greece and the capital of the administrative region of Central Macedonia. In 2011 the Municipality of Thessaloniki counts 322,240 inhabitants, while the greater contiguous built - up urban area that forms the "City of Thessaloniki" has a population of 790,824 inhabitants. Furthermore, the Metropolitan Area, which extends over an area of 1,455.62 $km^{2,}$ reached a total of 1,104,460 inhabitants in 2011. In 2001 the city counted 800,764 and the municipality 363,987 inhabitants. Although the municipality's population has declined in the latest census, the metropolitan area's population is still growing (from 954,027 in 2001 to 1,104,460 in 2011). A population decrease is expected, because of the crisis that leads people to move to the province, where they expect better prospects for employment and quality of life.

Thessaloniki is amphitheatrically built on the slopes of Kedrinos Hill and is surrounded in the North by the Seih Sou forest and Hortiatis Mountain. Thessaloniki lies on the Northern fringe of the Thermaikos Gulf, extending for over 12 km along its shore. To the Northeast lies the fertile plain of Thessaloniki, formed by the silting of the rivers Loudias, Axios and Gallikos. The city takes water from Aliakmonas River and the plenty, underground water reserves, but the problem actually is not quantitative but qualitative, due to intensive agricultural activity, in-fertilization of soils, water abstraction for irrigation and burden of water by substances (fertilizers, pesticides).

Thessaloniki presents a Mediterranean climate that borders on a semi-arid climate and enjoys many days of sunshine throughout the year , while its direct contact with the sea and its proximity to the Lagada lakes make the climate characteristically humid with many dense fogs, especially in the winter morning hours. On most winter days, a strong and cold Northern wind, known as the Vardaris, blows over the city. The average annual temperature is around 16 °C, the lowest average temperature is around 5.5 °C and the highest average around 26.5 °C. The annual average precipitation is around 430-450 mm.

The main city area is heavily constructed, which leaves minimum opportunities for the development of new green spaces; from 2010 to 2013, a total of 12 new parks were developed, leaving ground for future green expansion only to the former military camps and unexploited plain plots of land or brown fields. 52.4% of the city is covered by buildings/constructed land while the industrial zone is located in its Western end part.

The majority of population speaks Greek; immigrants have usually lived for many years in the city and are integrated into the Greek lifestyle/culture. Within the municipality in 2011, there were 8885 immigrants of various nationalities that account to only 2.75% of population. The vast majority of them are Albanians (2nd Georgia, 3rd FYROM).

Basic government/administrative structure

The administration is structured in eight segments, each run by a Deputy Mayor, and 32 additional departments. There are also 6 district councils, with increased responsibilities, in which the citizens can address their problems/issues/ideas.

The current administration - "Initiative for Thessaloniki" independent party - aims to transform Thessaloniki by strengthening transparency and citizens' involvement. The previous administration, governing the city for years, created a sterile landscape characterized by missing transparency.

In 2011, the municipality had a budget of €464,330,000 Euro, while the reduced, due to the crisis, budget of 2012 stands at €409,000,000 Euro. The debt in 2011 was 42, 8 million for the municipality, mainly due to previous misuse and embezzlement of public funds. In 2013 it is considered to have decreased, while in August 2013, half the municipal accounts were pledged due to 1.2 million Euros debt to the Tax Authority; this happened because the last 17 years the municipality did not ever pay its stamp duties.

Economic conditions

Thessaloniki is the second major economic, industrial, commercial and political centre in Greece, and an important transportation and trade hub for South-Eastern Europe, with a number of important companies headquartered in the city. The service sector accounts for nearly 2/3 of the total labour force. The Port is one of the largest in the Aegean and in 2010, more than 15.8 million tons of products went through it (Hatziprokopiou, 2006).

In 2010, 534800 people were employed in Thessaloniki. The share of overall unemployment for the administrative region of Central Macedonia was 9.9% in 2009, 19.5% in 2011 and up to 26% in 2012 due to the crisis. Thessaloniki follows the same trends in unemployment (15.9% in 2009, and more than 22% in 2013) while it is even higher among young people, up to 29.5%, leading most of them to explore their options abroad (Eurostat, 2013). Salaries in many sectors are quite low. Recent graduates are likely to start on €500 a month; a qualified civil engineer may earn €750/month in 2013.

Local lifestyle

The city is renowned for its festivals, art events and vibrant cultural life. Events such as the International Trade Fair, the International Film Festival etc. are held annually, while Thessaloniki will be the European Youth Capital for 2014. The city hosts four of Greece's largest universities and therefore attracts many students, which define the cultural and social rhythms. Ancient Roman and Byzantine ruins can be found everywhere, several museums and galleries, which in combination with the vibrant nightlife attract many visitors every year.

Cycling has become more common in recent years; the New Beach project has helped, since it provided with a large space for walking/cycling, while more than 18 km of bike lines were created by the municipality. Nevertheless, the use of private cars is still very extensive, as can be seen in the modal split (2010): cars and motorbikes 55%, pedestrian 10%, bikes 10%, bus 25% (EPOMM, 2010). Importance is given to the construction of the first metro line that will relieve the problematic public transport system which consists only of buses, while through recent initiatives of public rental bike system and vehicle-sharing, the city promotes alternative, environmentally friendly means of transport.

Key challenges and trends

Economic issues and trends

Private transport companies like the Urban Transport Organization of Thessaloniki (OASTH), usually oppose to any proposal concerning the application of alternative means of transport such as trams or boats for water transportation, while the Local Chamber of Commerce strongly opposes to the prohibition of cars in the city centre and pedestrianisation attempts. The pedestrianisation of Agia Sophia Street was initially approved as a pilot programme. The Chamber of Commerce later argued that the turnover of adjacent shops had dropped significantly, resulting in substantial financial losses. Therefore, the street should be opened to car traffic again. Also, as the economic crisis goes on, people cannot afford commercial rent prices; the consequence is the proliferation of empty buildings and shops, and the move of many shops to Western neighbourhoods where rents are lower.

Social issues and trends

The amount of immigrants living in Thessaloniki is considered to have decreased during the last 5 years, because of the crisis leading them back to their origin country, where employment prospects are better and where they do not face issues related to language, employers' distrust etc. Many Albanians entered the city charmed by its economic attractiveness and high level of well-being and unlike other immigrant groups, tended to be "diffused" into the urban space (Kokkali, 2007). In August 2013, around 300 families of Albanian origin were registered to the biggest association of the city, Mother Teresa. The city does not face any important problems concerning integration of immigrants, segregation, conflicts or violence incidents. There are around 20 associations/groups that offer help and support to immigrants, trying to integrate them into the society, providing education opportunities and representation whenever they face problems to find jobs or to deal with municipal/legal affairs.

Environmental issues and trends

The large volume of waste and the misuse or insufficient management of waste landfills is very crucial. Until recently there were bins for separation of waste, but finally the waste collected was not recycled, but just ended up in dumping places creating sources of contamination; i.e. the Kodra military camp was transformed into a huge dump of furniture, plastic bags, electric appliances, etc.

The intense traffic problem dominates the centre, leading the municipality into collaboration with organizations/initiatives like the "Association for the rights of Pedestrians" to search for solutions: exclusion of private cars from the centre, creation of regional parking lots, construction of additional peripheral roads, aiming to reduce cars in the centre and minimize noise, air contamination and aesthetic pollution created by cars on sidewalks.

In the city centre, the annual average rate of pollutants in 2011 was 54 μg/m³ for PM10 (EU limits exceeded 159 days/year) and 38 μg/m³ for PM2.5. The intensification of the economic crisis and the income reduction reduced the use of private cars for leisure/shopping, but resulted in poor vehicle maintenance and the use of wood for heating, increasing the overall CO2 emissions (Municipality of Thessaloniki, 2012). CO2 emissions in 2000 were 4,500 kt in the prefecture of Thessaloniki (industrial activity 1,426 kt, central heating systems 1,425 kt and transport 1,670 kt). CO2 emissions per inhabitant are relatively high, at 1.9 t caused mainly by heat production for household/office use. The metro will reduce CO2 emissions around 4800 t/year (TGC, 2011).

18.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Assuming that each household consists of an average of two people the water consumption in 2010 was 125 l/person/day, while the respective per capita water consumption for businesses was 3.11 m³/day. Water losses from the network of EYATH are currently estimated at 25%. For this reason, the company has developed strategic system reorganization, which includes, among other things, the gradual replacement of water meters with new meters of greater precision and higher sensitivity on record provision.

Furthermore, the needs of Thessaloniki concerning its public facilities (buildings, gardens, flower beds, etc.) were 782,322 m³ for 2010, which divided by 365 days gives 2150 m³/day. The prices are ranging depending on consumption levels and consumer categories starting from 0.43 Euros/m³ with an average price of around 0.64 Euros/m³ (2012). For industry, public services etc. there are different prices, ranging from 0.8 to 1.1 Euro/m³.

Key issues

The quality of drinking water is good, but the problem concerns the pipeline network that is very old and needs reparations/replacement. This leads to unpleasant taste/smell and complaints from the users, which are led to drink bottled water. Research studies also indicate that the water has quite big percentage in heavy metals from time to time. The percentage of people using bottled water is around 40%, another 40% drink tap water and 20% use water filters in households. Solid particles inside tap water can be observed whenever some construction/reparation to the network occur and availability issues arise during summer because of hard water or drop of the groundwater horizon. The European Commission has recently put the Thermaikos Gulf of Thessaloniki on its “sensitive” list; high nitrogen discharges imperil the coastline with eutrophication. The monitoring system is quite good addressing sources of contamination or deterioration of drinking water quality.

Key actors/partnerships

EYATH

The Greek government, after breaking up the Water and Sanitation Company of Thessaloniki (EYATH) into two parts - the first one responsible for the management/invoicing and the second for infrastructure/maintenance – intends to sell the first one, the most profitable, in a public tender. The company’s profits during the last 5 years were €75 million, while the price of the takeover (after the collapse of its stock market value) is about €55 million.

Initiative 136

Initiative 136, the most active citizens’ initiative opposing the privatization of EYATH, proposes its social management through local-level district cooperatives**.** Goals: acquisition of 40% and management of EYATH by the citizens, social control of the city’s water, democratic operation and non-profit company character, in line with social policies and environmental protection. The overwhelming majority supports

the initiative, which made its first public presentation November 2011. Many cooperatives have already been created in the city, with thousands of pre-signed members.

Key actions/measures/initiatives

Significant amounts of drinking water are used for the irrigation of parks/green spaces, since there is no system for wastewater treatment and reuse**.** The administration secured sponsorship from a large private company and installed in the ten biggest city parks a remote management system, with which they can watch the water flow and potential leaks/failures and get a precise overview of the entire irrigation system. In order to ensure continuous provision of high quality water in the future, the municipality attempts to protect surface and groundwater by encouraging ecological farming.

The “Mediterranean SOS” program provides with a guide on best practices for the sustainable management or urban water. The project “Integrated Coastal Monitoring of Environmental Problems in Sea regions and the ways of their Solution – ICME” deals with the water management of Thermaikos Gulf and the Black Sea; the municipality works in collaboration with Turkey, Georgia and Armenia. This project started at the beginning of October 2013 (budget: 600,000 Euros for the municipality).

Energy

Availability, affordability and consumption levels

In the Periphery of Thessaloniki the total electric energy consumption for 2012 was 4,809 GWh (39% domestic use, 32% commercial, 24% industrial, 2% agricultural, 3.2% public/municipal and 1.5% street lighting) (ELSTAT, 2012). The target for energy reduction within the area of the Municipality of Thessaloniki is estimated at 9,550 kWh or 20.12% by 2020 related to the base consumption of the benchmark year 2005.

The total installed capacity of RES for the production of electricity in the Prefecture of Thessaloniki was up to 151.3 kW in 2008. Noteworthy is the fact that before 2008, there were not any installed RES in the area (the total installed capacity of RES was zero), while today all of these units are Photovoltaic (PV) power plants. The total installed area of solar collectors is 345,000 m^2 (2011), while every year it is estimated that more than 35,000 m^2 of solar panels are installed in the greater area of Thessaloniki. The total installed power of PV of the interconnected system in Greece in the same period amounted to 1,929 kW, which means that the total installed capacity in Thessaloniki accounts for 7.84% of the total installed power. Increasing tendency for RES participation is expected with the enhancement of new investments.

Key issues

Around the year 2010 citizens were encouraged to install photovoltaic panels and sell the energy produced to PPC. The whole idea collapsed due to the crisis and the fact that after making the initial investment, producers did not receive the expected pay off, while the shortage of money and the uncertainty of PV, after the contribution to turnover and increased reductions in the guaranteed prices, led to the "freezing" of the market. As came out of the interviews, the general opinion about energy production from renewable energy resources for Thessaloniki is that it is less than 5% and no significant projects have been undertaken. After spring of 2013 there have been major efforts to restart the PV market and develop conditions for the long penetration in electrical networks.

Full liberalization of the Greek electricity market is demanded by various stakeholders and private energy producers. The main concern in relation to energy for all actors concerned is to provide affordable heating options for winter times while keeping the consumption level low. The plan of the municipality regarding energy includes: CO_2 savings of 6,185 t (20.3% until 2020), renewable energy production by 2020, 16,320 MWh per year (43% of total energy demand by 2020), uptake of biofuels 10%, potential energy saving targets 9,550 MWh per year (which accounts to 20.12%), and in general the energy refurbishment of existing buildings to reduce CO_2 and the gradual replacement of conventional, energy production for heating, by natural gas; best practices applied at public/municipal buildings and schools and then to households.

Key actors/partnerships

Energy production in Thessaloniki is dominated by the state-owned Public Power Corporation SA. (PPC/DEI). Self-organized initiatives focused on energy issues are not common because PPC actually controls all energy issues at regional and local level. PPC's power portfolio consists of conventional thermal and hydroelectric power plants, as well as RES units, accounting for approximately 68% of the total installed capacity in the country. In Thessaloniki, PPC collaborates with the municipality through the commissioning of projects and subsidiary programs for households and public buildings (i.e. solar panels on roofs).

SPIEF - Association of Producers of Electricity from Photovoltaic Thessaloniki

In June 2013 the "Association of Producers of Electricity from Photovoltaic Thessaloniki" (Greek Acronym SPIEF) was established. The purposes of the association are: promote/safeguard the interests of electricity producers from photovoltaic systems, study problems resulting from electricity production from PV and their resolution, defend the economic interests of its members, work with other associations to create a nationwide secondary link to better promote their concerns, represent its members before authorities and media, promote any action aiming at eliminating global warming and protecting the environment.

Natural Gas Supply Company of Thessaloniki SA (GSC)

The Gas Supply Company of Thessaloniki SA was founded in 2000, owned to 51% by the Public Gas Corporation (DEPA) and to 49% by a foreign strategic investor. Up to 2011, the GSC had already constructed 880 km polyethylene pipelines (low pressure) fuelling with natural gas in more than 12 municipalities of Kallikratis[i]. The gas expansion has contributed significantly to reducing CO2 emissions, as new burners replaced the older ones operating with oil.

Key actions/measures/initiatives

Key actions include operations in the improvement of the grid, a campaign by PPC that promotes the reduction of energy consumption, a project in collaboration with the municipality about the aesthetic improvement of the grid (all aerial grid wires to become underground), new NSRF program on controlling energy demand and consumption through internet (250,000 for new gauges) to increase transparency, project about photovoltaic panels on the roof and terraces (60 MW in operation in 2013 on roofs – 3 MW within the urban fabric). In September 2013, the municipality was sponsored with 5,522,152 Euros to implement the project "Bioclimatic upgrading of the Chrimatistirio Square".

Programmes the municipality is boosting through partial subsidies are: “Saving energy at home”, “Photovoltaics on roofs of municipal buildings”, “Energy refurbishment of public schools”, requiring interaction and cooperation between stakeholders.

Green spaces

Availability, affordability and consumption levels

The percentage of green space area in relation to the total area of the municipality of Thessaloniki was only 5.13% in 2012, whereas this figure corresponds to only 2.6 square meters of greenery per inhabitant. There are 483 parks and green “islands” in total, within the city, covering an area of 948,312 sq. meters; they tend though to be concentrated in specific districts, while others have nearly 1 m^2/inhabitant.

Key issues

Common issues that induce friction and conflicts between involved actors are: regeneration/redevelopment of existing green spaces in combination with change of land use, funding, management of empty plots of land, parking spaces and former military camps, vandalism, illegal occupation of land etc. Friction is sometimes created also because many actors involved cannot have an official say on the decisions due to the existing laws and the centrality of the state.

Key actors/partnerships

The relations between the different actors and stakeholders are very dynamic, while there is a well organised, active participation by local entities, NGOs, initiatives, citizens’ groups and associations which have strongly supported the municipality and its bodies or even proposed actions and interventions within the concept of sustainable use of public space. Many of these actors, especially those based on volunteering, are regularly collaborating on specific projects and interact, while the local government tries to engage them in various projects; sometimes there have been conflicts since some of these actors may have their own agenda or may serve political interests opposing the administration´s ones. The local government cannot rely on its own financial resources in order to proceed with the development of a new project and usually has to search for sponsorship and private investments combined with cooperation with NGOs and bottom-up initiatives that could provide them with volunteering work.

“Thessaloniki in a different way”

This citizens’ bottom-up initiative was established to create and promote a different picture of Thessaloniki. Since 2010, 27 actions and interventions on cultural, architectural, social and environmental issues have turned a large part of the agglomeration of the city to a nursery of ideas and innovative proposals. A giant synergy and cooperation of disparate forces, represented by the initiative’s members suggest the feeling of extroversion and creativity that has been developed in the city. The implementation of actions is undertaken by a creative group of people and hundreds of volunteers, which are equally vibrant and active, while the projects range from the regeneration of the old harbour and reforestation to the reparation of the State Conservatory and the rehabilitation of abandoned bridges. This is the greatest creative urban partnership of groups, institutions, private initiatives and volunteers ever in Thessaloniki, showing constant presence and action and commenting on political/cultural/developmental issues, through the free-press PARALLAXI, which belongs to the initiative’s founding members. (Parallaxi, 2010)

"Friends of the New Beach"

The "Friends of the New Beach" was founded in 2012 as a citizens' initiative, following the completion of the ambitious regeneration project that changed the form of the city. The initiative was created by people who love this area and want to protect its environment and show off the fresh project by organizing environmental actions and cultural activities like environmental workshops, tree-planting, movie screenings, Christmas market, informal gatherings/discussions on arising city issues etc. (Friends of the New Beach, 2012)

Greek Green Cities Network

The administration put forward the establishment of the Greek Green Cities Network. The idea came through discussions with other municipalities who have also implemented green policies, and the ascertainment that improvement of the cities´ environment should come from a grass root level through cooperation, knowledge and innovation transfer between cities that face similar problems. Issues addressed: lack of green spaces, air/environmental pollution, waste management, traffic congestion etc. GGCN interacts through: information dissemination, exchange of good practices, participation in European programmes and development of common strategies. The network, which is supported by the Greek branch of the Heinrich Böll Stiftung, aims to attract institutions, NGOs, Universities, unions and organizations, and to collaborate with them in the form of projects. [GGCN, 2012]

Key actions/measures/initiatives

With regard to the 100th anniversary of Thessaloniki's incorporation to Greece, the central government announced a large-scale redevelopment program that addresses environmental and spatial problems, improves the urban space quality, promotes sustainable development and boosts competitiveness. This project includes the redevelopment and change of the use of military camps, the rehabilitation and management of the port and the coastal line of the city, the creation of a commercial city district in the deprived West suburbs, the development of pedestrian-only zones in combination with the redevelopment of roads, etc.

An important part of this program is the already delivered revitalization of the Eastern urban waterfront, called New Beach, with a modern and vibrant design. The whole project features a total of 12 thematic gardens/parks and an uninterrupted promenade, spanning for 3 km along the coast. The whole budget for the Thessaloniki 2012 program (ending 2025) is 30,000,000 Euros. (Ypeka, 2013) Among the projects of the local government is the strengthening of urban agriculture initiatives and the introduction of allotment gardens. There have already been some self-organized urban farming initiatives like "PER.KA." which are operating in neighbouring municipalities (i.e. Kalamaria), while in collaboration with the Aristotle University; the current administration has implemented the urban vineyards.

18.3 Governance and citizens' participation

Multilevel governance

During the last 30 years, the spatial planning system of Greece changed from a centralized structure to a more decentralized one. More power and responsibilities were delegated to regional and local level. The governance and planning system can be characterized by a multiplicity of laws and regulations, predominance of a centralized, regulatory and hierarchical planning style.

Municipalities have responsibility for the administration of their local jurisdiction zone as it pertains to the social, financial, cultural and spiritual interests of its citizens. Responsibilities are limited to public functions, such as technical infrastructure; creation, construction and maintenance of public buildings; urban public transport, health care, environmental protection, cultural activities, etc.

Periphery of Central Macedonia

During the interviews, the rivalry concerning the use of space issues (due to political reasons) between the Periphery and the Municipality came up. This concerned the creation of bike lines along the waterfront, the pedestrianisation of Agia Sofia Street and the use of empty kiosks at the New Beach. Whenever the local government tried to move on with these projects, the Periphery making use of the complex legal and regulatory framework on change of land use and their power to adopt or reject decisions of municipal councils on traffic regulation and management, put a stop to the respective works. The periphery receives delegated power by several ministries, while among its duties is the concretization of national planning guidelines on spatial structure, land use, infrastructure networks and housing/building regulations.

National

The progress to decentralization is slow, because of bureaucratic inertia and ineffectiveness, and the resistance of long established structures to change. Constitutional problems and decisions on the national level obstruct the progress, while the financial dependence of the sub-national levels on the central state also delays procedures. The central government still has the general supervision on the elaboration of regional/urban master plans, statutory town plans, environmental protection programmes, public investments, integrated development programmes etc. (Nagy et al. 2008)

EU

The city participates in various EU programmes; the actual problem is again the heavy bureaucracy. Once an EU project reaches the implementation phase, the procedure to solve bureaucratic problems arising is so long, that deadlines are missed and funds are not absorbed.

Participation and bottom-up action

During the recent years, the city has developed a fairly extroverted character, specifically concerning issues that "bother" the citizens, like the lack of green spaces and traffic. There are organizations/associations/initiatives that deal with these issues, while the citizens can participate also through the city council meetings that take place every week and where they are represented by the elected municipal counsellors. There are no institutionalized forms of direct democracy. Some city councils have no actual jurisdiction. The role of the council for migrants' integration i.e. is actually ornamental and limited to consulting since all migrant affairs are undertaken legally by the Decentralized Administration. Some interviewees still consider the participation quite limited, due to lack of awareness, distrust to the government, complex frameworks or individual interests that dominate.

For the future, bottom-up actions/initiatives could be organized for these issues:

- Traffic/transport management – alternative approaches
- Citizens' groups affected by the crisis
- Increased unemployment rates

- Shop owners directly affected by the Metro construction works

The following groups are relevant for a transition to sustainability:

- Early pensioners
- Migrants
- Students

18.4 Conclusion

Short summary

Thessaloniki is the capital of the administrative region of Central Macedonia, lies on the Northern fringe of the Thermaikos Gulf and is surrounded by a fertile plain. Thessaloniki is renowned for its festivals, art events and vibrant cultural and night - life that attract many visitors every year. The use of the bike has gotten more popular lately, helped by the regeneration projects that have been implemented along the waterfront, but the use of private cars is still extensive, creating air pollution problems together with the central heating of households. The renewable energy resources share in the city is very low, while energy refurbishment of existing buildings to reduce CO2 and the replacement of electrical energy with natural gas for heating are part of the municipality's plans. The quality of drinking water is good, but the old pipeline network leads the citizens to buying bottled water. The city has a significant lack of green spaces, with only 2.6 m^2 per inhabitant. In recent years, the city has developed a fairly extroverted character, specifically concerning issues that "bother" the citizens, like the lack of green spaces and traffic. There are organizations/associations/initiatives that deal with these issues, have constant presence and action on political/cultural/developmental issues in the city and operate extensively through volunteering.

Trends and challenges for the future

- Energy refurbishment of public buildings - Target of 5% of public buildings in 2020 to have zero emissions.
- Transfer of the International Exhibition Centre (hosting the International Fair) out of the city centre - creation of a large metropolitan park
- Increase and protection of existing green spaces (20% increase goal) – tree planting more than 3000 trees per year
- Completion of the Thessaloniki metro project (CO2 reduction 4,800 tons/year)
- Upgrade/improvement of the drinking water pipeline network
- Better management of the gulf and the port
- Reforestation and expansion of the Seih Sou forest combined with improvement of accessibility to it through the Old City and other spots within the urban fabric

[i] Institutional Framework "KALLIKRATIS"

"Kallikratis", aims to strengthen decentralized governance and increase civil society participation. It reformed the administrative environment of Greece, redefined the boundaries of self-government units and yielded institutional responsibilities. The framework reduced the number of municipalities and legal entities by about 2/3, replaced the previous prefectures with 13 peripheries, established decentralized administrations and extended terms of office for all these entities from 4 to 5 years (PKM, 2013). It improved the situation for smaller cities, where villages were consolidated and economy of scale was realized, but in large, urban municipalities like Thessaloniki, it created further bureaucratic problems.

19. Italy – Milano

19.1 General city profile

Background information

Factual data

Milan is the capital of the Lombardia Region located in the Northern part of Italy. The city is located in the Western part of the Po Valley – a fertile plain between the Alps and the Apennines. Many rivers, such as the Olona, the Lambro and the Seveso as well as a broad channel system called the Navigli, flow through the city's territory.

Due to its position on the plain and its distance from the sea, Milan features a semi-continental climate: winters are generally cold and the summers are hot and sultry, while precipitation is moderately high and well spread during the whole year. A typical characteristic of Milan is fog during the winter months which, when particularly strong, causes mobility problems for the city.

The City of Milan in 2011 consisted of 1,242,123 inhabitants and a relatively limited area of 182.1 Km^2 (Istat, 2012). Indeed, an area with 6,822.2 in/Km^2 can be considered as highly populated.

In reality, the part of the regional territory which is associated with the city is much broader and it carries on further than the administrative borders for several kilometres: particularly towards the North and East presenting an urban continuum which assimilates other municipalities' territories. The relationship between the first municipalities which surround the City of Milan- called the First Belt – and the city itself is so strong that the whole territory can be considered as one city.

The reason for this strong tie does not only originate from the continuity of the built environment, but also from the fact that a large part of the population living in these municipalities actually works or studies in Milan where they use the city's services on a daily basis.

This territorial pattern is both the result of challenges the city has been facing and in itself generates other critical situations. Indeed, the city has to deal with high housing prices that are pushing several social classes toward the external areas and with high traffic levels – which according to many interviewees is Milan's biggest problem – caused by the commuting phenomena.

While the North and East areas are highly urbanized, to the South Milan is bordered by the "Agricole Park", an area dedicated to agriculture established by Lombardia Region.

Basic government/administrative structure

The city is run by a centre-left coalition since 2011. It is noteworthy that citizens' associations and bottom-up initiatives have actively supported the election of the current mayor through the so called "orange revolution", a term that refers to a political change backed by civil society.

Economic conditions

Milan's economy is prosperous and dynamic, above all if compared with the rest of the country. For example, in 2011, the city had an average annual income of 34,964.09 €: the highest in Italy (dell'Oste, 2011). Moreover, the city also has the highest number of enterprises, as much as 284,846, and one of the lowest unemployment rates, only 29 out of 100 people between the age of 20 and 64 were out of work in 2012 (Istat, 2012). The unemployment rate in Milan was 8% in 2012. In addition, the city plays an important role in the national economy hosting the Italian stock exchange.

The employment structure for the Province reveals a local economy highly centred on the service sector which employs 72.49% of the total work force, followed by a less predominant but still active industrial sector with 27%. With 0.51% of the population employed in the agriculture sector (Province of Milan, 2011) one can see the marginal relevance of this area despite the presence of the Padana Plain.

Local lifestyle

Milan's inhabitants constantly seem to embrace a lifestyle more compatible with and supporting of sustainability.

To begin with, evidence of this is provided by the success of recycling collections which today involve 37.2% of the total waste produced in the city (Legambiente, 2012) and which thanks to the push provided by specific policies should reach 50% in 2015.

Another important signal is the organisation in 2011 of a city referendum pursued by a large consortium of citizens' associations which focused on five environmental topics. Thanks to high levels of citizens´ participation the five referendum questions reached the quorum and now the city's council is committed to reduce the amount of traffic, reduce the consumption of land and offer more green areas, improve energy efficiency and limit emissions as well as integrate in the city green areas the agricultural park which will be created for the Expo 2015.

However, the same referendum result is a sign of how certain practices are more difficultly adopted: the first question involving the extension of areas closed to cars did pass but got the lowest number of positive votes compared with the other four.

In fact, car dependency and the resulting traffic are one of the most important challenges that Milan has to face. In reality, thanks to widespread public transport, only 53 in 100 inhabitants own a car (Legambiente, 2012). What actually hinders Milan’s sustainable mobility is the high commuting rate directed toward and coming from the neighbouring municipalities and its being a hub for logistic services: elements that make the resolution of the problem more complicated.

Nevertheless, in recent years through brave policies pursued by the municipality such as eco-pass, a street pricing system recently changed into a congestion charge; traffic in the city centre decreased by 30% (Interview actor 1).

Other actions, in partnership with the Province of Milan and the Lombardia Region, aimed at empowering public transport modes between the different geographical areas will help in addressing this issue.

These actions also positively affected the air quality, another substantial problem for Milan. Throughout 2008-2010, the quantity of days on which levels of polluting substances exceeded the enforced health

limit constantly decreased, such that at the end of this period the value was passed on only 53 days. However, due to its unfortunate geographical location, the days rose to 137 in 2011 and in 2012 the limit was passed on 107 days (Istat, 2013). Indeed, the Padana Plain obstructs air currents leading to the retention of polluting substances and the creation of fog that in turn bonds with the polluting substance further decreasing air quality.

Key challenges and trends

Economic issues and trends

The city owes its current economic prosperity to its ability to overcome the difficult de- industrialisation process it had to face in the 1970s and the ability to redirect its economy towards other sectors such as financial, media and fashion.

However, the city's industrial heritage is still visible in the 1100 ex-industrial sites (Siemens, 2010) that with their regeneration and required reclamation represents at the same time one of Milan challenges and economic opportunities.

Indeed, the possibility of brown field development is re-invigorating the city's building sector, once one of the most important drivers of the local economy. This sector lost its importance - after having contributed to the consumption of much of the land and green areas available in the city – in part because of the scandals of corrupted tendering processes, called Mani Pulite (Clean Hands) which emerged in the 1990s and which involved the local and national political class.

This sector, along with the city's economy, will have the opportunity to be revived thanks to the International Exposition which will be hosted by the city in 2015 and which will focus on how to feed the planet.

The realisation of the infrastructure and the management of the large numbers of people which will be attracted by the international event have been identified by some as providing not only possibilities but also challenges to the city.

Social issues and trends

Thanks to its positive economic situation, Milan has been the destination of strong immigration flows, from the South of Italy in the 1970s and now from the all over the world. 588,197 is the number of foreign families, 18% of the total population, which reside in the city today (Istat, 2012). Although perceived largely as a resource, the high number of immigrants from different countries presents considerable challenges to integration and social cohesion. The evidence of this could be found in some areas of the city mainly inhabited by migrants, where inter- ethnic tensions do sometimes arise. According to a report from the Milan Chamber of Commerce, considering a poverty line drawn at 1,398 Euro for a family of two, 17.3% of families in Milan might be considered poor (Carino and Scarcello, 2009)

19.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Every indicator related with water in Milan outlines a positive situation, starting from the high quality of water provided by groundwater sources, which is tested several times per day. Not only is the water provided to 49,400 households (Siemens, 2010) of great quality, but it is also largely affordable. Indeed, although the average water bill increased by 16% from 2007 to 2012 (Cittadinanzattiva, 2013), Metropolitana Milanese offers one of the cheapest tariffs in the country with an average annual cost for households of 223 Euro (Metropolitana Milanese, 2013).

Furthermore, household consumption levels and network leakages show positive trends.

The daily water consumption decreased by 6.9% from 1998 to 2008, changing from 463 litres to 431 litres per inhabitant (Siemens, 2010), while thanks to company investment in the water infrastructure, only 11% of the total water input in the system is lost (Cittadinanzattiva, 2013).

Key issues

However, the city has to face the serious problem of heavily polluted surface water, above all of rivers such as the Lambro that for years collected the entire city's industrial waste. The pollution was largely determined by the lack of the necessary purifying system which the city adopted only in 2006. Because of the dramatic environmental situation affecting the river, in 2001 the City of Milan had to face a civil trial led by Legambiente - an Italian environmentalist association - and towns affected by the Lambro's path.

Key actors/partnerships

Since 1999, the whole integrated urban water management has been entrusted by the council to the Metropolitana Milanese (MM), a company completely owned by Milan's public administration which previously managed only the city´s metro system and other engineering works.

Key actions/measures/initiatives

The city worked hard to close its purifying system gap and its effort has been repaid by the surface water improving its environmental situation.

In addition, the city and the local water utility are proposing campaigns and actions to raise the awareness of the high quality of tap water. For example, from this year Milan citizens can find in the city the "water houses", stalls which provide tap water in bottle both still and sparkling.

Energy

Availability, affordability and consumption levels

The City of Milan shows an energy consumption level lower than the Italian average for several energy sources. In 2009 annual fuel consumption for Milan was 413 Kep/inhabitant/year, and in 2008 energy consumption was 1145 kWh per inhabitant, both slightly lower than the country's average. Only methane gas for domestic consumption, which registered 425 m^3 per inhabitant, was higher (Siemens, 2010).

The company differentiates energy prices between domestic and small-medium size companies – to which it grants lower prices – and larger businesses. The price for the first group is 0.07841000 €/kWh if the total annual consumption respects the 1800 kWh/year level (A2A, 2013b).

Key issues

Milan presents a paradoxical situation regarding energy consumption: some parts of the city are highly technological with the most developed energy savings measures in the country, while other areas dispose of obsolete heating systems.

For example, it is estimated that almost 7,000 in 30,000 heating systems (Siemens, 2010), so more than 23%, work on diesel oil. This coupled with Milan's cold winters which render the use of heating systems indispensable for many hours of the day, lead the city to higher energy consumption levels than it would otherwise reach.

Key actors/partnerships

One of the main actors concerning energy issues in the city is A2A S.p. A. The company was originally founded in 1898 by Milan's council to face the "electric issue" and allow the city to be independent in electricity production from the economic requests of the national company. The current company structure was set up in 2008 with the fusion of Milan and Brescia local utility. Today A2A is the second most influential company in the Italian energy sector and is also active at the international level.

The City of Milan is deeply involved in the city's energy landscape. It owns 27.456% of A2A market stock and appoints 6 members of the company's Monitoring Committee. In addition, through its commitment to the Covenant of Mayors, the municipality is proposing several policies aimed at providing energy in a more sustainable way (A2A, 2013).

The City of Milan works towards this end in partnerships with the Province of Milan and with the Lombardia Region.

Key actions/ measures/ initiatives

The council actively tries to improve the city´s energy situation through several actions and partnerships.

First of all, it tries to address the issues of obsolete heating systems starting from its own plants, replacing all its diesel oil heating systems with methane ones or with district heating.

In fact, another important action experiencing success is district heating. In 2010 already 143 km and 200,000 inhabitants were served by district heating with estimated savings of 250.00 CO2 tonnes per year (Siemens, 2010). As called for by the City Sustainable Energy Action Plan, the city aims at increasing the district heating network and the production and consumption of renewable energy through tenders in the public sector.

In addition, there are several initiatives that have been introduced to encourage the private sector in this direction: an energy office was set up for each city district in order to provide information on energy-related issues and a building code - pushing for higher energy efficiency standards and facilitating the production of renewable energy - was approved.

Also worth mentioning are the measures in the mobility sector which will have a positive impact on the city´s energy consumption such as the revamping of public transport vehicles and the empowering of the transport system.

Many of the actions mentioned above were also decided upon through the participation of citizens and stakeholder of the energy sector.

Green spaces

Availability, affordability and consumption levels

As expressed by several interviewees, large-scale urban expansion in the 1980s and early 1990s dramatically reduced the green areas available in the city, resulting in only 16.4 m^2 of public green space being available per inhabitant in 2010 (Siemens, 2010).

Despite reduced quantity, the city offers a diversified set of green spaces: 37% of total public green space is made up of large parks, 28% by neighbourhood parks, 18% by public gardens, 12% by urban gardens and 4% historical parks (Comune di Milano, 2013).

Allotments are another important feature of Milan's green spaces. Allotments have long since been present in the city's urban landscape: they already existed in industrial workers` residential areas at the end of the XIX century and many illegal sites were started by immigrants from the South of Italy in the 1970s. This tradition coupled with new interest of citizens is making allotments ever more common, and in 2013,381,110 square meters were cultivated in the city, probably even more, considering that many sites are not declared to the public administration.

Key issues

According to some interviewees, a first identifiable issue is that the largest parks - such as the wood managed by the association mentioned above – are not easily accessible by public transport or by cycle paths, making their usage more difficult.

Another set of issues involves the actions undertaken by the council in this sector.

First of all, the same interviewees outlined how, although the square metres of green areas available for inhabitants rose, this was hardly perceivable. Indeed, the majority of the square metres were created by private actors' actions as compensation for their building permits.

Moreover, the criteria used by the municipality to appoint the usage of public allotments which privileges low income and elderly people are excluding a large part of the inhabitants from the possibility of enjoying a public allotment. Thereby, private businesses saw the economic opportunity to offer allotments to the city's middle class, who were also attracted by the better equipment found at the private allotments. Unfortunately, this social stratification of urban allotments could hinder the social function of the green areas.

In addition, the "GrowMi" initiative, although praiseworthy for its intention to increase the allotment numbers and citizens' participation, has been implemented with methods more appropriate for business tenders than for association's participation. As such, this kind of measure may foster competition between associations more than the needed cooperation.

Key actors/ partnerships

Many actors are involved or would like to be involved in green spaces management.

From the municipality's side, the Urban Planning Department plans the green spaces while the office of Green services, partly through an innovative informatics system, overviews the management which is mainly externalized to private companies.

Citizens associations and private businesses are instead consistently pushing the topic of urban food production, self-organising allotments or campaigning towards having the municipality increase their number.

Key actions/ measures/ initiatives

The council recognized the need for more green areas in the city and it promoted green area creation through the City Development Plan. Indeed, even though the actual level of public green space that is available per inhabitant is still low, it has increased by 7.7% compared to 2004 (Siemens, 2010).

In addition, the municipality is trying to satisfy the citizens' requests for more urban allotments and the associations' demands for more participation through an initiative called "GrowMi". The initiative calls for 9 areas totalling 25,000 m^2 to be transformed and managed by associations in allotments (Comune di Milano, 2013 b). The associations which wish to participate have to apply and the council is going to declare the winners.

The Milan citizens' associations are very active in the context of green spaces. For example, an association manages a wood at the periphery of the city for the municipality and many bottom-up initiatives are advocating for the creation of allotments.

The increase in the number of urban allotments is also due to their provision by private businesses which saw in this sector an economic opportunity.

19.3 Governance and citizens' participation

Multilevel governance

Multilevel governance seems to work properly in Milan as long as only the most local levels and only some topics are considered.

On one hand, the City and Province of Milan and the Lombardia Region all seem to share all the same goals concerning sustainability and are willing to collaborate for the creation and implementation of environmental policies. The actions undertaken in the mobility and energy sector can be considered a perfect example of this.

On the other hand, according to some interviewees, collaboration on social topics such as integration policies which will be much needed in a city as diverse as Milan could be more difficult due to the differing perspectives of the regional and city councils.

Conversely, the national state is instead felt to be completely missing from the multilevel governance structure and thereby hindering by its absence the proper realisation of certain sustainability policies at the local level.

In this context, the European level is perceived as proposing the general framework which is not provided by the State. Not only are its general policies appreciated, but also its ability to fund specific projects orientated to sustainability which has pushed the city in the right direction.

Participation and bottom-up action

Participation

The local administration seems to be committed to increasing citizens' participation in all aspects of political life.

This commitment partially originates from the fact that the present mayor and council have been supported from the beginning by citizens' associations in election and is aware of owing victory largely to them.

At the same time, the municipality is trying to increase the level of participation in the decision-making process because it recognizes this as the first step in enforcing brave and innovative policies. For instance, participation procedures were set in place particularly for delicate issues related to mobility such as the closing down of access to cars in certain areas.

Bottom-up action

Citizens in Milan seem to be very proactive and creative.

There are many bottom-up initiatives which aim to adopt and support a more sustainable lifestyle: from building cooperatives, which want to regenerate abandoned parts of the city, to ethical purchasing groups.

Particularly relevant in the city are the bottom-up actions undertaken around the self-production of food, which thanks to their quantity and visibility are sending a powerful message to the municipality about the need of more public allotments in the city.

Unfortunately, as admitted by some interviewees, despite their numbers they do not always manage to be visible to the rest of the population and to the municipality.

19.4 Conclusion

Short summary

Milan is the capital of the Lombardia Region located in the Northern part of Italy. The city is located in the Western part of the Po Valley – a fertile plain between the Alps and the Apennines. Both the municipality and the citizens seem to be strongly committed to sustainability values and to be ready to shape the city in a more sustainable way.

However, this intention is obstructed in practice by the city's past and by its geographical location.

For instance, the fact of being located in Po Valley negatively affects the resolution of one of the city's biggest environmental problems. Due to the lack of air change and the presence of fog, even the brave mobility policies undertaken in the last years - enjoying the support of parts of the population -struggle to tackle the high level of air pollution.

In addition, the city's industrial past is raising several challenges to the city's sustainable future, as shown by the significant pollution of surface water and by the large amount of sites which need reclamation strategies.

In order to overcome these challenges and move forward on the path to sustainability, the local government and citizens should collaborate to an even greater extent. Indeed, the two parties are already very active in sustainability topics and by joining force they may secure impressive results.

Trends and challenges for the future

- Offer affordable housing inside the city in order to invert depopulation and urban sprawl trends
- Improve the coordination between the different local governments to organise an effective public transport system and decrease the traffic levels of commuters in the city
- Implement integration policies to improve the city's social and ethnic cohesion
- Push existing policies and create new ones aimed at improving the quality of air
- Implementing all policies and actions called for in the Sustainable Energy Action Plan
- Further action for the reclamation of the Lambro river
- Strengthening green spaces policies, managing to increase the available areas for citizens
- Improve collaboration and facilitate existing bottom-up initiatives
- Make the most of the opportunities offered by the Expo 2015 while reducing the possible environmental damages connected to the event (land consumption, resources overuse)

20. Italy – Napoli

20.1 General city profile

Background information

Factual data

The City of Naples is the capital of the Campania region - located in the Central-Western area of Italy. The city lies in the centre of the Gulf of Naples and is surrounded by two volcanic regions: the Flegrei Field to the West and the Somma-Vesuvio to the East.

Naples has a Mediterranean climate with mild, wet winters and warm, dry summers which are in each case refreshed by the sea breeze coming in from the Gulf. On average, the city has 250 days of sunshine, thereby showing great potential for solar energy development. Due to the combination of coastal and mountainous areas, the city offers different micro-climates: the most distant neighbourhoods from the sea have a more continental climate - as do the ones located on the mountain side - than the ones located on the cost.

Naples' city centre is an UNESCO world heritage site and is characterised by the high density of construction and by the existence of two ex-industrial areas relatively nearby. The density of buildings does not decrease much in the city's external areas. In fact, there is often not a natural distinction between the City of Naples and the neighbouring towns given the constantly built environment between them.

In 2013, the city´s inhabitants were 959,052 spread out on 119.02 km² (ISTAT, 2013). The population is decreasing relentlessly after a period of growth between the 1950s and 1970s. However, the city has a young demographic structure, with a positive ratio between the population over 65 and that younger than 15.

Basic government / administrative structure

The administration is structured into 12 departments. The addition of a section focusing on common resources to the urban policies department is noteworthy.

To facilitate its governance, the city is divided into 10 districts which usually incorporate several neighbourhoods. Through the districts, the councils decentralise functions such as the maintenance of local facilities, social assistance, activities of local relevance regarding schools, culture and sport, and administrative services of local interest.

The current mayor and council were elected in 2011 as part of a left coalition.

Economic conditions

The public services and public administration, which employ 30.7% of the population, are particularly important for the Province of Naples (Camera di Commercio di Napoli, 2013 data 2005). The manufacturing and commerce sectors follow with 18% respectively 14% of the workforce employed (Camera di Commercio di Napoli, 2013 data 2005). Both sectors are made up mainly of small enterprises.

The success of the commerce sectors also depends on the flow of tourism. Indeed, natural resources as well as climate, culture and tradition make Naples and its surroundings an area of great touristic appeal which offers 57,000 beds and attracted 10.3 million tourists in 2005 (Camera di Commercio di Napoli, 2013).

Related to the tourism sector - and an important aspect of the city´s economy - is the port and its activities. Its relevance is easily explained by the 370 enterprises and 5,200 employees that are involved in the port of Naples and by its yearly turnover of about 516 million Euros (Camera di Commercio di Napoli, 2013 data 2005). Besides the embarking and disembarking of goods such as mineral oils, minerals, food, machines and vehicles, the tourist traffic in the port amounted to more than 9 million passengers in 2005 (Camera di Commercio di Napoli, 2013 data 2005). This kind of cruise-related tourism is considered to have a negative impact on the city´s sustainability without providing significant economic advantages. In fact, in many interviews it emerged that this kind of tourism - where the passengers sleep and eat on the boat- only consumed natural and economic resources without really supporting the local economy.

Local lifestyle

Naples has been facing several challenges related to its citizens' lifestyle and mentality that negatively affect its urban sustainability.

Low levels of recycling coupled with inefficient waste management led from 2008 until recently to the city experiencing many so-called “waste emergencies” – a phenomenon which describes the city’s streets being full of garbage because of the lack of collection and sites where to treat it. According to many interviewees, these crises were instrumental in awakening citizens’ social consciousness, which led many citizens and associations to self-organise the cleaning of the streets.

The emergencies helped citizens to understand the importance of recycling, and as such this practice doubled between 2004 and 2010 reaching 26% of total waste produced being recycled (De Maddi, 2013).

Unfortunately, waste management in the Campania region and particularly in the areas surrounding Naples involves organized crime and the illegal disposal of industrial waste, coming from factories located in the whole of Italy. An unclear but substantial amount of heavy metals, industrial waste, chemicals and household waste has been dumped and buried or burnt in the area that stretches between the City of Naples and the City of Caserta – an area now known as “the land of fire” because of the gas that the land emanates. Even more alarming is the fact that many of these substances were buried under cultivated fields.

This criminal practice has led to severe soil and air pollution that is thought to contribute at least partially to the two-year lower life expectancy of Naples' citizens compared to the rest of Italy. This can be further seen in the higher frequency of cancer in the citizens between 20-64 years old: 13.5% for men and 9.5% for women compared to 10.4% and 7.8% for the rest of Italy (ISTAT, 2013).

Besides the effects of burnt waste, high levels of traffic increases the air pollution and has contributed to Naples exceeding healthy air quality limits for 62 days in 2011 (ISTAT, 2013).

In fact, in 2012 not only did Naples have a vehicular density of 4,714.46 car/Km², but also 30% of its total car stock was of the most polluting kind (Euromobility, 2011). The situation is slowly improving thanks to

municipal investments in the public transport infrastructure and in car- and bike-sharing services being set up by citizens' associations with the municipality's support.

Key challenges and trends

Economic issues and trends

According to Naples' Chamber of Commerce, the local economy is characterised by recession trends. The gravity of the situation changes according to the sector, for example sectors depending on internal demand such as commerce, building and real estate sectors are those more hit, while industry related to exports and tourism sectors register a minor loss. In fact, the number of hotel rooms occupied during the summer of 2013 decreased only by 1.3% compared to summer 2012 (Napolitoday, 2013).

In general the crisis is deeply felt in Naples: 687 companies closed down in 2012 - 411 more compared to 2010 - and as a result the GDP per capita of the Province is 14,600.00 Euros. This constitutes a decrease of 7.9% compared to 2010 (RadioCcr, 2012).

Although commerce shows signs of crisis, it is important to report that neighbourhood-based small businesses resist the crisis well. In 2012, the number of these shops was 45 per km², exactly as in 2007 (ISTAT, 2013), demonstrating the importance that these shops hold in the social life of inhabitants.

Obviously, the closing down of many economic activities has had a negative effect on the unemployment level which reached 31.39% of the population in 2013. Youth unemployment is particularly high, reaching 47% among 25 to 29 year old (City of Naples, 2013). However, taking an unknown number of people into account that work informally means the number is probably lower.

The municipality is trying to increase job opportunities, above all for young graduates, through the Smart-City framework which encompasses projects aimed at attracting innovative and competitive businesses.

20.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Neither Naples nor its surroundings are rich in drinkable water. Hence the city is relying on neighbouring regions such as Lazio and Molise to provide water through long distance pipes built in the 1980s.

Some interviewees considered this as a positive factor which granted Naples good quality water. In fact, if Naples had drinkable groundwater resources, they would likely be contaminated by the illegal dumping of waste.

Although the majority of the water consumed in the city comes from a large distance, it is still largely available and affordable. For example, in 2008 daily water consumption per inhabitant in Naples was 160 litres (Legambiente, 2012). This is still high despite a decrease from 299 litres in 1999 (Cittadinanzattiva, 2013).

Although the water consumption levels seem to have been falling, households in Naples have seen their average annual water bill increasing by 7.7% from 2007 to 2012, when it reached €225 (Cittadinanzattiva, 2013).

The rise in prices did not involve lower income families, which can apply for special tariffs: constituting further evidence of the availability and affordability of water in Naples.

Key issues

Although this transformation was strongly supported by different actors, especially citizens, several interviewees with different backgrounds expressed doubts about this action. The main issue that they identified was that in this way the water management in the city has to do without private financial capabilities and rely solely on the restricted economic resources of the council.

Another indisputable issue is the water loss caused by leakages which increased from 23% in 2007 to 24% in 2011 (Legambiente, Ecosistema Urbano 2012, through Cittadinanzattiva, 2013). This is a critical issue given the high level of water consumption coupled with the fact that Naples and the associated region lack their own water resources and have to rely on other regions. In fact as noted by some interviewees, if the available water decreases in the supplier regions, they will understandably prioritize their own internal needs, thereby hindering Naples' supply. Therefore, Naples should definitely invest in water infrastructure and in limiting water consumption levels, as well as developing intelligent water irrigation systems and rain water collection systems: actions completely absent at the moment.

Key actors/partnerships

The main actor in the water sector is the municipality in two forms: Firstly, with its ability to draw up policies on water issues and secondly, through the water utility company ABC of which it is the sole owner.

Key actions/ measures/ initiatives

One of the most important actions undertaken in the water sector is the transformation of the local water utility from ARIN, a stock action company, to ABC, a corporation governed by public law. The change took place after the national referendum in 2011 which decreed that water had to be managed publicly across the country. The referendum was instrumental in the full application of this law in the city, the only city to fully apply it in Italy, also due to citizens´ associations vigorously campaigning in this direction.

The company´s new name, Acqua Bene Comune (Water Common Resource) clearly expresses how the council intended to manage this resource. In fact, within the new arrangement the company's board of directors is composed of three specialists and two representatives of environmentalist movements and a monitor commission composed of costumers and workers of the company will be formed.

Energy

Availability, affordability and consumption levels

Despite gas energy consumption levels being characterised by fluctuating trends, overall they increased through the 2000s, reaching 246.5 m³ per inhabitant in 2011 (Camera di Commercio, 2013)

Similarly, electric energy consumption rose between 2006 and 2009 even though the number of users remained basically constant.

It is interesting to note how the inefficiency of the transport sector, outlined above, is translated into its consuming the majority of energy compared to other sectors. In fact, transport is responsible for 45% of total energy consumption while residential buildings consume 32% of energy and the tertiary sector 18% (Città di Napoli, 2012).

This results in the transport sector being responsible for 39% of the CO_2 emitted by the city in 2005, compared to 31% for the residential and 24% for the tertiary sector, (Città di Napoli, 2012).

The local production of renewable energy is still low and does not use the great potential of the city. In 2005, the energy produced with solar sources amounted only to 26700 MWh while wind power did not contribute at all to city energy production (Città di Napoli, 2012).

Regarding the price of energy in the city, with Napoletanagas gas offering gas to its clients for 31.20 € fixed cost plus €/mc 0.28 (Gandini, 2010), and Enel having a general price of 0.24 €/kWh (Consulente energia, 2012) it is possible to consider energy largely affordable in Naples.

Key issues

Despite an expressed willingness by the city council and the SEAP to involve citizens, it has been stated that so far their engagement in this topic has been quite limited. This caries the risk that citizens, if not involved in the preparation of policies, might oppose the implementation of the energy strategies.

As reported by an interviewee, another issue is the difficulty faced by associations in terms of dealing with a large and international company such as Enel.

Key actors/partnerships

Enel s.p.a is the main electric energy provider in Naples. It is also the largest Italian company in the energy sector: it manages the majority of the Italian electric grid and generates energy through thermoelectric and renewable sources. Meanwhile, Napoletanagas is the main provider of gas. The company was founded by private investors in 1862 with the specific goal of providing light and heating to Naples with gas.

The city council, although it is not directly involved in any of the companies that provide energy, has an important role to play in energy issues. For example, through the development of the Sustainable Energy Action Plan, the city council has the means to heavily influence the energy landscape in the city.

Furthermore, citizens' associations are engaged in the energy field through initiatives aimed at reducing the city's oil dependency.

Key actions/ measures/ initiatives

The main actions in this field have been captured in the Sustainable Energy Action Plan (SEAP) framework – elaborated by the council after having joined the Covenant of Mayors movement in 2012. The council believes that through the support of civil society and the economic sector, a 25% CO_2 reduction instead of 20% will be reached compared to 2005.

Following the analysis that identified the transport sector as particularly energy consumptive, many actions will be focused on this sector. The development of the metro, an increase in pedestrian areas and the creation of cycle paths are a few of the actions that have been implemented in this sector. A car and bike sharing program organized by two citizens' associations should be operative in the near future.

The council also intends to encourage the production and use of renewable energy. For example, it covered 42 municipal schools with solar panels. Other initiatives of this kind are planned for metro stations and in peripheral neighbourhoods; while the difficulty of acting in the city centre due to its protected status prevents this area being included in renewable energy actions, even though it is a target for energy efficiency programs.

Green spaces

Availability, affordability and consumption levels

Naples suffered both after World War II and after the earthquake that hit the city in the 1980s of a great building speculation. The consequence was intensive building activity on the hills and in high concentration in the city centre which dramatically reduced the green spaces in the city and filled all the empty land with buildings.

Today, 3,398,550 m² is the total amount of green space in the city (Comune di Napoli, 2013), and the high building density poses significant difficulties to its increase. In fact, public green areas were 27.9 m² per citizen in 2004 and 29.5 m^2 in 2009: a slight increase largely caused by the decrease in the population during the same period (ISTAT, 2013).

The limited amount of public green areas is compounded by the fact that it is not distributed homogeneously through the city: while the external areas offer more public green spaces to their inhabitants, the city centre is almost without any. According to interviewees, the city centre contains private gardens belonging to churches that could help to improve the situation if an agreement to keep them open for some hours per day was found.

On the other hand, the city offers many types of green spaces: from historical villas - 3.5% of the whole municipal area - to woods such as Capo di Monte and small neighbourhood gardens.

Key issues

A primary issue can be identified in the lack of economic resources that does not allow the municipality to properly maintain public green spaces, resulting in their decreased quality. Economic constraints prevent the municipality from undertaking much-needed actions to increase the number of public green areas.

In order to address this problem, the municipality encouraged the inhabitants to "adopt" a green space and provide for its maintenance. Although the initiative was a success and it was very much appreciated by private businesses and citizens' associations alike, some interviewees noted the financial commitment necessary to properly maintain a green space. As such, the majority of associations could not participate, and the majority of the areas were adopted by private businesses. In addition, for some interviewees the public green areas were a too precious resource to let their quality be determined by the ability and willingness of private citizens to care for them.

Another issue is the low number of allotments in the city, contrasting the increase in demand for them. According to some interviewees, given the contamination of cultivated fields (see sections above), citizens do not trust the provenance of vegetables and fruits and an increasing number of people wish to be able to grow their own.

Key actors/partnerships

The council, through its Garden Services Department, is the main actor regarding green areas in the city. It demands the maintenance or the realisation of some projects to private companies through tendering. Recently, citizens, private businesses and citizens' organisations have been involved in green area maintenance.

Key actions/ measures/ initiatives

One important action that has been undertaken is providing citizens, private businesses and citizens' organisations with the possibility to adopt a public green space. The initiative stemmed from the municipality's economic difficulties in maintaining them and from the citizens´ willingness to practically participate in the city's activities and to improve the condition of the green spaces surrounding them. The initiative was launched in 2011 and now 107 public green spaces of different sizes are managed by citizens (Comune di Napoli, 2013).

The council would also like to proceed with large regeneration programs of the ex- industrial areas where it would be possible to reserve a prominent role for green spaces. However, at the moment, the municipality does not have the economic resources to implement these kinds of projects.

20.3 Governance and citizens' participation

Multilevel governance

All interviewees agreed in stating that the City of Naples had enough independence from other levels of government to formulate its own policies in the sustainability field regarding its own territory.

Regarding the national state, in many interviews it emerged that the lack of legislation concerning sustainability topics hindered proper collaboration with other levels of governance such as the Region and the Province. Indeed, when present, national policies were perceived as positive – such as in the case of economic incentives provided to cover private houses with solar panels, which is thought to have helped to increase the amount of solar energy consumed in the city.

Some interviewees reported that there were implicit pressures against the transformation of the water utility into a company under public law from higher governance levels such as the Region.

Even though the national level does not actively limit the city, the economic restrictions imposed on the city through the pact of stability – a pact that all Italian local authorities had to agree on - drastically limit the amount of available economic resources and how they can be used.

Similarly, in the case of the European Union, even though its guidance on these topics is highly appreciated, it is the financial side that the city finds more difficult. That is, many interviewees find the EU funding system not suitable for the city mainly because of the high standards of access.

Participation and bottom-up action

Participation

Citizens` participation seems to be the key word of all the municipalities programs and actions. Indeed, citizens´ participation has been the strong point of the present administration which satisfied the need of a large part of Naples' population to be more involved in the city's activities and decision making.

In the specific case of Naples, citizens' need and will to participate increased definitively after several cases of corruption in the managing of common resources. Therefore, citizens' participation in the city is usually perceived as a way to grant the openness and legality of the process. The municipality satisfied this need by putting in place several channels for the population to participate in the city's decision-making process.

First of all, the municipality has established the Citizens' Boards along the lines of existing administrative departments. Citizens, associations, networks, etc. can enrol online to a specific board and then attend the meetings of the board where they will be informed of the department activities and will have the opportunity to formulate recommendations and suggestions.

Second of all, the city is setting up participatory budgeting which potentially will rest at the district level in order to involve a larger portion of the population.

In addition, the city, in response to the request of citizens, provides the opportunity to get directly involved in the maintenance of the city commons, such as public green spaces.

Although all the interviewees seemed to appreciate the opportunities available for participating and judged them to be a significant improvement, some believed them insufficient to allow the full participation by citizens. For instance, according to some, the decisions of the Board of Citizens should compulsorily be discussed in the city council.

Bottom-up action

Many bottom-up actions stemmed from the city's experience during the "waste emergencies". For example, a large group of citizens self-organised the collection and disposal of garbage. According to many, the emergency had an important role in awakening the citizens' interest in their own city and their will to participate in its governance. Indeed, some of the associations involved in the street cleaning are now involved in other projects promoted or supported by the municipality such as bike-sharing.

In general, it is possible to say that in Naples the population is more prone to participating in processes launched by the municipality or campaigning to the municipality in order to start a participation process than in starting bottom-up actions of their own accord.

The case of the green areas is exemplary: while there are few citizens' organisations that autonomously manage green areas or that started city allotments, many replied to the council's call for green space adoption (see above sections) or are campaigning to the municipality to increase the number of allotments.

20.4 Conclusion

Short summary

The City of Naples is the capital of the Campania region - located in the Central-West area of Italy. The city lies in the centre of the Gulf of Naples and is surrounded by two volcanic regions: the Flegrei Field in the West and the Somma-Vesuvio in the East.

The city, after having faced critical moments such as the “waste emergency” and several corruption scandals, is experiencing a general social awakening. This is embodied in the municipality committed to the improvement of quality of life and sustainability in the city and citizens´ increasing interest and participation. Indeed, there are many initiatives demonstrating the collaboration of the municipality and citizens' organisations in various fields. Examples include the car- and bike-sharing projects in the energy consumption reduction framework as well as in the adoption of green spaces by citizens. Furthermore, the transformation of the water utility company, opposed by the region, was carried out with citizens’ support.

However, all the projects planned by the council have been limited in their implementation until now by the deep economic restrictions the city is experiencing.

Economic restrictions that are imposed partially by the higher levels of government and the lack of support are the main obstacle to fruitful multilevel governance in the city.

Trends and challenges for the future

- Implementing the sustainable management of waste, enhancing recycling and composting in order to avoid further waste emergencies
- Implementing the sustainable mobility strategy, enhancing public transport and implementing the car- and bike-sharing program
- Setting up awareness campaigns to facilitate a change of mentality on recycling and mobility
- Implementing actions presented by the Sustainable Energy Action Plan
- Reducing water consumption, investing in water infrastructure and in finding new solutions for water provision
- Increasing the quality of green spaces, improving citizens' adoption of green spaces, as well as increasing their number
- Finding the economic resources to implement projects
- Regenerate ex-industrial areas
- Enhance tourism and develop it following a more sustainable model
- Empower and restructure the city’s local economy focusing on innovation

21. Italy – Roma

21.1 General city profile

Background information

Factual data

Rome is both the capital of the Italian state and of the Lazio region which is located in the central-Western part of the country. Rome had officially 2,638,842 inhabitants registered in 2013 (ISTAT 2013). The number of citizens has remained rather stable in the years, with only a slight increase of 2% from 2005 to 2009 (Council of Rome, 2013).

However, this figure does not capture the total number of people that come into the city each day. In fact, having the highest concentration in the world of historical-architectonical monuments (Cutrufo, 2010) and being the headquarters of many institutional organisations (Italian governments, FAO, Vatican State), the city attracts each day at least additional 52,000 people[i]. The number rises significantly if including the 300,000 commuters that enter Rome on a daily basis (Cutrufo, 2010). Rome's attractiveness can be considered a double-edged sword: if on the one hand it boosts the internal economy, on the other hand it stresses the council´s budget requiring extra services and it leads to a heavier usage of the local environmental resources.

One important characteristic of the city's population is the large number of foreign migrants who account for almost 10% of the total population, making Rome the Italian Council with the highest number of foreigners (Council of Rome, 2013).

Despite the city's official population, Rome's large territory implies that the city has a relatively low density, 2,050 inhabitants per km² (ISTAT, 2013). Indeed, Rome extends across 1,285,307 km² and only a comparison with other cities' size allows one to fully grasp the relevance of its dimensions. For example, Rome's size is the equivalent of the nine main Italian cities' sizes added together and twelve times the size of Paris (Cutrufo, 2010).

Due to this extension, the city council manages an extremely heterogeneous territory: Rome rises up on the Tiber benches and is also crossed by a second river, the Aniene; it is bordered by hills, the Albiani in the South-East and the Sabini "Mounts" in the North-West, while in the South-West it includes 20 km of Tirrenic cost.

The urbanized area is surrounded by the so called Agro Romano, literally the Roman field, which occupies 40% of the total surface, making Rome the largest rural city in Europe (Dipartimento Tutela ambientale e del Verde, 2012; Cutrufo, 2010; Siemens, 2010). As expressed by several interviewees, this special feature of the Roman landscape, if adequately valued, could play an important role in achieving sustainability in the city and it could become essential if its ability to feed the city would be empowered instead of endangered by developments trends, such as those experienced in recent decades.

The city's climate changes depending on the morphology of the territory; therefore the weather is properly Mediterranean near the coastal area, while it is attenuated continental in the interior ones. The temperature decreases going from West to East, while precipitation, which ranges from a minimum of 700

mm in the coastal area and a maximum of 1500 mm on the Sabini mounts, increases. Precipitation is concentrated above all in the winter and spring period, while it is very rare in the summer season (Dipartimento Tutela ambientale e del Verde, 2012). The city is also often swept by Western and Northerly winds. As a result of its climate characteristics, the city is particularly suitable for energy generation through renewable sources.

The heterogeneous and vast territory as well as the great influx of population makes Rome a very complex organism to govern and manage. The governance challenge is not made easier by the development model that the city has followed in the past. Indeed, one of Rome's most quoted characteristics is the irrational, very often informal and unauthorized development of its periphery, which was facilitated by the absence for 40 years, from 1962 to 2003, of a land-use plan. According to the city council's evaluation, 40% of the city's urbanized territory, where 25% of the population lives, is unauthorized development (council 2010 in (Siemens, 2010)). The periphery's main features seriously hamper an efficient and rational use of economic and natural resources and heavily contribute to Rome's urban mobility problems. For example, it is hosting as much as 80% of the total population and its informal character and an extremely scattered built-up environment hinders the provision of services and public transport in the area.

Basic government/administrative structure

In recognition of the complexity raised by its governance and of its unique status as the capital of the Italian state, Rome was granted special administrative autonomy in 2010. The new local authority, called Capital Rome, not only developed more functions in several crucial fields such as urban planning and economic development, but also acquired the right to be involved in state decision making processes in which an issue that might concern the city is discussed (Piraino, 2013; Direzione Giunta e Assemblea Capitolina, 2013). Many interviewees identified in the new administrative autonomy an essential tool for better government of the city, however several complained about the slowness in implementing it.

Because of its complexity and the vastness of its territory, Rome´s administrative territory is divided into fifteen districts. Although the districts are not local authorities, they play an important role in addressing the need of decentralization. For instance, they enjoy administrative, financial and accounting autonomy, as well as managing services and representing their communities, promoting their development in the city (Capital Rome, 2013). Many local actors recognize their important role and believe that a greater decentralization towards the districts would improve local resource management. The council also seems to be aware of this and it is considering moving towards a greater decentralisation.

Rome recently (May 2013) went through administrative local elections; now after five years of centre-right, the city is administered by the Partito Democratico, a party of the centre-left.

Local lifestyle

The dispersion of the urban structure and a lack of interconnectedness of public transport led to an urban mobility characterized by a predominance of private transport - now one of Rome's most relevant problems according to all interviewees. Indeed, Rome is the European city with the highest number of cars, 74 for every 100 people, and ISTAT data shows that during rush hours almost 70% of movements are carried out with private transport (Siemens, 2010). This urban mobility model implies longer journeys which discourage movement in the city, only two each day per inhabitant (Siemens, 2010), as well as high

air pollution and high oil dependency. Therefore, improving the mobility situation is reckoned as a pivotal challenge for starting an energy transition in the city.

Recycling is another aspect connected with a local lifestyle that is not particularly virtuous in Rome. Many interviewees underlined how strong was the inhabitants resistance to this practice and how much a mentality change was needed in the city in order to adopt a more sustainable life style. However, efforts of the public administration and programs which involved citizens have helped to increase the amount of recycled waste from 17% in 2007 to 30% in 2013 (Ama Roma, 2013).

Nevertheless, the quality of life seems to have improved in recent years as shown by Rome raising its position in the Italian quality of life per city list (Sole 24 Ore, 2012) and by the higher number of citizens that declare their satisfaction with their life in the city (Felici, 2007 ; Ugolini, 2012).

Key challenges and trends

Economic issues and trends

Overcoming the present economic crisis is an important challenge that Rome has to face. While in the last decade Rome presented a better performing economy than the rest of the country, partly due to its being the national centre of specific sectors, it is now showing a more worrying situation than other Italian cities (Giulio Marcon, 2012; UnicamereLazio, 2012; Paesesera, 2013). The reason is to be found precisely in its different economic structure based much more on telecommunication, information technology, construction industry and the retail sector which have suffered severely due to the crisis (Giulio Marcon, 2012). For example, the retail sector, being the sector with the highest number of employees (data for Greater Rome), lost 30,000 work positions in the last four years (Villani, 2010). In addition, Rome's economic sector is mainly based on the Italian internal market and does not benefit from an increase in exports as other cities may. The result is a high unemployment rate, 8.5% in 2011, against the 5.8% of 2007 (Giulio Marcon, 2012). Not even the tourism, another pillar of Roman economy, has been able to improve the situation because of the decrease in the number of visitors from 2011 and 2012 and in their average expenditure in the city (UnicamereLazio, 2012).

Therefore, according to many local actors one of Rome's most important challenges is to renew part of its economy, for example innovating in the construction industry towards energy efficient refurbishment and investment in a more sustainable tourism.

It is interesting to note that despite the generalized negative economic situation, it is still possible to observe a positive trend: an increase of 2.9% in the number of businesses from 2009 to 2012 (UnicamereLazio, 2012).

Environmental issues and trends

The city's congestion problems are translated into a higher rate of air pollution than the Italian average (Siemens, 2010). However, Rome's performance in this sector is slowly improving: in 2011, the average concentration of PM10 was 36.5 microgram per cubic meter, while it was above 48 in 2004 (Legambiente, 2012).

The mobility sector is also responsible for 3,688,549 t of CO_2 of the 10,008,879 t CO_2 emitted in total by the city in 2010, while the remaining amount is almost equally divided among the residential and the

tertiary sector (Dipartimento Tutela ambientale e del Verde, 2012). The fact that the total amount of CO_2 emitted in the last decade remained rather stable is a sign, on the one hand, of the city's commitment to reducing the emission of climate-altering substances and, on the other, of the difficulty in implementing more drastic measures in doing so, above all in the urban mobility sector.

21.2 Sector specific synthesis

Energy

Availability, affordability and consumption levels

Rome's electric energy consumption has slightly increased in the last decade: in 2003 the TJ consumed by the city were just over 35,000, while it rose to 40,000 TJ until 2010 (Dipartimento Tutela ambientale e del Verde, 2012).

Breaking down the electric energy consumption for different sectors, it emerges that Rome's peculiar economic structure has consequences also in this field and differentiates the city from the rest of the country. In fact, whereas in 2010 industrial consumption accounted for only 6% of total consumption, the tertiary sector consumed as much as 62% of the electricity produced and the domestic sector the remaining 31%. The city's tertiary sector's energy hunger is also evinced by a 21% increase in its energy consumption between 2008 and 2010, while the number of users remained stable.

The data is more positive for the domestic sector, where although electric energy consumption did not really decrease, due to a rise in number of users, the consumption per user fell by 6% in 2010 compared to 2003 (Dipartimento Tutela ambientale e del Verde, 2012).

The high consumption of the tertiary and domestic sector is explained by Rome's old building stock, indeed buildings built before 1976 are responsible for 60% of the two sectors' energy consumption.

With 19.3 cents on average a for kw the city proves to be more affordable and slightly cheaper than the European average (e-gazette, 2013). In addition, ACEA provides a social bonus to vulnerable families so that they may have discounts on their energy bill.

Key issues

The main issue reported by many interviewees is that these theoretical commitments have not been translated into a reduction of energy consumption levels. According to many interviewees, the plans and strategies would need a more thorough follow up.

For example, despite the fact that several energy plans for Rome indicate that a smart decentralized grid is fundamental, the council does not seem to be the main promoter of this measure, but rather citizens associations such as Polaccoforkyoto that aims to boost energy self-production through house roof solar panels.

A risk of citizens loosing trust in these new initiatives was identified by several interviewees.

Key actors/partnerships

Several different types of actors are engaged in energy related issues in the city.

Acea, the multi-utility of whose stock 51% is held by the city council, owns the entire distribution grid and is the main energy provider in Rome. The company has changed and grown much since its foundation by the Roman council in 1909: today it provides energy, not only to Rome, but also to other areas of Lazio and Italian regions and has branches in South America as well (Acea, 2013).

Regarding the production of energy in Rome, Acea manages two thermo electric plants of 80 MW and 145 MW located in two peripheral neighbourhoods of the city (Montemartini and Tor di Valle) and several hydro-power plants in the Roman province (Acea, 2012).

The city´s administration, besides its involvement in Acea, has since long been particularly involved in several projects in energy issues, above all in projects linked to climate change (see initiatives).

Key actions/measures/initiatives

Over the years, Rome has elaborated and taken part in many initiatives and actions regarding energy issues.

One of the most recent ones is the Covenant of Mayor movement, joined by the city of Rome in 2009. Signing up to the initiative, the city commits itself to reduce its CO2 emissions by 20% compared to 2003, corresponding in its case to 2.2 million tonnes of CO_2.

According to the Sustainable Energy Action Plan submitted, in order to achieve this goal, the city seems particularly intentioned to raise the efficient use of energy and to boost the use of renewable energy through the municipal building code. Indeed, the most recent changes to the building code (resolution 7/2011) raised the energy efficiency standards for new buildings and imposed an associated improvement of the building's energy performance on all buildings refurbished.

The creation of smart grids based on communities´ energy production is another strategy designed by the council to achieve the reduction target included in the Sustainable Energy Action Plan (Dipartimento Tutela ambientale e del Verde, 2013). This, as many other measures included in the plan, were first proposed in a master plan for Rome's energy transition created by the famous economist Rifkin (Rifkin, 2010).

Also worth mentioning is the initiative ROMAFORKYOTO, a local action plan started in 2004 to reduce GMH emissions in the city. The initiative represents a successful example of collaboration between public actors, citizens and private businesses working together to develop an effective local plan (Camarsa et al, 2010). Unfortunately, at present little of what had been proposed by the plan has been implemented, even though many actions were proposed again in the Sustainable Energy Action Plan.

Water

Availability, affordability and consumption levels

Rome lies in a geographical area rich in water. However, due to pollution and contamination not all of the available water is drinkable. The majority of Rome's drinkable water originates from water grounds located on the left of the Tiber which supply powerful springs such as Capore, Peschiera, Acqua Marcia located in the Roman province with a capacity of 14,000 l/sec (Dipartimento Tutela ambientale e del Verde, 2011).

Water consumption is 234.3 l/inhabitant/day and is the highest in Italy (Legambiente, 2012), probably because of the large number of tourists and other city users, that, although consuming water are not counted in the resident numbers and therefore increase the ratio.

Different from other areas served by Acea ato2 in the region, the water distributed in the city is of high quality and affordable (Acea, 2013). With an annual average expenditure of 236 € per household (Cittadinanzattiva, 2013), the water price in the city is affordable and cheaper than in other cities in the Lazio region. However, the water price tends to increase every year: it already rose by 22.9% from 2007 to 2012.

Key issues

A first issue is connected to the pollution of the soil that might lead to water contamination. This is why, to properly manage the groundwater sources, the Council has set the reduction of the vulnerability of the soil to landfill and chemical pollution as a goal. Moreover, due to climate change and extensive usage, the amount of water available in the groundwater has decreased in the last years (Dipartimento Tutela ambientale e del Verde, 2011). Therefore, it became essential to not only reduce water consumption, but above all to dramatically reduce the water loss caused by leakages that today amount to 27% of the total pumped in the system.

Another crucial aspect that the city has to face regarding water is about how and by whom this resource should be managed in the city. There are many associations of citizens that oppose further privatization of the water utility company. In particular, Roman citizens´ associations campaign for the abolition of the guaranteed return on investment element among those that make up the final water price in the city as decreed by the national referendum held in 2011.

As reported by interviewees and newspapers (La Repubblica, 2013), conflicts on the future of the utility company are being raised between the newly elected council and the utility company management, with the first insisting on a more public vocation for the company while the second, mainly elected by the previous, argue against it.

Key actors/partnerships

Acea ato2 is the Acea s.p.a branch (see above) responsible for all the integrated water service in the city: from managing the city's water infrastructure and water sources to the distribution in the households and businesses and the purification of water. As for the Acea sector focused on energy, Acea ato2 started its activity in Rome but now serves the much larger area of all Lazio central regions. To serve only Rome's area, it manages 7,098.5 km of aqueduct network, 4,050 km of sewage network and as much as 35 plants for water purification (Acea, 2012).

The regional and local administrations are also key actors. In fact, the so-called Conference of Mayors - an authority composed by all the mayors served by Acea ato2 and coordinated by the president of the Rome Province - has a monitoring function over Acea ato2 and above all the function to control the tariffs.

Regarding water issues in the city, citizens´ associations have proven to be very active and able to influence council decision on how to manage this resource. This is the case of the previous council decision in 2012 to sell 21 of its 51% Acea owned stock to the market being reconsidered also thanks to citizens´ pressure (paesera, 2012).

Key actions/measures/initiatives

Seeing that the reduction of water consumption is one of the main measures needed, the city council promoted an initiative in Roman schools aimed at decreasing water usage in the school facilities while sensitising the students to the topic (Dipartimento Tutela ambientale e del Verde, 2011).

Also Acea is aiming at reducing water consumption, investing in the infrastructure in order to reduce leakages and through the creation of material to inform users about how to save this important resource (Acea, 2012).

Regarding the request for a more public management of the water company, some citizens are adopting the strategy to self-cut the amount corresponding to the guaranteed return on investment element from their bill in order to push the company to respect the referendum. However, in some cases this strategy has resulted in their houses being disconnected from the water system and in conflicts with the water utility company (Il Fatto quotidiano, 2013).

Green spaces

Availability, affordability and consumption levels

Rome's data regarding green areas definitely outline a positive situation. The city, with 52,000 hectares of green areas is the first one in Europe for the amount of green spaces (Siemens, 2010).

The great amount ensures that, despite the high number of residents, the city is able to offer more than 30 m^2 of green areas per inhabitant. This, coupled with parks being well spread in the city territory, translates into green spaces being easily accessible to all citizens.

Not only does Rome offer a good number of green areas, but provides among them a varied selection of different types which contributes to satisfying several environmental and social needs. For example, a large amount of Roman green area is made up by natural reserves which are extremely important in defending biodiversity in the city. Furthermore, the different neighbourhood's parks, specifically equipped thinking of the different users, are rather essential for their fulfilment of social functions in local areas. Other types such as historical villa gardens and parks in the city centre perform an aesthetic and social function. The council highly values green areas for all these functions and for their ability to be carbon sinks, characteristic of the extreme importance of this issue for a city such as Rome which is haunted by air pollution problems.

Key issues

As emerged during some interviews, it is paradoxically the great number of green areas coupled with the situation of economic constraints faced by the city council that raises problems for the proper management of these areas.

The green area management was also reported to be complicated and made more expensive by their improper usage and by the acts of vandalism to which they are often subjected.

In addition, a serious issue is a trend in the last 15 years of building in rural areas (4,384 hectares lost) and on woods (416 hectares).

Key actors/partnerships

Rome presents a great variety of green spaces and according to which type of green area is considered, it is possible to find different actors and different kinds of relationships occurring among them.

The city administration is directly involved through the activity of the Department for the Environmental and Green Areas Protection, which plans and programs new projects related to public urban green spaces, and through the Operational Unity of Public Green which manages and maintains the public green areas on a daily basis. The Unity manages directly only 41% of the green areas under its control while it externalises the care of the other 59% (Dipartimento Tutela ambientale e del Verde,).

Specifically, 10% is managed by AMA S.p.A., a council´s public utility company, while another 10% is looked after by cooperatives, as much as 30% by private companies and only 4% is managed directly by the Municipality where the public green is located (Dipartimento Tutela ambientale e del Verde, 2011).In addition, in the last few years thanks to the council´s initiative, citizens' associations and private businesses can be involved in the management of public green areas (see below in initiatives).

It is important to underline that the city´s administration does not manage all the green areas in the city, not even the totality of the public ones. In fact, the many natural reserves present in Rome are managed by a specific regional authority called Roma Natura, while 20 km² are private property (Dipartimento Tutela ambientale e del Verde, 2011).

Key actions/measures/initiatives

Responding to the increase in participation, demands raised by citizens and as a means of decreasing council costs, the city has started to promote the adoption of green areas by associations, cooperatives and private business. The initiative called "Punto Verde Qualità" [Green Quality Point] aims to improve the quality of green spaces while better involving the users, partly in the hope of changing the rate of improper usage.

Citizens' organisations have also been important in reclaiming areas that were destined for development. For example a successful case was the institution of the Parco della Cecchignola in an area previously identified for a street development after much campaigning by citizen associations.

21.3 Governance and citizens' participation

Multilevel governance

In general, the municipal level of Rome feels it should be granted a higher degree of autonomy from the other levels due to the city dimensions, complexity and capital status, which would greatly improve its ability to manages its resources. For example, a more equal relationship with the province and the regional government level would improve the implementation time of projects in the sustainability field. Rome's local level also wishes to be more involved in the decisions that are taken at the national level, but that affect the city. For all these reasons the institution of the Capital Rome local authority - which grants more powers to the City of Rome - was highly welcomed, but the rate of implementation should be accelerated.

At the same time, the sustainable management of Rome's local resources is seriously hindered by the economic constraints the city is experiencing at the moment. In fact, given the limited economic resources available, the council has to prioritize which citizens' needs' to satisfy, selecting the ones perceived as social over the environmental ones. Better support from the national state is felt to be fundamental to reverse this trend: if not with direct funding then through clear policies.

Regarding the European level, the city feels again that in order to access the right funding and to implement the projects related to sustainability in the most valid way, it needs a direct dialogue with the highest government level. In fact, Rome's specific needs and requests often do not manage to get through the mediation of other local levels such as the province or the region.

Participation and bottom-up action

Participation

Theoretically, the municipality seems to have understood the importance of citizen participation in sustainability policies for their success. The long experience of Agenda 21 is thought to have been fundamental in achieving this general consensus over the positive aspects of participation practices and in having stirred interest for these topics among the population. Indeed, many actors regret the weakening of this participation tool.

Several interviewees coming from different backgrounds have also underlined how in some key aspects of sustainability such as the development of recycling - where an attitude change from the citizens is essential - they were not enough involved.

Another issue identified regarding participation is how actions decided upon through participatory processes are eventually not implemented, or how suggestions formulated at round table sessions are not found again in the final decision. It was expressed that this has the detrimental effect of distancing the citizens from these activities and topics and limiting their willingness to be involved.

Bottom-up action

Citizens in Rome seem to be quite active regarding bottom-up actions and self- organisation in several fields. For example, there are many cineforums, languages and skills courses organised by the citizens for the citizens in common or squatted places. These initiatives seem to satisfy the citizens´ need to socialise in a freer way and to develop in an affordable way their cultural interests.

Other bottom-up initiatives tend to arise when citizens do not agree with a council decision or feel the municipality is lacking in action in a particular field. As consequence, the bottom-up action in these cases is usually perceived as, or accompanied by, campaigning towards the municipality to step in or improve the service. The self- reduction initiative in the water field and the reclaimed green spaces can be considered examples of this.

21.4 Conclusion

Short summary

Rome is the Italian national capital and the Lazio regional capital. The city is characterized by several unique features such as: its immense size with a large rural surroundings which occupies 40% of the total

surface, and contributes to its 52,000 hectares green spaces; its 20 km of costal area; the high density of historical monuments that attracts at least 52,000 additional people each day and a predominant importance on the job market that leads 300,000 commuters to enter Rome on a daily base. These characteristics could play a fundamental role in the city´s transition towards sustainability. For example, a revaluation of the Agro Romano rural area could allow the city to self-feed itself.

However, these elements contribute to the great complexity involved in governing the city and give rise to significant challenges to the sustainability of the city. Indeed, the large size coupled with the high number of people that visit the city every day leads to acute mobility problems.

The city´s mobility problem, like the waste management problem, expresses well another important challenge for the city to become sustainable: the resistance among citizens towards adopting a more sustainable life-style. Therefore, setting up participation processes that really involve the citizens, starting with mutually agreed targets that really motivate the citizens to change, would be a feasible solution for Rome to improve its performance and quality of life. The goal should also be to improve the quality of the participatory processes in order to make sure that the citizens feel really involved and not just validating a decision that have already been taken. In addition, in order to safeguard citizens' motivation, it is fundamental to readily and rapidly implement the strategies formulated during such processes.

An obstacle in implementing strategies and projects is often the limited economic resources available to the city, resources that have dramatically decreased since the economic crunch in 2008. Once again, Rome's existing unique characteristics such as the tourism industry and the importance of the building sector could help to boost the city's economy and thereby help to fund the council's projects. In fact, if the former was properly revamped in a more sustainable direction, the latter used more for energy efficiency retrofitting, they could revitalize the city´s economy and bring new investments.

Trends and challenges for the future

- Solve mobility problems, reducing car dependency and improving public transport
- Increase the percentage of recycled waste
- Diffuse a more sustainable life-style among the citizens
- Reduce the development trends in green areas
- Re-evaluate rural areas
- Improve the participation process towards truly involving citizens
- Actually implementing strategies developed, for example, in the energy field
- Solve conflicts around water management increasing citizen participation and implementing laws voted for by citizens
- Restructure and renew important economic sectors such as tourism and the building sector in a more sustainable way
- Renew old building stock

i The average number of people arriving at the Fiumicino and the Ciampino airport per day (Cutrufo, 2010).

22. Italy – Trieste

22.1 General city profile

Background information

Factual data

Trieste is the capital of the Friuli-Venezia Giulia autonomous region in the North-Eastern part of Italy. The city is located at the head of the Gulf of Trieste and between the Italian and Istrian peninsulas, a few kilometres from the Slovenian border.

The analysis of Trieste's peculiar geographical conformation is essential if one wishes to understand many issues related to sustainability in the city.

The city´s territory is mainly occupied by hills which become proper mountains at the city's outskirts. It faces the Adriatic to the West - where it reaches 2 meters above sea level - while it is limited by the Karst Plateau to the East where it reaches 458 meters above sea level. Thanks to this valuable landscape, three-quarters of the city territory is covered by landscape protection law (Data emerged in interview with actor 2). Although recognising the value of the landscape, many actors elucidated the manner in which a high proportion of protected territory hindered the applicability of innovative urban policies.

The plateau is made up of limestone which is soluble to weather distress such as rain and which allows water to penetrate into the ground. As a result, the area surrounding Trieste has several underground rivers, such as the Timavo, that are important for the city's water supply. Other underground water streams originating from the plateau flow directly under the city's streets. Trieste's resource richness in this regard is supplemented further by the Rio Ospo which flows South of the city and by the Sardos river.

Due to the difference in altitude, the city is divided into different climate zones: the areas facing the sea have a proper Mediterranean climate, with relatively mild temperatures, while the districts nearer to the Karst Plateau have a more continental climate. In any case, it is possible to consider the city's climate overall as Mediterranean thanks to the generally mild winters and warm, but not sultry, summers.

The difference in temperature between the littoral and the plateau areas contributes to the creation of a very strong and cold wind called the Bora which can reach 180 km/h and limits the city's possibility to use renewable sources of energy (see energy section).

In 2012, the city of Trieste consisted of 207,800 inhabitants spread over 84.49 km², thereby showing a high population density – 2,459.46 inhabitants/km² - that was identified in some interviews as another one of the city's limiting features on urban policy options (Comune di Trieste, 2012).

The city's demographic development shows a constant decline in population from the 1960s up to now, accompanied by a progressive ageing of the population with the average age in 2011 being 49 (Comune di Trieste, 2012). In recent years this negative demographic situation has been slightly improved thanks to immigration from Eastern-European countries.

Even though only 7.85% of the population is foreign (Comune di Trieste, 2012), the city has always had an international character thanks to its geographical position and its history. Historically, the Slovenian minority is particularly relevant and is granted the possibility to have Slovenian-language schools and official documents.

Basic government/administrative structure

The city's administration is divided into eight main areas which in total offer 24 different offices. The city´s territory is divided into seven districts which might contain several neighbourhoods and to which are delegated certain functions such as managing social and cultural activities that are relevant for the district.

Economic conditions

The economic condition in Trieste has always been prosperous compared to the rest of Italy; indeed in 2008 the city registered a GDP per capita of 28,941.25 Euros, 17.2% higher than the national average (Il Sole 24 Ore, 2008). A pillar of today´s Trieste Province[i] economy is the service sector which generates 84.2% of the provincial value added. The role of the service sector can also be seen in the high number of employees, around 73,000 in 2009 (Mass press, 2011).

On the other hand, the industrial sector is losing its importance. While relevant in city life until the 1980s, today it contributes only 10% to the city´s GDP (Comune di Trieste, 2013). In 2009 industrial activities related to the port and to metallurgy employed only 15,000 people in the Province (Mass press, 2011).

Commercial and industrial activities are still connected, though less compared to the past, with the city port contributing 14.6% to the total economic production of the Trieste Province (Union Camere-Cam com, 2013).

Furthermore, tourism, having increased its importance in the city´s economy through the years, is strictly connected to the port. In fact, in 2013, 139,000 people entered the city from the port.

Furthermore, Trieste is emerging as an important research hub thanks to eminent universities and a scientific park which hosts more than 80 companies dealing with highly qualified services (Area Science Park, 2013).

Special characteristics

Being a connection point between Italy and East-European countries is definitely Trieste's special characteristic. If this feature has opened many cultural and economic possibilities for the city, it has also translated into specific environmental problems. For instance, the high transit traffic rate and its selection for its strategic position to hosting gasifiers and other polluting industrial plants cause environmental problems.

Local lifestyle

The analysis of an important sustainability practice such as waste recycling sees Trieste struggling with only 26% of the total waste recycled, even though the total amount produced by the city is limited as compared with other large Italian cities: only 460.4 kg/inhabitant (Legambiente, 2012).

Despite the efficiency of the public transport network (with highly frequent services and a good quality of vehicles), the city's mobility is still shaped by private modes of transportation such as cars and motorbikes. This is shown by the rate of 53 cars and 20 motorbikes for every 100 inhabitants (Ziani, 2011).

To the traffic produced directly by citizens one must add the traffic produced by holiday-makers or lorries passing through the city while transiting to or from the Eastern part of Europe.

According to a large number of the interviewees, it is hard to improve these parameters because of the proverbial resistance of Trieste citizens to changes, as expressed by the city's unofficial motto "no se pol": "it cannot be done". The administration tries to overcome this difficulty by encouraging good practices such as recycling, providing prizes to virtuous citizens and implementing a new mobility plan which is much more focused on slow mobility. However, it was underlined that hilly territory like in Trieste does not encourage cycling.

Obviously, the high traffic level has a negative effect on the quality of air, which registered 51.2 NO2 (µg/mc) and 26.2% PM10 (µg /m^3) in 2012 (Legambiente, 2012).

The data is much more alarming, if we consider the one collected near the Servola metallurgic factory for the same year. In this case the level of PM10 (µg/mc) passed the allowed limit on 99 days while the limit of benzo(a)pirene – a carcinogenic substance – surpassed the annual allowed limit by three times, registering 3.4 ng/ m^3 (Baraggino & Tieri, 2013) .

The substances emitted by the factory are not only a threat to the environmental sustainability of the city but above all to the health and life of citizens. This is clearly expressed by the 1959 deaths caused from 1995 to 2002 by these dangerous emissions (Baraggino & Tieri, 2013).

Key challenges and trends

Economic issues and trends

It emerges that an important challenge for Trieste will be to solve the conflicts between the different economic and environmental interests existing in the city and which are embodied by the Servola factory case.

On the one hand, the factory has a huge environmental impact on the city and on the citizens' health. As such, several groups of citizens and organisations have been campaigning over the years for its closure.

On the other hand, the factory is integrated in the city economic network and a cease in its activities might lead to around a thousand people losing their jobs.

To date, economic concerns seem to predominate over environmental ones. The municipality and region – the latter granting the factory its environmental authorization - prioritise the continuation of industrial activities with which they plan to combine environmental reclamation strategies.

The economic argument is further supported by the fact that the global economic crisis starts to make itself felt in Trieste. The employment rate in the 14-65 age group was 47.3% in 2007, decreasing to 44.1% in 2011 and reaching 43.7% in 2012. Therefore, the closing of the plant would lead to further economic distress in the city (Rauber, 2013).

Another challenge presented by the current economic crisis is the perception of social and environmental needs as competing with one another. As testified by an interviewee, given limited economic resources, the council feels it has to prioritize the funding directed to social programs over environmental ones.

22.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Water in Trieste is available in great quantity with a high level of quality. 79% of the water pumped in the system originates from the Isonzo underground stream. Thanks to the natural filtration process, this water shows high quality characteristics and does not need to be treated, e.g. with chlorine, before being distributed. The remaining 21% originates from surface water, of the same Isonzo when it emerges from the ground and from the Sardos, and needs to be treated for its minor quality (AcegasAps, 2013).

The consumption level of water pro capita was 180 litres for domestic use in 2012 - among the highest in Italy.

The cost of water rose significantly in Trieste in the last few years, more than 44% from 2007 to 2012, reaching an average annual bill of 342 Euros (Cittadinanza, 2013).

Key issues

Affordability of this resource seems to be an issue in Trieste. The high cost of water, coupled with the economic crisis, makes it difficult for lower income families to regularly pay their water bills. According to some interviewees, their lack of payment results in the water company cutting their water provision. This issue might be related to the company being always more managed by private actors and the weakening of its connection with the public administration.

The increased privatisation of the multi utility and the increasingly reduced control over it by the council is perceived as a problem by that part of the citizenry that feels that important decisions regarding their resources are taken far from them. This is why several citizens associations campaign for the respect of the national referendum.

Another issue connected to the perceived lack of control over local water resources is that they actually originate in neighbouring Slovenia. Thereby, the availability and quality depends also on the behaviour of a third party.

In addition, the extent of water that leaks out of old infrastructure, up to 50% of the total water that is pumped in, is a problem (Legambiente, 2012). Indeed, actors with various backgrounds believe that investing in the water infrastructure should be a priority.

Key actors/partnerships

AcegasAps - which manages the integrated water system of water collection, supply, transport and distribution, coupled with the management of all water purification and sewers - is definitely one of the main actors regarding this field.

The municipality is directly involved through the limited amount of AcegasAps stock it owns and via policies intended to improve the use and the quality of water.

In contrast, citizens' associations which oppose AcegasAps´ further privatisation and campaign for the full respect of the national referendum outcome which decreed the publicity of water and the impossibility of generating profits from this resource are increasingly important.

Key actions/ measures/ initiatives

The perceived lack of control over water management has been partly addressed by the creation of the Consumers´ Consultative Committee of the ATO[ii] of Trieste in 2013 after a strong campaign by citizens' organisations. The Committee is composed of members of environmental and consumers' associations and unionists from AceagasAps, called by the Trieste mayor who is also the president of the ATO Board. Among other activities, the Committee is charged with providing suggestions for the creation of a Service Charter and with identifying for the authority clauses that might be damaging for consumers. To be more effective, all citizens are called upon to provide suggestions and highlight problems. Although the creation of the Committee is seen as highly positive, one interviewee underlined the difficulty for it to be taken seriously by the other actors.

Energy

Availability, affordability and consumption levels

Both gas and electricity have experienced a fluctuating trend. Gas consumption was just less than 140,000,000 m³ in 2001, after which it increased and decreased over the following years, and in 2011 returned to be just over 140,000,000 m³. Similarly, electricity consumption in the building sector was just over 600,000 in 2001 and was still around that amount in 2011 (data emerged in interview actor 1[iii]).

Buildings are responsible for the majority of CO_2 emissions in the city - 64% of total emissions counting the emissions from residential and service buildings together - followed by the transport sector with 33%.

In 2012, only 12% of the total energy consumed in the city was also produced in the city: the majority of which through waste-to-energy plants (almost 10%) and only 2% through solar panels (data emerged in interview actor 1).

Energy consumption in the city does not seem to have any particular problem regarding affordability.

Key issues

The council intentionally concentrates the majority of its resources and attention on energy efficiency and less on renewable energy. As reported by several interviewees, this decision derives from several obstacles to the development of renewable energy found in the city.

Firstly, the presence and the characteristics of the bora wind – unreliability and great strength - exclude the possibility of using wind power. Secondly, its strength increases the difficulty and expense of setting solar panels on roofs and on the ground. Moreover, the high density of construction and the fact that a large part of the city´s territory is protected by landscape laws hinder the potential for increasing the city's solar panel stock. Another important factor that does not facilitate the development of renewable sources

in Trieste is unstable national policies regarding energy. For example, the fact that the Italian government has suddenly removed incentives for solar energy and has not yet developed an energy plan.

Other issues stem from the kind or lack of cooperation between the different actors involved.

Even though many important actors and agencies - such as Acegas, research institutions, the port authority and the authority managing the industrial area - have been involved in the drafting of the SEAP, citizen participation was not large in the energy sector. Their participation was limited to the development of the Mobility Plan and the City Development Plan. On these occasions, according to some interviewees, the citizens' role was mostly providing suggestions and commenting on existing decisions rather than being involved in the decision-making process.

In addition, the council and the chamber of commerce provide very similar services to citizens regarding energy without collaboration. A partnership between the two parties might increase the efficiency of the service and reach more users.

Key actors/partnerships

Acegas s.p.a is the main actor for the distribution of electricity and gas in the city. Originally founded in 1864 by the council, the company underwent deep changes over the years, the last of which was its fusion with Hera s.p.a - another Italian multi-utility. This created a large North Eastern multi-utility, which provides energy and water to the cities of Bologna, Padua and Trieste. With each change the amount of stocks owned by Trieste's council has decreased: collectively with other relevant councils it owns 30% today (Economia web, 2012).

Anyway, the municipality still plays a substantial role in the city´s energy sector through policies aimed at directing the sourcing of energy and reducing its consumption.

Another relevant actor is the Trieste chamber of commerce which is a point of reference for local businesses concerning energy issues.

Key actions/ measures/ initiatives

The municipality is one of the main actors proposing and implementing strategies, the majority of which can be found in the Sustainable Energy Action Plan framework.

Much of the council's efforts regarding energy is focused on increasing the city's energy efficiency which is currently challenged by the city's old building stock. The city counts on reaching this target through a new city building code which will impose higher standards for new or restructured buildings. The code will also try to facilitate the adoption of solar panels on buildings.

Given the importance of the transport sector in energy consumption, the municipality also considers its new mobility plan as an instrument for addressing energy issues. For example, by increasing the number of cycle paths and pedestrian areas, the city hopes to reduce its oil dependency.

It is worth noting that the council considers awareness raising with its citizens as a valuable instrument for reducing energy consumption. For this reason, an office providing information on how to improve energy efficiency in houses was set up, and an environmental education programme which covers energy issues has been started in three schools.

Similarly, the chamber of commerce provides free consultancy and guidance for those companies that decided to improve energy efficiency of their plants and offices. It also provides a highly qualified course to become an expert in KlimaHouse.

Green spaces

Availability, affordability and consumption levels

Although the population did not grow in recent decades, the volume of built surface increased from 53,000,000 m² to almost 55,500,000 m² to the detriment of green areas (data emerged in interview with actor 1).

According to several interviewees, the number of green spaces in the city is still sufficient to satisfy the population's needs, despite not being all that well distributed. In fact, the city centre lacks parks and greenery, while the external areas offer more possibilities to their residents

Some specified that the lack of usable green spaces was not that much determined by their non-existence but by the state of abandon that characterizes some areas, thereby defining the low quality of this resource in some cases.

Key issues

One issue is precisely the abandonment of some public green areas in a city that struggles to satisfy the demand for this resource. In addition, in some interviews it emerged that the low quality of some areas discouraged citizens from using it, attracting further abandonment of the area and its improper usage.

Another issue is that attempts by citizens' organisation to improve the situation are missing support in the council. In fact, an association that formally requested permission to take care of an abandoned and closed down green area in its neighbourhood reported a burdensome bureaucratic process.

Key actors/ partnerships

The municipality is the main actor involved in the planning and managing of the city's green spaces. It externalises the actual maintenance of green areas to private companies and cooperatives.

A few citizens' and neighbourhood associations are also involved in taking care and maintaining parks and gardens near to them.

Key actions/ measures/ initiatives

Several initiatives have been undertaken or are planned in Trieste, which are trying to satisfy citizens´ needs regarding green spaces.

For example, the municipality is planning to give the possibility to citizens' organisations to "adopt" a green area and to provide for it. The initiative could have several positive effects such as those obtained by a citizens' organisation that for years has been independently taking care of a park, which was abandoned and used only by drug users. The park is now a social hub for the neighbourhood, highly frequented and important in the inhabitants' social life.

The municipality is also trying to answer to citizens' increasing interest in city allotments increasing their number.

22.3 Governance and citizens' participation

Multilevel governance

In Trieste it is felt that multilevel governance works only until the regional level while the national level is completely absent in terms of guidance on sustainability policies.

The national level's absence is particularly visible in the energy sector - a sector on which Trieste´s city council focuses much of its attention and where it would appreciate more clarity and stability in national policies so as to shape its own accordingly.

On the contrary, the relationship with Friuli-Venezia Giualia Region is perceived as positive and as an important support structure in addressing important issues such as energy and environmental reclamation strategies. Some interviewees remarked that this fruitful collaboration with the regional level was facilitated by the two administration councils belonging to the same political party.

However, some interviewees noted that decisions such as those concerning environmental reclamation strategies or whether a polluting factory had to close were better taken at the council level. In addition, more front running policies for what concerns territorial planning at the local level would have a positive effect on Trieste's sustainability.

Regarding the European level, the city's administration strongly appreciates the guidance offered concerning sustainability matters as well as the high targets proposed. What is felt would improve multilevel governance is higher approachability on the part of the European Union for local levels and small cities such as Trieste.

Participation and bottom-up action

Participation

Citizens´ participation in the city's decision-making can still be improved. The municipality has only recently started to involve citizens and citizens' organisations. One example is inviting them into consultative meetings regarding the Mobility Plan and the City Development Plan, as well as providing the possibility to send suggestions online and gathering their preferences through questionnaires.

Many interviewees have expressed how, although this might be considered a first important step, it did not fully satisfy the citizens' need for participation. Indeed, interviewees coming particularly from citizens' organisations specified that the population needed to be involved from the first stages of the processes and that their input should receive more weight.

Positive steps in this direction have been undertaken in the water field through the creation of the Consumers Committee, even though this participatory channel has still room to increase its influence.

Bottom Up Action

There are many citizens' associations involved in sustainability topics in Trieste. Their activities focus mainly on raising awareness among the population about how to achieve a more sustainable life style and about the environmental problems and risks faced by their territory.

Although these actions might not be completely defined as bottom-up actions, their function is particularly important in an area such as Trieste: given the current presence of factories dangerous for the environment and health and often selected to host other such plants. For instance, environmental and citizens' organisations have been instrumental in blocking, at least temporarily, the construction of a gasifier in the city.

Other actions undertaken directly by the citizens regard the management of parks which have had positive results in regenerating not only green areas, but the entire neighbourhood. It was expressed that these initiatives have not received as much support by the municipality, as others focusing on more social aspects such as taking care of youth and elderly.

22.4 Conclusion

Short summary

Trieste is the capital of the Friuli-Venezia Giulia autonomous region. The city is located at the head of the Gulf of Trieste between the Italian and Istrian peninsulas, a few kilometres from the Slovenian border. After decades of reduction, the city's population registered 207,800 inhabitants in 2012.

The city's administration has definitely turned its attention towards sustainability topics but it has encountered several challenges, many of which derive from the city's territorial characteristics. For instance, the hilly territory prevents cycling from becoming a popular means of transport, and the presence of the Bora hinders the development of renewable energy. The municipality tries to overcome these challenges through the Mobility Plan and the Sustainable Energy Action Plan.

The low level of citizens' participation in the making of these plans might be another element that could slow down the transition towards sustainability in Trieste. The already existing opportunities for participation could still be extended, deepened and further integrated.

In contrast, a participatory channel that has been much appreciated is the Consumers Committee, even if it still needs to be accepted by other actors. The Committee should help to address the tension that rose over the progressive privatisation of the water utility company, one particularly strong issue in the city.

It is important to note that in the city there is a pervasive perception of the incompatibility between economic, social and environmental needs – an incompatibility that is more strongly felt after the economic crisis, as embodied by the Servola metallurgic factory and by the competition for funding between social and environmental projects.

Trends and challenges for the future

- One of the most difficult challenges that the city will have to face in terms of sustainability is its perception of the incompatibility between economic, social and environmental needs.
- Renewing the economy, focusing more on and fostering more the research sector

- Solving the Servola factory issue
- Addressing the limit posed by territorial characteristics to the development of renewable energy in the city; such as the Bora, the highly dense city centre and the coverage of protection law through the implementation of the Sustainable Energy Action Plan
- Implementing the actions foreseen by the Sustainable Energy Action Plan, such as building refurbishment as regards energy efficiency in the city which is currently quite low
- Grant constant access to water to lower income families
- Invest in the water infrastructure
- Improve the quality of green areas, as well as supporting existing citizens´ organisations with this aim
- Generally increasing and improving the participation of citizens in the council
- Supporting existing bottom-up initiatives

[i] All the data in this section refers to the Province of Trieste. It is important to note that the City of Trieste makes up almost half of the Province´s territory.

ii ATO is the acronym for 'Ambito Territoriale Ottimale', Best Territorial Area. These are areas defined by the region which should be served by the same provider and have similar water costs. The ATO Board, composed of the mayors of the municipalities included in the area, decides on investment in the infrastructure and on prices.

iii In reality, the actor provided me with a copy of the city Sustainable Energy Action Plan which is still a draft. So he asked me not to quote directly from the document but to report him as source.

23. Spain – Barcelona

23.1 General city profile

Background information

Factual data

Barcelona, the capital of the autonomous community of Catalonia, is located in North-Eastern Spain. The city is bordered by the rivers Llobregat in the South and the Besòs in the North and lies between the Mediterranean Sea and the Collserola ridge. Barcelona has a surface area of 102.2 square kilometres.

The climate is typically Mediterranean with hot and humid summers and mild winters with an average rainfall of 600 mm per year. The average daily maximum summer temperature is between 17-18 °C and the average temperature in winter is 14 °C.

During the civil war (1936-39), Barcelona was bombed several times by the Italian air troops who supported Franco, during whose long dictatorship (1939-1975) Spain experienced significant hardship. Barcelona developed large dormitory suburbs full of immigrants coming from other Spanish regions. Due to increased post-war immigration, shanty towns for around 100,000 people were built, and Barcelona was primarily an industrial city. The factories have now moved to the periphery, and former industrial areas have been converted into residential quarters. The recovery of Barcelona's waterfront started with the 1992 Olympics Games, where prior to 1980 the shanty town of Somorrostro had been located.

The 2012 census recorded 1,620,943 inhabitants (Statistical Yearbook of the city of Barcelona). In 2002 1,527,190 inhabitants were recorded, giving an increase of 93,753 people in the last ten years. According to the population projections' high scenario (base 2008) of the Statistical Institute of Catalonia (Idescat), the city will have 1,589,493 inhabitants, indicating a downward population trend. The current economic crisis and the lack of job opportunities might be the main causes for this trend.

The number of registered immigrants in 2013 is 280,047 persons, representing 17.4% of the registered population in the city. Ten years ago the proportion was 10.7% (163,043). The main nationalities are: Italian, Pakistani, Chinese, Ecuadorian, Bolivian, and Moroccan (City of Barcelona).

Basic government/administrative structure

The city is divided into ten administrative districts, each one with its own district council. There are five areas of government (Mayor's office; interior, safety and mobility; economy, business and employment; urban housing, quality of life, equality and sports, culture, knowledge, creativity and innovation).

According to data from the city council, the budget for 2013 was 2,328.3 million Euros, 1.4% more than the initial budget of 2012. The planned investments are 325 million, 2.5% less compared to 2012. The budget for 2014 is 2,574 million Euros.

In 2008, the city council's debts were 770 million Euros and on June 30, 2013 they reached 1,129 million Euros, having increased by 359,150 million Euros. In absolute terms, the city council of Barcelona is the second most indebted city council in Spain. Its debts per inhabitant are almost 750 Euros.

Economic conditions

The main industrial sectors are textiles, chemistry, automobiles, electronics and medicine. The city is chiefly a service-economy. In the last ten years, efforts have been made to diversify, fostering the biotechnology and the biomedicine sectors. Other important sectors are tourism, information and communication technology, and design. Barcelona was the third-most popular city for hosting international events in 2011.

The city council promotes Barcelona as a business-friendly city in order to attract foreign capital. According to the European Cities Monitor, Barcelona was sixth among the best European cities for business in 2011. The city conveys confidence to foreign investors and entrepreneurs. According to the National Institute of Statistics, in the first semester of 2013, 6.1% (5,025) more corporations were established than in 2012.

According to the city council's Department of Statistics, the unemployment rate in 2008 was 8.4%, in 2012 it was 17.2%, and in the third trimester of 2013 18.4%. In comparison, in 2012, the unemployment rate in Catalonia was 20.7% and in the whole country 23%. This year, 41.8% of the unemployed in Barcelona have exhausted their unemployment benefits.

Special characteristics

Catalan is the official language of Catalonia, according to the Statue of Autonomy of Catalonia and the Spanish Constitution. Spanish is also spoken, as the official language of Spain. The Catalan National Assembly and civil society organized the Catalan path to independence on September 11, 2013, taking the form of a 400 km human chain along the Catalan coast. Due to the economic crisis and the centralist attitude of the Spanish government, Catalan citizens have recently developed a strong feeling for independence. Nowadays, the simple majority of deputies in Catalan Autonomous Parliament are in favour of the independence from Spain.

Local lifestyle

Mobility

With the recent expansion of Barcelona airport, 34 million passengers arrived in 2011 (an increase of 18% in comparison to 2010). In 2011, the number of passengers passing through the port of Barcelona continued to grow to over 2.6 million, 13% more than in 2010.

In 2011, in the European Cities Monitor – the indicator measuring the ease of travel within the municipality – Barcelona was sixth. The city has eleven operational subway lines, a good network of buses, three tramlines and a large modern train network. In 2007 a bike-sharing public service was created, and two years later there were 191,700 registered users. In 2012, the city council wanted to increase the service fee by 116.13% for the next year. In response, a citizen platform called SalvemElBicing has emerged.

According to the mobility survey, on a weekday, in 2011 the use of private vehicles in Barcelona decreased by 1.8% while the public transport increased by 0.9%. Although travelling for work purposes has fallen, the overall level of mobility remains. The overview by vehicle type highlights the decline in the number of vans and trucks, which accounts for the decline in economic activity in Barcelona. In 2011, the use of bicycles increased by 11%, while the use of motorcycles increased by 2.2%.

Key challenges and trends

Economic issues and trends

In 2013 a new maritime association, Barcelona Clúster Nàutic, was created to boost economic activity. Neighbours fear the erosion of industry, rising prices of housing and the promotion of touristic apartments. The local struggles against speculation in the port began in the late 1980s, when the platform Salvem el Port Vell was created.

Due to the lack of job opportunities and the low purchasing power, alternative economy models are mushrooming around the city. According to data from the city council, there are nine solidarity banks and time banks, 2 knowledge exchange networks, 2 goods exchange networks and 31 eco-consumption cooperatives in the city.

The “Better than new 100% Old” is a project launched by the Metropolitan Area of Barcelona (MAB) to promote second-hand markets, swap markets and repair shops, extending the life of a wide range of objects while reducing waste. “The repaired better than new project” began in 2009. The centre offers a wide range of workshops and a do-it-yourself repair service with the attention of expert professionals.

The Catalan solidarity economy network, which has celebrated its tenth anniversary, has organized the solidarity economy in an old textile factory of the city. 184 companies, cooperatives and organizations are part of this network. In the fair, Ecosol is the only currency that can be used (1 Ecosol = 1 Euro). Ecosol was launched in 2011 as an alternative currency. In fact, in Catalonia there are already 25 alternative currencies circulating in these times of crisis.

Social issues and trends

In 2010, a thousand children studied in prefabricated modules of eight provisional schools. This year, the Students' Union has called a demonstration to protest against cuts in education and the law for improvement of educational quality. On the second student strike day, 5000 students took to the streets in Barcelona. Due to the increased unemployment among university graduates, many go abroad in search of opportunities, causing a brain drain and demographic changes.

There are a growing number of families vulnerable to or affected by evictions. Vulnerable groups, such as migrants, are at particular risk. According to XAPSLL, the total number of homeless people in Barcelona was 1,129 persons in March 2013, compared to 923 in November 2011.

While there are many actors fostering the tourism industry in the city, a growing attitude against this industry can be observed among residents. The Neighbourhood Association of the Gothic Quarter and the Urban Actions Collective frequently organize guided tours questioning the current tourism model and its effects on the locals and the public spaces.

Environmental issues and trends

According to data from the city council, greenhouse gas emissions (GHG) in Barcelona in 2008 totalled 4,053,765.5 t - considering the electricity mix of Catalonia, a value that produces a ratio of 2.51 t/inhab/year.

48% of the particulate pollution in the Barcelona area is due to road transport. The density of vehicles in the city is one of the highest in Europe, with 6,000 cars per square kilometre. The average waste generation per day per inhabitant is 1.36 kg, while the average in the MAB is 1.29 kg.

In 2008, the city consumed 17,001.78 GWh of final energy: services sector (29.9%), residential sector (27.9%), transport sector (24.1%), industrial sector (17.2%), and other sectors primary, energy, construction and public works (0.8%).

Renewable energy production in Barcelona saw a significant increase between 2003 and 2008 up to a maximum of 96.53 GWh, 0.57% of all the energy consumed. The energy sources were photovoltaic energy, solar thermal, small-scale hydraulics and biogas.

23.2 Synthesis per thematic focuses

Water

Availability, affordability and consumption levels

81% of water comes from surface sources (38% from the Llobregat side and 47% from the Ter side) and 15% comes from aquifers. In 2012, the domestic water consumption reached 105.8 l/inhabitant per day, a figure representing a decrease of 1.2% with compared to 2011 (Environmental data city council). Since 2004, water consumption has decreased due to the crisis and due to an increasing awareness of the need to conserve water. Considering the fact that the city has no heavy industry, the water consumed is mainly for domestic use. There are 838,659 users in the city. The price of the water bill is € 2.019 / m^3 and VAT (supply costs, water rates, and sewer) is € 2.178 / m^3 (Water Catalan Agency). Manolis Kogevinas, co-director of the Centre for Research in Environmental Epidemiology in Barcelona, points out that the water quality of Barcelona is among the worst in Western Europe. The problem is that this hard water has too many minerals.

Key actors/partnerships

- *Aigües de Barcelona Metropolitan Enterprise of the Integrated Water Cycle* is an enterprise formed this August and integrated by AGBAR. The French group Suez group holds 85% of the capital, while the MAB holds 15%.
- *AGBAR* is a holding of 152 enterprises with 10,700 employees and a turnover of € 4,000 million worldwide, supplying water to 26 million people. AGBAR supplies the majority of municipalities in the metropolitan area. In 2008, the enterprise increased its rates by 8.5% while it declared a profit of € 160 million Euros. The MAB is a local authority that was set up to manage territorial, environmental, housing and transport issues in 36 municipalities. The MAB has power over various public services concerned with the integrated water cycle.
- In late 2012, *Aigües Ter Llobregat (ATLL*), the former public enterprise that captures the water for the MAB and for 121 municipalities of Catalonia was privatized, being now managed by Acciona. In 2010, it had been considered to be the second best public enterprise worldwide.
- The *Water Catalan Agency (ACA*) is the entity managing water purification. In March 2013, this public agency had 1,103 million Euros debts.

Key actions/measures/initiatives

Water resources are limited in the MAB. During a drought between 2007 and 2009, a total of six ships from Tarragona and Marseille brought drinking water to supply the city.

In 2012, measures foreseen in the Rainwater Master Plan (PDAP) for the MAB were introduced and have since continued. The same year, the average metropolitan system efficiency – the difference between the volume of water consumed by users and the volume of water entering the supply network - reached 79.88%, which is similar to that of the year before (79.97%) according to the city council's environmental data.

The water price has risen since 2010. In total, it has increased by 18.3% over three years. The most significant increase (10%) took place between 2011 and 2012. Next year, it is expected to increase by 1%. (La Vanguardia). A social tariff - paying 14% less - will be launched next year to help 15,000 families having difficulties in paying the water bill. During the fieldwork, people taking water from street fountains could be observed. According to MAB, the customers in the area of Barcelona are subsidizing the sanitation of the other municipalities in Catalonia.

The platform Water is Life presented a report on anti-corruption prosecutors urging an investigation of an agreement made in 2011 by the MAB to grant the concession of the integral water treatment for 35 years for approximately 330 million Euros to AGBAR, without a tendering process. The platform provides information about the social costs for citizens linked to this privatization. The procedure to cut off the supply to users who do not pay is also questioned, as well as the fact that AGBAR processes a service fee tax and VAT as a private fee. There are citizens' initiatives to remunicipalise the water management.

Energy

Availability, affordability and consumption levels

In 2008, the total final energy consumption - including consumption of electricity, natural gas, LGP and automotive petrol - was 17,001.78 GWh and the consumption ratio per inhabitant was 10.52 MWh/inhabitant. Consumption per inhabitant increased over the period 1999-2008 at an average annual rate of 0.119% (City Council – Energy and environmental quality).

The city consumed 44.5% (7,536.66 GWh) of electricity, originated chiefly from nuclear plants (54.1%) and combined cycle power plants (22.8%). The consumption of natural gas was 31.8% (5,381.83 GWh), and the remainder diesel 15.4%, petrol 7%, and liquefied petroleum gases or LPG 1.4% (233.12 GWh). Thermal energy generated directly via solar systems was also consumed (0.3%). This energy consumption represents 1.38% of the energy consumption of Spain in 2008. The installed photovoltaic capacity totalled 6,116.5 kWp; 27% in municipal areas and the remainder (73%) in private areas (City Council – Energy and environmental quality). In order to boost its implementation, there were economic incentives for remuneration of photovoltaic installations on rooftops. In 2008, the energy produced by these installations taken together was 7.62 GWh, a figure that represents an annual increase of 226% since 2004.

Today, the so-called energy poverty affects 13% of the population in Catalonia. The aid provided by Caritas Barcelona to alleviate the energy poverty among families has increased by 326% in two years.

Key issues

In 2008, the energy infrastructures located in the municipality of Barcelona and Besòs (boundary with Barcelona), produced 5,243.2 GWh of electrical energy (5,684 GWh in 2006) and 52.4 GWh of solar thermal energy. Of this energy, 93% was generated at major production plants (in Besòs and Sant Adrià). The remaining 7% was produced at small energy plants using cogeneration, at renewable energy facilities and waste energy recovery plants. In 2008, electricity produced with renewable sources was 0.59%. 52% accounted for solar thermal energy of the total renewable energy (City Council – Energy and environmental quality).

Key actors/partnerships

In terms of production, electricity is fed into the transmission and distribution grid, which belongs to the *state's power network REE*, reaching all points of consumption. In the new electricity market (deregulated July 1st, 2009) there are:

• *Distributors*: The following is a description of how the system worked until the market was liberalized: the distributor was a company that supplied electric energy to consumers in a particular territory, awarded by the government. In the case of Catalonia, this was FECSA - ENDESA. The rate was determined by law and the electric company could not charge a higher fee. In this situation there were "rate consumers" – this was only applicable to households consuming <10 Kw, enterprises consuming more than >10 Kw were obliged to find their supply in the free market. Although the market was liberalized, one can still opt for this alternative, which in fact remains if consumers do not decide to change their electric company.

What happens to clients from the old public enterprises? They have automatically the last resort tariff (TUR) and this is a price set by the state. Because this price is lower than the cost of generating electricity, there is the so-called tariff deficit. The National Energy Commission (CNE) estimated the tariff deficit in 2012 at 5.609 million Euros. Consumers that have not changed the company since the electricity market had been liberalized, have the TUR, and those who have already switched, have the rate set by the respective company.

• *Providers:* these can set the price they want and supply energy through a commercial contract. Consumers can choose any of the company providers existing in Spain: thus, accessing the free market.

The major electric companies in Spain are Endesa, Iberdrola, Gas Natural Fenosa, Hidrocantábrico (HC) Energía and E.On. These large companies are not only providers but are formed by subsidiaries that are responsible for the production, distribution and commercialization. With the gas (1 July 2008) and electricity (1 July 2009) liberalization, there are companies such as Gas Natural Fenosa offering electricity and Endesa offering gas.

Barcelona local energy agency is a local public consortium founded in 2002. The agency works on energy savings proposals, energy efficiency in municipal facilities, fostering local renewable energies and providing information and awareness campaigns, technical support and advice.

Key actions/measures/initiatives

Barcelona city council has been committed to energy efficiency, reducing energy consumption and renewable energy. The first Solar Thermal Ordinance (OST) entered into force in 2000, which is a compulsory regulation for new buildings and those under refurbishment to incorporate solar energy

systems to meet the demand of hot water. As a result, in 2008, solar thermal capture systems were installed in 1,226 buildings. In 2002, the Barcelona Energy Improvement 2002-2010 was developed to increase energy production using renewable sources of primary energy, especially solar thermal energy.

Green spaces

Availability, affordability and consumption levels

Barcelona is a compact city with few green areas. There are historical parks and gardens, parks devoted to a particular plant species, and the most numerous are urban gardens, including sports and picnic areas, facilities for children and areas for dogs. There are the forestall parks Collserola and Montjüic mountains, two important green lungs of the city. Beaches may not be considered green spaces as such, but these are important leisure areas for the citizens, and Barcelona's beaches extend for over 4.5 kilometres.

Key issues

After four attempts to close the Park Güell, designed by architect Antoni Gaudí, (one of the most important tourist hotspots of the city) the park has not been freely accessible since October 2013. The Defensem el Park Güell Platform, which comprises 50 entities attached and has collected more than 50,000 signatures, called citizens to a gathering to defend free entry to Park Güell as a public park. The city council assures this privatization will assure the sustainability of the park. To enter the historical park via the Horta Labyrinth, one has had to pay a fee since 1994.

Key actors/partnerships

Parks and gardens: is a municipal enterprise responsible for the conservation and management of green spaces and public trees. Since 2001, the public enterprise holds ISO 14001 certification.

Barcelona and Gijón are the two last Spanish cities with public management and maintenance of parks and gardens. However, employees of the municipal company point out that no further personnel have been recruited for years, with a resulting impact on the quality and maintenance of green areas. The number of employees protesting against the planned privatization of the public company is increasing. In 2011, 30% of the budget was allocated to private companies.

Urban gardens: in 1997, the city council created the Barcelona urban gardens networks which is a program for citizens over 65 years. Currently, there are twelve urban gardens. A plan will soon be expanded to offer local entities the possibility to use 14 abandoned sites for a period of time. But there are many gardens that have been developed in disused urban land by neighbourhood groups. More recently, urban gardens have been mushrooming on the roofs of the city, a potential and useful space for urban farming that has often been left in disuse.

Key actions/measures/initiatives

The construction crisis and the savings on public investment have left the city full of empty lots and this has increased the urban gardening phenomenon. It is presumed that, due to the lack of job opportunities, many locals are opting to get involved in gardening activities.

23.3 Governance and citizens' participation

Multilevel governance

Barcelona is one of the economic powers of the country and it has become a global city. In many respects, Barcelona would have a higher level of governance without the existing tensions between Barcelona and Madrid. Barcelona has requested for years a Mediterranean railway corridor or the AVE to Paris – this has been launched on November 27, 2013 – since many transport connections favour Madrid. Barcelona is part of ICLEI, the network of cities and towns towards sustainability. The local level has been proactive in the development of the Agenda 21.

Regional

In 1998, the Advisory Council for Sustainable Development of Catalonia (CADS) was created to support the Government of Catalonia in matters of Environment and Sustainable Development. The Council collaborates with local governments, networks and other entities in developing and advising local initiatives and projects.

National

The Spanish Government does not show political will to implement a strategy on sustainability. The energy reform approved on July 12, 2013 remains a mystery to many. The Government has also taken advantage of the reform to regulate self-consumption. With the current unstable framework, it is difficult for local governments to remain committed to the use of renewable energies.

EU

Europe has become the benchmark but at the same time there is criticism with regard to the wave of privatizations (water, sanitation, education) coming from Brussels.

Participation and bottom-up action

Participation

AGBAR is not transparent to citizens. Although AGBAR has supplied water to households since 1867, the "legitimacy" of this concession is questioned. A judgment considers the document signed in 1966 is invalid and therefore, there is no concession of the service or contract. In terms of energy, some interviewees believe it is complicated to involve the citizens in energy related issues because it is a difficult concept to understand. There is a feeling of responsibility towards water among citizens.

There are 50 community and 20 neighbourhood centres in the city. The city council is working on the renewal of participatory strategies. This year, the Observatory for citizens' participation was created to improve the relationship between citizenship and city council.

Next to formal forms of participation, citizens are also active in informal ways of improving their neighbourhoods: from fixing sidewalks, to occupying abandoned lots for urban agriculture purposes. Community movements are appearing to restore and self-manage abandoned spaces. For example, with the agreement of the city council, neighbours occupied the warehouse Bloc Onze. Today, this has been

rehabilitated, hosting a self-managed library, an auditorium, climbing wall and an audio-visual laboratory. In addition, there is a growth of cooperatives and groups for ecological consumption.

23.4 Conclusion

Short summary

The city council takes efforts to approach new channels for citizens' participation. Demonstrations against social cuts (sanitation, education, pensions) are constant in the city. In 2009, the Barcelona in transition movement was created with the objective of creating awareness among neighbourhoods while increasing its resilience. Local administrations should work closer with the existing citizens' initiatives.

Barcelona has been ambitious and successful in the maximization of local energy production, and the implementation of a solar panel regulation. However, the current regulatory framework hampers the definition of a clear future strategy on energy. In terms of mobility, due to the current crisis, the use of private vehicles has been reduced and the use of public transportation and bikes is increasing. However, the Metropolitan Transport of Barcelona (MTB) has reduced the frequency of 23 bus lines and has increased the rates. As a consequence, the "I do not pay" citizens' campaign appeared to protest against these measures. Since 1992, the tourism sector has been promoted in the city. With more than 7 million tourist arrivals in 2012, the environmental and socio-cultural effects are evident.

Trends and challenges for the future

- Overcrowding and privatization of public spaces resulting from the tourist activity,
- increase of water prices,
- increase of energy poverty,
- improvement and creation of new transport infrastructures,
- emigration and brain drain,
- increasing Catalan independent feeling,
- the need for a more representative citizens` participation.

24. Spain – Bilbao

24.1 General city profile

Background information

Factual data

The city of Bilbao is the capital of the province of Biscay, located in the Autonomous Community of the Basque Country in the North-central part of Spain. Bilbao is surrounded by two mountain ranges with an average height of 400 meters. The estuary of Bilbao is the mouth of the Nervión and Ibaizábal rivers on their arrival at the Cantabrian Sea, in the Bay of Biscay. The estuary crosses Bilbao, dividing the city in two.

There is a temperate oceanic climate due to the proximity of the Cantabrian Sea. The average maximum daily temperature is 20.3 °C and the average daily minimum is 9 °C. The average annual precipitation is 1,195 mm.

According to the Municipal Census of 2013, the total population in the city is 349,869 inhabitants with 321,346 Spanish citizens and 28,523 foreign-born residents. Bilbao is the most populous city in the Autonomous Community.

Basic government/administrative structure

Bilbao is divided into eight administrative districts and these districts are divided into 34 neighbourhoods. The city council has 14 municipal areas such as public works and services, social action and housing, traffic and transports, culture and education etc. The city council's budget in 2014 will be € 512.8 million increasing by 12.7% compared to the previous year. In July 2013, Bilbao lost its zero debt status because about € 20 million are required. However, opposition parties claim that the debt is at least € 79 million. According to Transparency International Spain, in 2012 the city council of Bilbao is the second best rated city council of the country in terms of transparency.

Economic conditions

Maritime traffic, port activity and shipbuilding, mining and steel were important economic sectors. Throughout the nineteenth and early twentieth century, the city experienced heavy industrialization, being the second most industrialized urban area of Spain, after Barcelona. However, the economic model based on steel industry entered a deep crisis in the 1980s. Therefore, Bilbao was forced to rethink a new economic model, and today is very focused on services. In 2004, the Bilbao Exhibition Centre was created to attract international events and conventions in the city. With the inauguration of the Guggenheim Museum, the tourism sector has been boosted.

According to data from the city council, in the first quarter of 2012, province of Biscay's GDP decreased by 0.3%. In the first quarter of 2013, the overall retail trade index in the city recorded a fall of 4.8%, and was at a negative rate for eight consecutive quarters. Between April and June 2013, hotels recorded a decrease in revenue of 4.6% in comparison to the previous year. Domestic travellers have decreased by 11.4% – probably due to the crisis – and foreign arrivals have increased by 5.7%. The second quarter of

2013 ended with a total of 36,137 licenses of existing economic activity in the city, representing a quarterly increase of 0.4% (160 in absolute terms). The vast majority of licenses correspond to service activities (23,842 licenses). In late June, there were 32,210 people unemployed. Compared to the previous year, the balance is negative, with more 2,519 unemployed people registered (8.5% annual increase).

Special characteristics

Two decades ago, Bilbao was a grey, dirty and contaminated city with an unemployment rate of 25%. It has now become a modern service city. The closure and modernization of key industries and the relocation of port activities to the outer bay have facilitated the urban transformation. The transformation of the riverfront of Bilbao (it cost € 900 million to clean up the estuary) with the Guggenheim Museum opening in 1997 (€ 7,000 million in costs) have drastically changed the image of the city.

Local lifestyle

Mobility

Bilbao is one of the main road traffic destinations in the Basque Country. In the second quarter of 2013, the Bilbao Airport – with an investment of € 600 million Euros – recorded a total of 989,921 passengers, representing a decrease of 12.3% in comparison to the previous year (City Council). With an investment of € 1 billion, the metro was inaugurated in 1995. There are currently two lines and three more are planned to be built. The funicular, inaugurated in 1915, takes passengers to the Arcana Mountain. In 2002, the tram was built and the regional railway has 13 lines. In 2007, the Special Plan for cycling routes in Bilbao was developed to increase bike lanes in the city. Bilbao was one of the only major cities in the country that refused to put advertising campaigns on public buses. In October 2013, Bilbo bus launched advertising panels in 30 units of 19 different lines. Annual revenues for the municipality will be €450,000, 20% of it will be devoted to the maintenance areas.

Key challenges and trends

Economic issues and trends

Fagor Electrodomésticos, a Basque cooperative belonging to the Mondragon Corporation group is in crisis since 2007, and has recently been declared insolvent. Without receiving the necessary needed, Fagor could enter bankruptcy. The future of 1,600 people working in the Mondragón, Basauri, Bergara and Eskoriatza factories is very uncertain.

This year, the first Euskadi solidarity-based economy fair has been launched in Bilbao. In addition, time banks and exchange markets are growing in the city. In January 2014, a social currency called Ekhi will begin to circulate in the city. It will be used in local businesses involved in the project with the intention of boosting the economy. The tickets will have expiration date.

Social issues and trends

In 2012, the number of migrants declined by 1668 people (5.52%) and the Spanish-born population decreased by 865 people (0.27%). Bolivian, Colombian, Moroccan and Romanian are the most common foreign nationalities in the city (City Council).

The Basque social welfare system is highly developed: 39.7 out of every 1,000 inhabitants receive some kind of benefit, compared to an average of 4.75 in Spain (Basque Government). However, The Gune platform organized a demonstration in October 2013 against pension reform and further cuts. With the urban transformation, housing prices have increased dramatically in the city, especially in the neighbourhood of Abandoibarra. Caritas has begun to observe that older people, often with small pensions, support whole families who have lost all their income in the Basque Country. In October 2013, thousands of people attended a rally in the city against reform that the Minister of Education, José Ignacio Wert, sought to implement.

Environmental issues and trends

In 2005, CO2 emissions in the municipality totalled 1,352,185 t. The transport sector accounts for 38%, the residential sector for 23%, the service sector for 21% and the waste sector for 18% of emissions. In comparison to 2005, GHG emissions have been reduced by 16% (City council). Still, more energy efficiency and renewable energy development is desirable. Awareness about energy issues in Bilbao and in the rest of the country could be improved. Due to the crisis the poverty energy phenomenon is increasing among households. In October 2013, the municipality of Bilbao approved a motion, which reduced the speed limit to 30 km/h in residential areas of the municipality and 50 km/h on other roads.

24.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The Ullíbarri-Gamboa reservoir (128H m^3) in the Zadorra River belongs to the Zadorra system, and it provides drinking water to 893,601 inhabitants of the metropolitan area of Bilbao. The daily consumption per inhabitant is 109 litters and the water quality is very good, as one of the best of the country. According to the International Water Association (IWA), in 2007, Bilbao had one of the cheapest water prices in the world. The price of water is 1.25 Euros per cubic meter. However, next year the price will increase 0.84€/monthly and there will be a bonus for families in need (EUROPAPRESS).

Key issues

In the 1980s, the estuary of Bilbao was very contaminated due to dumping of industrial waste and wastewater. In 1979, the CAAB launched the Integral Sanitation Plan of the Metropolitan Bilbao, with an investment of € 1 billion over 30 years. As a result, the Bilbao river estuary was regenerated and rivers and beaches from the surroundings were recovered.

Key actors/partnerships

Consorcio de Aguas Bilbao Bizkaia (CABB) is a consortium created in 1967. It is the public entity in charge of water supply and sanitation services in 72 municipalities of Biscay (around 1 million inhabitants and 90% of the province). The water consortium operates five water treatment plants, purifying 111 million cubic meters annually.

The *72 city councils, the Provincial Government of Biscay and the Basque Government* are part of this consortium, as both owners and consumers. In 2011, the first corporate social responsibility (CSR) report has been launched. The consortium invests about € 55 million annually in related projects.

Aguas de Bilbao S.A is the public company created in 2000, aiming to carry out all the activities related with the water integral cycle.

City Council of Bilbao: supplies water to the population of Bilbao from two different sources: the Ordunte system, fully managed by the City Council, and from the CABB. The city council is responsible for health controls of tap water.

Key actions/measures/initiatives

The CAAB has signed an agreement with the Basque Energy Entity to improve energy efficiency in the facilities. Other mid-term projects are being carried out by the CABB: renovation of electric installations, modernization of plants and control systems.

Because of the rains in November 2013, the city council has taken preventive measures due to the risk of overflow of the Nervión River in the Bilbao estuary. There have been several overflows in the city, the last one in 1983. Due to major floods, more than one hundred municipalities were declared disaster area.

Energy

Availability, affordability and consumption levels

According to the action plan for sustainable energy report from the city council, in 2009 the municipality of Bilbao had the following electrical power consumption: residential 492,674,001 kWh and services: 607,711,746 kWh. The natural gas consumption was residential 366,885,521 kWh and services 124,493,049 kWh. The electricity production reached from renewables was 601,419 kWh, of which 2,000 kWh came from wind production, 184,418 kWh from solar thermal production and 415,000 kWh from solar photovoltaic production. According to an interviewee, the total primary renewable energy in the city is 1.2% while in the Basque Country as a whole it is 6.9%.

The price of electricity is one of the most expensive ones in Europe. The price increased by 69.9% between 2006 and 2011. The gas flat fee (<5,000 kWh) is € 4.3/monthly. The prices on the free market depend on the provider, but prices for the consumption below 10 kW are very similar to the TUR.

Key issues

During 2007-2009, energy consumption was reduced in 421 old buildings due to the application of thermal envelopes, insulation and air conditioning. Steps have also been taken to reduce heat consumption of old houses. This measure provides an average of 524 renovations (511 homes and 13 shops) per year, reaching average savings of 3% to 15% of heat consumption per household.

Pursuant to the requirements of the Technical Building Code (CTE) and the Ordinance on the Environment, housing performance has been improved with lighting installations reaching a 4% reduction in energy consumption. Furthermore, actions to replace conventional boilers to condensing or low temperature boilers have been carried out (Local Action Plan for Sustainable Energy Bilbao).

Key actors/partnerships

- *Basque Energy Entity:* was established in 1982 by the Basque Government. The agency is responsible for developing projects and initiatives in line with the policies defined by the Government. It also works on energy efficiency, diversification of energy sources and the promotion of renewable energies.
- *Iberdrola:* is the main electric company provider, headquartered in Bilbao. It was created in 1992 by merging the companies Iberduero and Hidroeléctrica Española. It deals with both the production and distribution of electricity.

The collaboration agreement signed in 2011 between Iberdrola and the Basque Energy enables the implementation of smart electricity distribution networks in Bilbao to optimize the use of electricity. This will be realized within the next three years, with an investment of € 60 million.

- *BIO Oficina del Cambio Climático de Bilbao:* BIO is a pioneering initiative created in 2009 with the objective of coordinating the City Council and the citizens in developing the Local Action Plan for Sustainable Energy Bilbao, as well as informing and raising awareness about climate change among Bilbao residents.

Key actions/measures/initiatives

To reduce the energy consumption of public lighting, 5,123 new energy-efficient light bulbs were installed between 2008 and 2010. 2,500 incandescent lights will be gradually replaced with LED technology for the Christmas ornament lighting. The city council has also made efforts to reduce energy consumption in public buildings and municipal sport centres. The city council has placed a new type of tile in pedestrian areas, like the traditional one in appearance, incorporating an additive capable of absorbing carbon dioxide: the GeoSilex (Local Action Plan for Sustainable Energy Bilbao).

During European Mobility Week, twenty automotive workshops in Bilbao offered the possibility to monitor the CO2 emissions of vehicles for free. The city council, through the municipal company Ekintza Bilbao, aims to raise awareness among companies to reduce CO2 emissions. The “Measuring the carbon footprint program in the organization” report has been launched with 17 participating companies.

Green spaces

Availability, affordability and consumption levels

Bilbao is popularly known as the Bocho, which in Basque means ‘hole’ is surrounded by mountains. The city contains 21 urban parks (over 200 hectares) and the forest parks (1,025 hectares). The five hills surrounding the city are part of the metropolitan area of Bilbao, and are equipped with 18 recreational areas. The hills can be accessed from any area of Bilbao and on weekends, many locals spend their leisure time there. The city has no fenced parks. The availability of green areas has increased considerably in recent years and many small actions have been carried out to green the various neighbourhoods of the city. However, the topography of the city determines a lot the development of green spaces. There has been some criticism that newly created green spaces in the city are largely urban and feature a lot of concrete.

Key issues

The city council has been responsible for uniting existing urban and forest parks, calling it the Green Belt Bilbao. With the configuration of the Green Belt Bilbao, in 2004 there was 16.58 m^2 of green space/inhabitant, while in 2008 it was 24.5 m^2 / inhabitant (city council).

The Biscayan Mountain Federation and the municipal area of public works and services have developed the so-called Grand Recorrido de Bilbao 228. It is a 71.25 km track with 11 routes passing through the five hills surrounding Bilbao with the aim of fostering leisure activity in the natural areas surrounding the city. In 2013, the trail has been approved by the Spanish Federation of Mountain Sports and Climbing (FEDME).

Key actors/partnerships

- Administratively, the maintenance and planning of green spaces corresponds to the *Works and services department* of the city council. The *Environment department* is responsible for the approval of plans.
- *Constructora Fomento de Construcciones y Contratas (FCC)* is responsible for cleaning and waste collection services. In 1973, FCC began to manage cleaning services in Bilbao. The replacement of waste collection vehicles with electric ones has recently begun.
- *Urbaser* handles the conservation and the maintenance of sloping grounds, parks and urban furniture.

Key actions/measures/initiatives

Certain environmental groups are critical of the policy and management of green spaces as they are doubtful whether it enhances the ecosystem from a purely environmental point of view. For these environmental groups more focus should be placed on the regeneration of forest and the restoration of the native vegetation. Furthermore, more ambitious plans should be aimed for, from their point of view.

24.3 Governance and citizens' participation

Multilevel governance

Bilbao is the capital of the Biscayan province and the administrative authorities at the provincial level are located in the city. In 1998, Bilbao signed the Aalborg Charter to join the European Sustainable Cities and Towns Campaign. This commitment fostered the development of the Agenda 21. The Incorporation in 2003 to Udalsarea 21, the Basque Municipalities for Sustainability, allowed the establishment of a concrete plan of action following the guidelines of the Local Agenda 21.

Regional

The water consortium is composed of eighty municipalities, the Provincial Council of Biscay and the Basque Government. In 1992, the Bilbao Ría 2000 was created. This is a public corporation, with the three Basque administrations as equal constituent members - the municipalities of Bilbao and Barakaldo, the Provincial Council of Biscay and the Basque Government- and the State administration. Instead of money, each administration provided land in order to enhance the redevelopment of the city.

EU

With Bilbao's Comprehensive Sanitation Plan, the city met European requirements for wastewater treatment, and life has been recovered in the estuary. As European directives require that the water rates meet all investments, water prices will increase in the near future. In 2010, Bilbao joined the EU initiative of the European Covenant of Mayors to reduce its GHG emissions by 20% by 2020.

Participation and bottom-up action

Participation

The Basque country has a long tradition of forming associations and advocacy groups. According to the city council data, there were 1,349 associations registered in the city in late 2008. Consultation can be done through the website of the municipality or through district centres. In recent times, consultations have also been made through surveys.

Some advocacy groups would like better cooperation with the city council. More information and consultation were specific items asked for.

In November 2013, Ekologistak Martxan and other 20 organizations from the country launched 60 propositions to the European Parliament with the aim of improving the management of water resources in the European Union.

Bottom-up action

Biourtu is a group of professionals from the building, design and horticulture sector, who are engaged in creating gardens on terraces and roofs of urban buildings. A construction and urban gardening plan is carried out, and courses and workshops are also conducted. The residents of the San Francisco neighbourhood have recently opened an urban organic garden. The Civic Centre of the district conducts training courses regularly to encourage citizen participation in the maintenance and management of this communal garden.

24.4 Conclusion

Short summary

The change from an industrial economic model to a service-focused one has resulted in less pollution, better water quality and more green areas in the city. In 2010 Bilbao was awarded the Lee Kuan Yew World City Prize, considered the Nobel Prize of urbanism. Bilbao is in third place in the ranking of sustainable Spanish cities according to a study sponsored by Siemens.

In terms of mobility, the development of the metro and tram fosters the utilization of public transportation. Due to the topography of the city, it is complicated to foster the use of bike in the whole city. The water is of good quality and one of the cheapest of the country. Investments have been made in recent years to reduce leakages. As water is not a scare resource in the area, potable water is used for the irrigation of green spaces. Air quality has improved significantly in the last decade but traffic has become a major source of pollution. Being an urban agglomeration, the city has difficulties in maintaining adequate levels of air quality. The city can be proud of its green areas. With the existing urban parks and the five mountains, locals have a good access to these high quality spaces. In terms of energy, in developing a

climate change plan for Bilbao, the city council is making an effort on energy efficiency and energy savings. However, more development of renewable power generation could be fostered. The existing local regulations (protected mountains, protected roofs in the old town) hamper the implementation of photovoltaic or wind power. Communal urban garden initiatives are increasing in numbers.

Trends and challenges for the future

- Awareness of energy issues,
- Increase of energy poverty,
- Renewable energy: there is potential to increase thermal and solar energy,
- Water prices will increase due to European directives,
- Changing the current mobility behaviour,
- The planned development of new metro and tram lines and bicycle lanes can decrease the use of private vehicles and therefore improve air quality,
- Foster non-traditional participatory methods,
- Governmental cuts hamper the development of sustainable policies.

25. Spain - Madrid

24.1 General city profile

Background information

Factual data

Madrid, the capital of the Kingdom of Spain, is located in the centre of the Iberian Peninsula. The city is located only a few kilometres from the Sierra de Guadarrama Mountains in the Tajo basin and is crossed by the Manzanares river. The weather is continental Mediterranean, with average temperatures in winter around 8 °C and in summer around 24 °C with an annual precipitation of less than 500 mm.

According to data from the city council, in 2013 the city had 3,215,633 registered inhabitants, of which 446,165 were foreign nationals. The population slightly declined by 22,304 (-0.69%) compared to January 2012.

Basic government/administrative structure

The city has 21 administrative districts and every district is managed by a district municipal board. There are six public policy fields (economy, public finance and public administration/ security and emergency/ planning and housing/ family, social services and participation/ arts, sports and tourism).

The municipality has a debt of 7,780 million Euros. This debt hampers the management of existing projects and hinders the development of new ones. The budget in 2014 was 4,447,359,236 million Euros, an increase of 3.4% compared to 2013 - the first increase since the beginning of the crisis.

Economic conditions

Madrid is one of the strongest economic regions in Spain. For 2012 it was estimated that Madrid contributed close to 18% to the national GDP. In the first years of the new millennium the economy of Madrid grew strongly and significantly. By 2005, in terms of absolute GDP output, the city had become the 23rd richest city globally and the third richest in Europe. In this economic success story, the construction sector and the service sector played a central role. At the climax of Madrid's growth in 2005 the construction sector grew by an estimated 8.2% while more than two thirds of the workforce were employed in the service sector which made up 85% of economic activity in the city. Of the service sector, financial services and commercial services covered about 32% each. However, since the beginning of the economic crisis, economic activity and employment suffered also in Madrid, although not as much as in other regions of the country. In 2013 unemployment in the region of Madrid was at 20.05% and therefore below national average.

Local lifestyle

Mobility

Due to its location in the centre of the Iberian Peninsula Madrid is well connected nationally and internationally. The city is the centre of the Spanish high-speed train network and Madrid Barajas Airport, in 2013, was the sixth busiest airport in Europe. Within the city, the public transport system offers the Cercanías commuter trains, a metro system and bus service. Although cycling has played a minor role in past years, in 2014, a public e-bike rental service was inaugurated.

In 2004, the commuter train system was the target of terrorist attacks, which left 191 people dead and over 2000 wounded.

Key challenges and trends

Economic issues and trends

According to data from the city council, in 2013 there were 258,044 unemployed, an increase of 9.53% on the previous year. Still, with 20.05%, the city is below the national average. All economic sectors in Madrid were negatively affected by the crisis. Agriculture and the construction sector however most severely. In 2013, employment in the construction sector decreased by 7.67% and in agriculture by 9.62%. According to the trade association “Círculo de Empresas”, one of the biggest challenges for growth in the region is a shortage of credit for small and medium sized enterprises which leads to a delay in investment and therefore economic activity.

Social issues and trends

The austerity measures decided on the national level also have to be implemented at a regional and municipal level. Therefore, the region as well as the municipality of Madrid has introduced budget cuts that also affect the social sphere in Madrid. Among those are for example cuts in education. Between 2010 and 2013 spending for education was reduced by 12.3% in the region of Madrid. Furthermore, as a result of the economic crisis there have been a high number of persons evicted from their homes for not being able to pay the mortgage on their house or the rent. There is no official data on evictions, but according to the Plataforma de afectados por la Hipoteca (Platform for those affected by their mortgage); there have been 171,110 evictions in the country since the beginning of the crisis. For the region of Madrid the platform estimates 77,435 persons evicted since the beginning of the crisis until mid-2012 for failing to pay their mortgage.

Environmental issues and trends

The environmentalist group, Ecologistas en Acción Madrid claims that the city has again emitted more nitrogen dioxide (NO2) than the legal limits established for the protection of human health prescribe. In 2012, at least 11 of the 24 stations that measure this contaminant exceeded the limit. In 2010, Madrid was the city with the most carbon dioxide pollution in Spain. Madrid recorded noise levels of between 70 and 90 decibels, well above the 65 decibels recommended by the World Health Organization.

The 2012 study of average daily traffic flow reports a decline of 5.42% in the number of vehicles on the road in the city in comparison to the previous year. This is the fifth consecutive decline and the biggest so far.

24.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The tap water from Madrid is of good quality. According to the latest survey by the National Statistics Institute, average consumption per person was 140 litres per day. The total current consumption in 2012 (525 hm^3 between industrial, commercial and domestic use) is equivalent to the consumption of 15 years ago (505 hm^3 in 1998) even though the population has grown by 1.5 million. According to data from the city council, since 2013, the price of water including VAT is: 0-25 m^3: 0.9207€ / 25-50 m^3 in winter: 1.336176€ and in summer: 1.48446€ / >50 m^3 in winter: 2.71404€ and in summer: 3.426516€).

Key actors/partnerships

Canal Isabel II: was founded in 1851 and is the unique Spanish public entity that manages the integral water cycle in its entirety, supplying water to 6.1 million inhabitants, with a volume of 535 hm3/year. It is the largest producer of hydroelectric power in the community of Madrid with an installed capacity of approximately 40,000 kW. From an environmental point of view, programmes have been implemented in the last 5 years to reduce water losses in the networks, achieving a saving of 13%. In 2012, the Canal Isabel II signed a contract to transfer the powers to a new private enterprise Canal Gestión (Management) - focusing on the provision of services supply, sanitation and reuse, including user services and business.

Key actions/measures/initiatives

There are plans for selling parts of the Canal Isabel II Company. Citizen initiatives are questioning the need for this step. As they argue the company is providing a good service at an affordable price without making a loss. On the other side, the local administration claims that there is a need to invest 4,000 million Euros in the next 15 years to comply with European regulations. The ultimate goal is to privatize up to 49% of the public company by 2015.

Energy

Availability, affordability and consumption levels

According to the municipal energy plan 2004-2012, energy consumption is 2.1 tep/inhab and CO_2 emissions are 6.1 t/inhab. In 2013, total energy consumption was 10,217 ktep. The final energy sources consumed were as follows: petroleum derivate 62%, electricity 21%, natural gas 15%, and remaining sources 2%. In the last thirteen years, the energy consumption has increased by 4,869 ktep, with an annual average increase of 5.1%. Renewable energy produced in 2013 was 291.4 ktep, approximately 3% of the total consumption. This is mainly thermal energy (biomass, waste, solar, cogeneration) with 168.9 ktep and electrical power with 122.5 ktep. This energy is produced by domestic means (urban waste) and external means, with gas cogeneration. Domestic electricity generation contributes 5.2% to the final consumption. To a lesser extent, hydraulic energy is being used generating 275 GWh in 2013.

Key issues

Deregulation: on 1 July 2008, following EU directives, the gas market was liberalized and on 1 July 2009 the electricity market. Previously there had only been one energy provider in a region. Overall, the goals of lowering the gas and electricity prices were not achieved.

TUR: to make the transition between a regulated market and a deregulated one, a decision was taken to set up the so called tariff of last resort (TUR). TUR is used for all domestic users of both gas and electricity (TUR can only be contracted by electricity users with a contracted capacity of less than 10 kW which corresponds to 95% of contracts. It is said that almost 20 million households still use the TUR. The price of the TUR is set by the government.

Key actions/measures/initiatives

According to the *Madrid critical observatory of energy*, the city did not meet its emissions reductions targets between 2004 and 2012. It needs to be seen if the new energy plan, which the city council launched at the end of 2013 will achieve its aims. National legislation, such as the taxation on consuming privately produced solar electricity does not help in the transition towards more renewable energy.

Green spaces

Availability, affordability and consumption levels

Residents of Madrid have access to a number of large and rather central parks such as el Retiro, la Casa del Campo or the newly developed Madrid Rio park. For public parks reclaimed water is used for the irrigation of green areas. Furthermore in 2012, surface of green areas has increased by 3.5%. In addition to parks in the city, residents are using the surrounding mountains for recreational purposes on the weekends or on holidays.

Key issues

Madrid's main project in recent years has been the burial of the M30 motorway and the construction of Madrid Río Park on the top of the tunnels. Madrid Río cost 371 million and it cost 3,226 million more to bury the M-30. Despite the high costs of the project, satisfaction with the project is rather high among locals.

Key actors/key actions

- *Madrid city council* is deciding on policies, establishing a budget and awarding contracts for the maintenance of green areas.
- *FCC, Sacyr-Valoriza, OHL-Asvan and Cespa* contractors active in Madrid for the maintenance of public areas such as street cleaning, waste disposal and maintenance of green areas.
- *Union of the street cleaning and garden service*
- *Citizens' platform defending green areas:* various initiatives active in the field of parks and green areas such as Salvemos la Casa de Campo, Salvemos campamento and Parque Sí en Chamberí

24.3 Governance and citizens´ participation

Multilevel governance

Madrid has been the capital of Spain since the seventeenth century and the seat of many national institutions. Therefore, the city government has traditionally had an influential position in the context of Spanish politics. The Autonomous Region of Madrid is only made up of the city of Madrid at its surrounding area. Therefore, city and region have to work together closely. However, in 2013, the debt of the region of Madrid increased by 23.4%. Therefore, also the regional level is severely limited in its policymaking by financial constraints.

Participation and bottom-up action

Participation

The territorial District councils can engage neighbourhood associations and representative associations. Citizens can also participate in the affairs of the city through individual consultation meetings and consultations through the council website.

The 15-M Movement, also called the outraged movement, is a citizen movement formed following the demonstration of 15 May 2011. There was a series of peaceful protests in Spain, with the intention of promoting a more participatory democracy. Following the 15M, many platforms, associations, cooperatives, and political projects and groups for specific subject areas (water, energy, housing, democracy, civil disobedience, economy, education, health, etc.) have been founded.

Bottom-up action

In 2009 the sports centre of the square Cebada was demolished, with the intention of building a new one. Yet, the economic crisis delayed the works. The council wanted to sell the lot to private companies to create a shopping mall, but there were no investors interested. Meanwhile, several neighbourhood groups regained the wasteland of 5,500 square meters in the district of La Latina, in the heart of the city. In this space there have been developed film and theatre activities, workshops, seminars, competitions, urban gardening and the opportunity to swim in the summer. El Campo de la Cebada has recently been awarded with the Golden Nica Award 2013 by the Ars Electronica festival under the Digital Communities category. The project is "proof that crises create opportunities," says the festival.

The Madrid Urban Garden Network is an initiative promoted by different groups engaged in agriculture in urban areas. This is a network of networks so that collectives engaged in organic urban farming, being public and communal, can have a meeting and communications point. Currently, there are 15 urban gardens that are part of the network.

24.4 Conclusion

Short summary

The current situation of Madrid is heavily affected by the economic crisis that Spain is experiencing. Due to the crisis, the budget to maintain green areas has been reduced and the enterprises responsible for its management are beginning to use more endemic species because they require less maintenance and therefore fewer funds. Improvements and new irrigation systems are taken into account. There are

intentions to privatize the public enterprise supplying water, which leads to discussion between the administration and civil society groups.

Trends and challenges for the future

- Privatization of water, increasing rates
- Maintaining green areas with a limited budget
- Lack of awareness of energy challenges among the population
- Uncertainty on the development of renewable energies and self-consumption
- Emigration, brain drain, demographic change
- Social cuts, citizens´ demonstrations

25. Spain – Valencia

25.1 General city profile

Background information

Factual data

The City of Valencia is the capital (as well as the most populated municipality) of the Autonomous Community of Valencia, and in terms of population, the third largest city of Spain, hosting 797,028 inhabitants in the administrative centre. Its metropolitan area has a population of 1,774,201 inhabitants, being also thus the third largest metropolitan area of the country. The City of Valencia is the fifteenth most populous municipality in the European Union. Its port is the largest one on the Mediterranean Western coast, and the fifth busiest container port in Europe.

The city is located on the banks of river Turia, in the Levant coast, exactly in the centre of the Gulf of Valencia. In 1957, the City of Valencia suffered a severe flood by the river Turia, reaching almost 16 feet of water in its streets. For this reason, it was decided to drain and reroute the river that now passes around the Southwestern suburbs of the city. The drained area was transformed into a four-mile park, which crosses the city. It is nowadays used for outdoor activities, such as sports, walking and cycling.

There is a subtropical Mediterranean climate with one of the mildest winters in Europe and long warm to hot summers. Its daily average temperature is 22.3 ℃. It has 2,660 annual hours of sunshine. The average annual precipitation is 454 mm.

The City of Valencia has undergone a significant growth in the foreign born population, which rose from 1.5% in 2000 to 15.1% in 2009. The main foreign nationalities in the city are Ecuadorian, Bolivian, Colombian, Moroccan and Romanian.

Basic government/administrative structure

In the City of Valencia, there are four levels of public administration with different responsibilities and competences. On the one hand, there is the City Council of Valencia, which is the administrative body with most of the competences and public civil servants in the city, as it regulates citizens' day-to-day life and important issues, such as urban planning, transport, municipal tax collection, traffic safety management via the local police and maintenance of public roads and gardens. It is also responsible for the construction of the municipality's main facilities, such as day-care units, sport centres, libraries, care homes for the elderly, etc.

Valencia's Regional Council has fewer competences than the city, but manages the interests of the emblematic buildings in the city.

The Autonomous Community of Valencia is the Government of Valencia, which has broad key competences in the management of the city; from education to social affairs, transit, economic policies, trade, etc. It is also responsible for the construction of facilities, such as hospitals, schools, universities and homes for the elderly, etc.

Finally, the fourth level of government is the General Administration of the State, which is in charge of specific issues, such as security, justice, management of ports, airports and coasts.

The Municipal Council is headed by the Mayor, Rita Barberá Nolla, from the Spanish popular party, who was elected by absolute majority of the votes of the 33 members of the city council. The budget approved by the City Council of Valencia for 2014 is of 739,663,962 Euros. It has been reduced by 600,000 Euros, which represents a 0.1% reduction.

From the 87 million Euros directed to social service delegations, 30 million Euros were allocated to social welfare and 8.33 million Euros to employment and entrepreneurial projects.

On the other hand, there were 8.7 million Euros allocated to education; 1.5 to youth; 13.4 to sport; 4.8 to culture; 21 to gardens and parks; 54.4 to solid waste management and cleansing; 12 to the integral water cycle; 2.3 to urbanism; 67.1 to traffic; 8.6 to citizen security; 4 to tourism and 7.1 to innovation.

Economic conditions

The economy of Valencia and its metropolitan area is, as in the rest of the business landscape, very much linked to the SMEs (small and medium enterprises), highly competitive, recognised by its entrepreneurial nature and with mainly export purposes.

The City of Valencia had a positive dynamic growth over the last decade, due mainly to the construction industry and tourism. Almost 84% of the working population is employed in service sector occupations, while 14% of the population is employed in the industrial sector (food and agriculture, paper and graphic arts, wood and furniture, metallic products and footwear and clothing).

The sector that holds the biggest number of companies is the food and agriculture sector. On the contrary, the Ceramic and Toy sector are the ones holding a lower number of companies.

The port of Valencia handles 20% of Spain's exports, being the country's biggest port for container traffic. Extensive renovations have been completed and ambitious expansion projects are currently taking place.

In terms of agriculture, only 1.9% of the working population is dedicated to agricultural activities, with 3,973 hectares planted mostly with horticultural cultivation.

However, it needs to be outlined that since the economic crisis started in 2008, Valencia has been one of the most affected regions and has had difficulties in slowing down the growing unemployment rate, as well as the growing government debt, etc. Therefore, in the last years, severe spending cuts have been introduced by the government of the city.

Mobility

The citizens of Valencia make around 1,895,022 daily journeys, which means an average of 2.37 journeys per person a day. Almost 320,000 of these journeys (17%) take place to the outskirts of the city, while more than 1,575,000 journeys (83%) remain inside the city.

68% of all the journeys take place through sustainable modes. The journeys by private car represent the 31.9% of the total journeys, which means 603,600 daily internal and external journeys. The public transport keeps 32.2% of the journeys, and almost half of the journeys taken place inside the city are made by foot (48.2%).

The City of Valencia has high favourable conditions for the use of bicycles inside the city, reaching almost 75,114 journeys per day (from these, more than 40% of the journeys are made by public bicycles and the rest by private bicycles).

69% of these journeys are due to work journeys, and 31% made by students.

The City of Valencia wants to reinforce the participation in more effective and less polluting modes of travel, as well as secure the accessibility and the mobility of the citizens, recovering at the same time, the urban space and the quality of life.

The majority of journeys in Valencia are done by foot, which puts the city in an excellent position to provide and achieve a more sustainable mobility. It is therefore the key element to enhance citizens' traffic safety.

As the use of bicycles has notoriously increased in a very small amount of time (17% since 2009), the City of Valencia is improving the conditions of the cycle lane network, as well as the traffic safety and accessibility.

In terms of public transport, the main challenge for the City of Valencia is to increase the speed of the transport on the surface, so it can be effectively competitive with the private transport. For this purpose, they are working on prioritization measures in the bus system.

When it comes to the private use of the car, the City of Valencia has worked towards citizen awareness, focusing on rationality and sustainable parameters.

As the city already has a municipal integral and smart traffic management, and as the use of the bicycle and urban transport already counts with advanced technologies, the City of Valencia is now looking for synergies among the different agents for a common management.

Special characteristics

Since the seventies, the City of Valencia became one of the first cities in Spain to manage traffic by computer until today. By building the modern Traffic Management Centre, the city aims to be the meeting point between all stakeholders involved in the mobility of the city; pedestrians, bicycles, private cars, public transport, police, media etc., performing comprehensive traffic management in order to optimize the mobility conditions for all the road users.

Local lifestyle

The City of Valencia is growing in a sustainable way: 60% of the municipal district is protected urban gardens, and through a recently launched project on urban gardens, citizens will have the opportunity to cultivate and take care of some of these urban gardens.

The Urban Mobility Plan has considerably improved, the municipal bus fleet being 100% ecologic. The use of the bicycle is promoted in the city as the preferential transport mode. The city has a network of 130 Km of cycling lane and a bicycle rental system is also now in place; *Valenbisi* will allocate 2,750 bicycles, distributed in 275 base stations, installed in strategic city spots. Electrical cars also have a spot in Valencia, where several charging stations across the city have been installed.

More than 20 streets have been recently pedestrianised, originating consequently an environmental improvement. Almost 600,000 square meters have been paved with sound- absorbing pave. 1,000 traffic lights use LED technology.

The City of Valencia counts 43 photovoltaic solar plants, and the use of water has decreased in a 7.2% between 2003 and 2008. Valencia is the only Spanish city, which does not use drinking water for watering and street cleaning. 42 parks have an intelligent watering system that allows a saving of 35% of water.

100% of the glass is recycled, as well as 95% of the containers and 80% of the paper and cardboard. The city will soon have a new regulation in the field of noise pollution.

Numerous raising awareness campaigns have taken place in the City of Valencia, as well as a tax refund system for the protection of the environment and the responsible use of water.

The City of Valencia is a signatory of the Covenant of Mayors, and has currently developed the *Valencia 2020 Strategy* to achieve a more sustainable urban environment.

Key challenges and trends

Economic issues and trends

If the demographic growth of the region needs to be outlined, so does its evolution in terms of outcome and income. The real GDP of the Autonomous Community of Valencia in 2011 was of 72,986 million Euros, 50% above the level in 1995. The phase of the highest growth was between 1995 and 2000. However, the impact of the economic crisis has fully affected Valencia's economy, which has been presenting negative real GDP variation rates since 2008. It is foreseen that only in 2014 a slight improvement will take place, with a growth rate of 0.7%.

The recovery of the growth in the Community of Valencia is suffering delays as the accumulated imbalances during the expansive phase are absorbing themselves very slowly. The excessive influence of the private sector and the families, and the high rate of unemployment generated by the construction crisis are depressing households' consumption and business investments.

With the crisis, public finances have suffered strong pressures, both from the side of the income and from the side of the expenditure, which have caused a high level of depth. The economic crisis has meant a strong destruction of employment in the Community of Valencia since 2007 (almost 420,000 net jobs), which represents a loss of 20%, registering as well no stop negative variation rates since 2008. The Community of Valencia, albeit is located in the group of developed regions in Europe, is also suffering from a low productivity (85% from the EU-27 average), draining its competitiveness and capacity to create wealth.

Due to the decrease of economic activities and job opportunities, the region of Valencia also holds one of the highest rates of youth unemployment in Europe. There seems to be a lack of opportunities for those who have recently ended their studies, especially for low-skilled young graduates. When starting their own business, young graduates also encounter many difficulties to kick off promising projects as they hardly have working experience and thus are less creditworthy. The current institutional and legal framework for entrepreneurship activities is also perceived as de-motivating.

25.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Water has a prominent role in the City of Valencia due to its main activities (agriculture, industry and tourism) and its geographic location in the Mediterranean basin, with annual periods, mainly in autumn, susceptible of originating phenomena, such as the cold front. This fact, together with the flatland orography of the city, forces to build strong infrastructures as safeguard to floods, events that have unfortunately regularly taken place in the city in the previous decades.

The Municipal Delegation of the Integral Cycle of Water carries out its activities, including the abstraction of water (that comes from the rivers Júcar and Turia), its treatment and the distribution to consumers. Consequently, the used water is abstracted and directed to treatment stations, thus it is brought back to the receiver riverbed with similar quality conditions as when it was abstracted.

The management of water, whose consumption has multiplied by six in the last century, requires sustainable procedures to avoid the squandering, as well as to fulfil the environmental requirements of the natural cycle.

In the City Council of Valencia, the Delegation of the Integral Cycle of Water develops and manages all activities through the Integral Cycle of Water Service, which as explained, covers not just the supply but also the sanitation.

Summarising, these are the following tasks:

In the supply:

- Abstraction of surface water and groundwater
- Treatment process
- Distribution, by means of conduits, to the consumption points

In the treatment:

- Hygienist activities
- Prevention of floods
- Treatment and environmental protection

As of 2013, the cost of water in Valencia was of 1.78 Euros/ m^3, having decreased the consumption by 12% due to the low economic activity and the stagnation of population.

Key issues

Since centuries, the distribution and division of water in Valencia has created numerous conflicts among farmers. For this purpose, the Court of Water ("Tribunal de las Aguas") was created. This body meets every Thursday in the morning, in front of the cathedral, to mediate the conflicts originated by the distribution of water among regional farmers.

Due to the high tourism activities in Valencia, water consumption increases considerably in the high season, due to the high use of golf camps, swimming pools, gardens, etc. Those stakeholders interested in avoiding Valencia's citizens paying more for the use of water, strongly encourage the implementation of touristic differentiated prices. They only see taxation as a path to achieve a sustainable use of water.

Key actors/partnerships

Aguas de Valencia – EMIVASA

Aguas de Valencia was created in 1890 to supply the City of Valencia with drinkable water. Currently, it is a business group who has delegated the integral management of water to its subsidiary company EMIVASA, where Aguas de Valencia contributes with 80% of the resources, and the City Council with 20%. Approximately 1 million inhabitants depend on its supply.

EPSAR

The public body responsible for the sanitation of wastewater in the Autonomous Community of Valencia (EPSAR) was created in 1992 by the Government of Valencia.

Energy

Availability, affordability and consumption levels

The consumption of primary energy in the Autonomous Community of Valencia in 2011 has been of 10,604 ktep, 7.1% less than the previous year.

The demand of final energy has been of 8,060 ktep, a decrease of 3.3% with regards to 2010.

As in previous years, in 2011 the sector of transport and industry were the economic sectors that consumed the most, with percentages of 40.8% and 30.5% respectively. The services and household sectors represent the 23.9% of the final consumption.

The industrial sector consumed 2,462 ktep, which meant a decrease of 3.5% with regards to 2010. This decrease was caused by an improvement in energy efficiency as well by the economic crisis.

The sector of transport consumed 3,286 ktep, and as in 2010, decreased its energetic demand by 3.6%. The increase of the consumption of biofuels in 2011 by 17.4% in comparison to 2010 needs to be mentioned.

The domestic sector consumed 1,140 ktep, keeping a similar value as in 2010.

The sector of services consumed 792 ktep. This sector covers the infrastructures and the public facilities, such as hospitals, schools, public street lightening, as well as the business premises. This sector followed the line of 2010, decreasing its consumption by 2%. This decrease is also manly due the economic crisis.

The sectors of agriculture and fisheries consumed 381 ktep, which represents the 4.7% of the final consumption structure, an amount that remains constant throughout the years.

Key issues

The Autonomous Community of Valencia has developed a Saving and Energy Efficiency Plan that aims to:

- Reduce the consumption of primary and final energy in the Autonomous Community of Valencia
- Improve the competitiveness of businesses, decreasing its energetic costs, by means of introducing more efficient technologies
- Reduce the energetic dependency of the Autonomous Community of Valencia
- Reduce the environmental impact linked to the use of different energetic sources to match the goals established by the EU and the Kyoto Protocol

Cluster of Energy of the Autonomous Community of Valencia

The Cluster of Energy of the Autonomous Community of Valencia has as its main goal to facilitate the innovation among Valencia's businesses in the sector of energy to improve its competitiveness.

The Cluster will allow the cooperation among the different agents in the sector and will reinforce the collaboration of synergies among the businesses, the Technological Institutes, the Research and Capacity Centres and administrative bodies.

Key actors/partnerships

IBERDROLA

IBERDROLA is a Spanish private multinational electric utility company based in the Basque Country. It is Spain's largest energy group by market capitalisation, the global leader in wind energy and one of the world's largest utilities by market capitalisation. IBERDROLA is the City of Valencia's main energy provider.

IVACE

The Valencian Institute of Business Competitiveness (IVACE) is a public body of the Government of Valencia, assigned to the Ministry of Economy, Industry, Tourism and Employment.

The aim of the institute is to manage the industrial policy of the Government of Valencia and to support businesses in the field of innovation, undertaking, internationalisation and investment seeking, as well as to promote energy saving, energy efficiency and renewable energies resources. The institute also steers the energy policy in the region.

Green Spaces

Availability, affordability and consumption levels

In the case of Valencia, the surface of green urban area per inhabitant is 5.64 square meters per inhabitant (the ideal surface of green urban area per inhabitant, according to the World Health Organization, is 10-15 square meters per inhabitant). The surface of urban green area of the City of Valencia has slightly increased, as in 2006 each inhabitant was entitled to only 5.3 square meters of green area.

Currently, the City of Valencia has almost 4.6 millions of square meters of green urban area. In 2010, the government spent more than 35 million Euros for the maintenance and conservation of the city parks and gardens, which is equivalent to 2.23% of the total budget of the City Council. The main urban parks are Viveros, Marxalenes, Benicalap, La Rambleta, Cabecera, Blasco Ibáñez, Orriols and Alameda, which are outside of the centre. The centre of the city has smaller parks, such as Parterre, Glorieta, Parque del Oeste, Botánico, Hespérides, Gran Vía and Hermanos Maristas.

The urban woodland in the City of Valencia reached 157,504 exemplars in 2009.

The City of Valencia is working towards recovering gradient urban garden ground, as well as creating 100 hectares more of special parks in the transition between urban gardens and the city in areas such as Vera, San Miguel de los Reyes and Faitanar.

In terms of the watering system, Valencia is one of the Spanish cities that best saves water resources. The City Council plants young trees, which have a better capacity to absorb CO_2 emissions, as well as low consumption species. The city also gives priority to the native species, which have a better capacity of adaptation. The mulching technique is often used; which consists of covering the ground with materials to avoid the contact with the air, and therefore weeds can be eliminated.

Key issues

L'Albufera

L'Albufera is the most important and emblematic natural space in Valencia. Its conservation is crucial as it is a relevant biological reserve and a traditional landscape of exceptional value. Currently it is suffering important environmental challenges: the main lake is a hypertrophic system, due to the excessive entrance of organic allochthonous material and inorganic nutrient. There is a poor fauna and the extinction of high relevant ecological species is not decreasing. The City of Valencia is currently developing a regeneration plan with the aim of reviving the ecological potential of this natural space.

Housing

The 2009-2012 Regional Government Housing Plan in the Autonomous Community of Valencia was implemented by the Government of Valencia with the aim of strengthening its power in the fields of housing and land. These are the four key themes of the new plan:

- Facilitate the supply of affordable housing;
- Stimulate the demand for housing; the access to both property and rent;

- Support the renovation of buildings and urban areas, and
- Promote better building standards, as well as energy efficiency in the construction of public protection housing

25.3 Governance and citizens' participation

Multilevel governance

The Provincial Council of Valencia approved in 1999 the adhesion to the Aalborg Charter, with the aim of:

- Creating a network of local entities with the interest of working together towards sustainable development, applying municipal sustainable and participative policies;
- Establishing agreements with municipalities of the province of Valencia to proceed with environmental auditing, and
- Providing Valencian municipalities with financial support and technical assistance for the implementation of different action plans.

In 2000, the "Carta de Xátiva" was presented, in which is stated the need of creating a Network of Valencian Municipalities towards Sustainability. The network is composed of the Provincial Council of Valencia, the Municipalities in Valencia, as well as public and private entities that decided to join, being this a network to achieve more sustainability in accordance with the Agenda 21´s main principles.

The "Carta de Xátiva" and the creation of the Network of Valencian Municipalities towards Sustainability have been key elements for the dissemination and implementation of Local Agenda 21 processes. 60.38% of the municipalities in the province of Valencia have this way committed themselves to follow the path of sustainable development.

Participation and bottom-up action

Citizens´ participation has been a key element in the government and administration of the City Council of Valencia, as politicians are aware of its complementary nature to representative democracy. In 2008, the Government of Valencia approved a law on Citizens` Participation. In this law the autonomic administration establishes measures for citizens' active participation, creating channels that promote the participative culture (citizens' hearings, consultative forums, etc.) and expresses the need of using technology, especially the internet, as a tool to link citizens and government.

Currently, and very much linked to the urban gardens mentioned above, many participative processes are taking place around urban gardening initiatives that organise roundtables involving many stakeholders (politicians, farmers, citizens, health and financial experts, students, etc.).

25.4 Conclusion

Short Summary

The City of Valencia is a young city; 19% of the population is between 14 and 29 years old, and 33% between 30 and 49. Its main motor is the area of services, with 84% of the total population working in this sector. However, in 2014, the economy in Valencia is only expected to grow by 0.4%, while the whole

of Spain will grow by 0.9%. In 2015, the evolution will still remain below the national average: an increase of 1.4% is expected, while Spain will grow by 1.9%.

The Valencian GDP fell by 11% between 2008 and 2013 (the Spanish average decrease was 7.5%). A big wealth loss has occurred, result of a productive structure mainly focusing on construction and low-value added services. The unemployment rate is two points above the Spanish average, and the employment created is unfortunately precarious and of bad quality. Valencia is one of the European regions with the highest rates of youth unemployment. The loans to private companies have decreased. The sectors of the future, such as the audio-visual sector, have also suffered the effects of the crisis, and high quality employment is not replaced because there is no capacity to prelaunch other sectors. The internal consumption is therefore limited and hardly any public investment is foreseen.

The City of Valencia has an outstanding Urban Mobility Plan, achieving thus a 100% ecologic municipal bus fleet. The use of the bicycle is promoted in the city as the preferential transport mode. The city has a network of 130 km of cycling lanes and the bicycle rental system is a reference of success at the national and European level.

Valencia has recently developed a Saving and Energy Efficiency Plan, aiming at reducing primary and final energy consumption, at promoting renewable energies and at enhancing energy efficiency at all levels.

In 2013, the City of Valencia saved twenty thousand million litres of drinking water, equal to supplying a municipality of 50,000 inhabitants during a whole year. This was mainly due to relevant investments done in the city to obtain good infrastructures, to an efficient management of water resources and to the successful implementation of sensitization and awareness campaigns. Currently, the City of Valencia has almost 4.6 millions of square meters of green urban area and is working towards having more urban gardens to be managed by the own citizens. The city understands that new technologies need to be used to get closer to citizens, and has therefore already in 2008 approved a law to regulate the framework of citizens´ participation. Urban gardens have recently been crucial in enhancing citizens' involvement in different city policy areas.

Trends and challenges for the future

- High unemployment rates, specially youth unemployment
- High ecological footprint in comparison to other Spanish regions
- Promotion of renewable energies; the eighth biggest exporter of renewable energies among Spain's regions
- Energy Efficiency, both in the rehabilitation and construction of buildings
- Drinking water saving national example
- Sustainable Tourism; the new agenda
- Reference at national level of public sustainable procurement
- Sustainable Mobility as the tool to achieve sustainable urban areas with high quality of life; public transport needs to be faster to compete with the private use of the car

26. Turkey – Istanbul

26.1 General city profile

Background information

Factual data

Istanbul is the largest city in Turkey with a population of 13.9 million (Turkstat, 2013). The area within the borders of the Istanbul Metropolitan Municipality (IMM) is 5,343 km^2. The distance between North–South edges of the city is 45 km, and East-West edges of the city is 165 km. Istanbul is larger than 23 European countries with its land and population (Ilıcalı, 2011). Istanbul is located on a water way, the Bosphorus, on the North-Western Turkey, between the Sea of Marmara and the Black Sea. It lies on the Northwest of Turkey in the coordinates of 280 01' and 290 55' East longitudes and 410 33' and 400 28' North latitudes (IMM, 2013 Geographic Location). While joining Black Sea and Marmara Sea, Istanbul straits divide the Asian and European continent as well as the city of Istanbul. The city borders extend to the Kocaeli Mountain Ranges in the East on the Asian side, the Marmara Sea in the South, and the waterline of Ergene Basin in the West, which covers Eastern Thrace Peninsula in the European side.

The city is world famous for its history. It has been the capital of three great empires: the Roman, Byzantine and Ottoman Empire. The city was proclaimed the new capital of the Roman Empire in 330 AD, it was subsequently renamed Constantinople, after Emperor Constantine I. It was the capital of the Byzantine Empire till 1453, and the capital of the Ottoman Empire till 1923. Very recently archaeologists excavated the remains of a village that dates back to 6000 BC, which pushes human transition to sedentary life to an earlier period than previously assumed (NTVMSNBC, 2013).

There is no definite climate type for the whole Istanbul Province. Due to its physical geographic features it carries different climate characteristics than the cities in the same latitudes. Being in the low-pressure and high-pressure zones, which repeat twice in order, it is under the influence of terrestrial (dry) winds and the Western winds (humid and rainy) of sea. The overall characteristic weather is a somewhat cooler version of the Mediterranean climate: a short spring, hot summer temperatures, a long autumn with blue skies, and a rainy winter. Average of snowy days in Istanbul is 7 (Istanbul Gov. Tr., 2013).

The current population density of the city is 2,567 people per km^2. Recent urban transformation projects are radically restructuring historical neighbourhoods and also increasing their density (İnceoglu and Yürekli 2011). This rapid urban transformation started to raise issues with regard to green spaces, public transportation, energy and water supply.

Basic government/administrative structure

Istanbul consists of 39 districts, 25 of which are located on the European side, and 14 on the Asian side. All districts are governed by district municipalities, under the Istanbul Metropolitan Municipality. The mayors are elected in local elections that are held regularly in five year periods.

The budget allocated to the Istanbul Metropolitan Municipality in 2013 is 8 billion TL. In 2012 the budget was 7.3 billion lira; there was a 9.6% increase in the budget. The consolidated budget that includes Waterworks Authority (ISKI) and Istanbul Public Transport Authority (IETT) amounts to 13.6 billion TL. The

estimated revenue for 2013 was 7.3 billion TL (IBB Budget, 2013). The Mayor of Istanbul Municipality, Kadir Topbaş stated that during his incumbency period the lion's share of the budget has been allocated to transportation. By the end of 2013 the total money spent on transportation will be 28.5 billion TL (Habermonitor, 2013).

The metropolitan municipality in Istanbul is ruled by the Justice and Development Party (AKP). The political distribution in the district municipalities is 26 AKP, 12 People's Republican Party (CHP), 1 Democratic Left Party (DSP).

Economic conditions

Istanbul is responsible for 27% of Turkey's GDP, with 20% of the country's industrial labour force located in the city. Istanbul significantly contributes to the Turkish economy; it is responsible for two-fifths of the nation's tax revenue. On the international scale, Istanbul ranks among the fastest growing OECD metro-regions (OECD, 2010). The city has seen a steady growth of population since the 1950s, jumping from 5.8 million in 1987 to its current size of 13 million and expected to reach 16 million by 2025. Employment is expected to double on the European side and more than triple on the Asian side by 2025 (OECD, 2010) shifting from 30% of industry and 59% of service in 2000 to 10-15% of industry and 80-85% service in 2023 (İBB, 2006). Currently, a considerable portion of its labour force (%37) is in low added value and labour intensive manufacturing sector, mainly textile and supply chains. This sector produces 80% of total exports (OECD, 2010). Istanbul is Turkey's economic powerhouse; however unemployment in the city is nearly as high as in poor South-Eastern cites in Turkey[i].

Local lifestyle

Istanbul has an intermodality heavily based on cars. Currently 89% of all passenger transit happens by road, followed by 8% on rail and 3% by sea. While 71% of motorized trips are made through public transport, the increasing car ownership trend adds significant congestion to the road network. However, despite the metro investments work towards solving the major transportation problems in the city, Istanbul is still far from being cycling and walking friendly city.

Key challenges and trends

Economic issues and trends

Turkey's steady economic growth brought the GDP per capita from 4,416 USD in 2003 to over 10,000 USD today with a positive future outlook. Due to its economic growth, Istanbul has attracted waves of migrants from inside and outside Turkey. This has put the current infrastructure under strain both in terms of congestion and pollution (OECD, 2010). The expansion on a per-capita basis exemplifies the relatively strong performance of emerging-market metropolitan areas in the past several years. This does not imply a growth based on sustainable development, as the economy depends mostly on low value added and labour intensive manufacturing sector and its unemployment is alarmingly high (Berube and Rode 2010).

Social issues and trends

In the summer of 2013, an attempt to build a shopping centre in Taksim gave rise to Gezi Protests. The peaceful protests are often taken as indicators of a vibrant civil society and awareness with regard to city problems, which are generally characteristics associated with advanced democracies. The protests were ended by the police. The social issues in Istanbul are part of the country's overall problems. On the one

hand the city undergoes a rapid change and transformation in the name of development and better living standards. On the other hand, the costs of rapid change are inevitably producing its discontent, especially with regard to civil rights and liberties. These conflicts might risk the social, environmental and economic sustainability of the city.

Less present in the media than the Gezi Protests are the city´s urbanization policies concerning the historical inner city district Sulukule where the Turkish Romani people had lived from the 11th century until 2009 when the last house was demolished as part of the urban redevelopment project "Sulukule Renewal Project". This forced gentrification process started in 2008. Tenants were expropriated, evicted and offered to live in a newly constructed satellite city almost 50 away from the city centre. At the end of 2009 the last house was demolished. The original population cannot afford to live in the newly constructed houses in Sulukule since they are sold at almost ten times the price paid to them (Letsch 2011

Environmental issues and trends

Three big projects collectively known as Northern Marmara Highway projects are currently underway in Istanbul. They include Kanal Istanbul, a new waterway which will connect the Marmara to the Black Sea through the European part of the city West of the Bosporus; a third airport that will be built atop the city's only remaining substantial forestland; and the building of a third bridge over the Bosporus. If the third bridge follows the trend of the other two bridges, the area around will be soon developed with new residential complexes, office buildings and congress centres. This also means that the population of Istanbul will reach up to 20 million people according to some estimates (Genç et al, 2013). The soon to be developed area is the Northern part of both the European and Asian side of Istanbul. It is home to Northern Forests as well as water basins; therefore there is a risk of negative environmental impact of, concerning both water and green spaces.

The carbon footprint of Istanbul City is 43,826,098 ton CO_2. The sources of emission are electricity, coal and natural gas consumed by residential buildings (35%); by vehicles (23%); by industrial energy use (15%). According to the report, the emissions per capita is 3.1 t CO_2 and per household as 9.71 t CO_2 (GTE, 2013). Istanbul consumes 13% of the gas and electricity energy produced in Turkey.

26.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

97% of Istanbul's drinking water comes from surface waters collected in reservoirs. Istanbul is not located on a major river basin system, but sits upon four smaller river basins. The first river basin consists of lakes and dams. They are the Terkos Lake with Istıranca River; Büyükçekmece Lake with Karasu and Çakıl Rivers; Küçükçekmece Lake with Sazlıdere, Nazlıdere and Nakkaş Rivers. The second is the Bosphorus basin with Göksu and Küçüksu Rivers. The third is Black Sea basin with Riva, Türknil, Kabakoz, Göksu and Ağva Rivers. And the forth is the Marmara Sea basin with Çırpıcı and Ayamama Rivers.

On these river basins there are fifteen facilities which provide water to the city. The annual total water supply of these facilities is 723,655,328 m^3 (ISKI 2011, p. 48). The total area of lakes, ponds, and dams is 127.86 km^2 and the largest one is Terkos Lakes with 31.77 km^2. The total water storage capacity of Istanbul is 866 million m^3. Of the available water resources 40% is located on the European side and 60%

is located in the Anatolian side; however of the current population 65% reside on the European side and 35% on the Anatolian side. This has serious implication for the management of the water resources for the city. Water loss rate in 2006 was 29%; by 2009 it dropped to 24% (ISKI 2011, p. 52).

The unprecedented growth of the city has meant that Istanbul's resources have become inadequate. ISKI, Istanbul Water and Canalization Administration, provides water from long distance resources. There are several ongoing grant projects to supply water to Istanbul from external resources. One is the Melen System, located 170 km away from the city, which is being developed for the long term water demand of the city. The initial phase of the project with Japanese financing was finalized in 2007 and it provided 268 million m^3 of water. By 2040 the water supplied by the Melen System will almost double the amount prior to 2007. Also, there is a plan to build a 5.5 km tunnel under the Bosporus, which will transfer water to the European side (IBB 2011). Other projects involve bringing water from the Istranca dams in the Black Sea basin on the European side of the Bosphorus, and the Yeşilçay Regulator in the Black Sea basin on the Asian side (Çodur et al 2007). The current water management system of Istanbul relies on resources outside its own territory. However, the city has historical precedents of this kind as far as water is concerned. The aqueducts extending to the periphery of the city date back to 4th century AD. Istanbul has the longest and most extensive ancient water channel system ever constructed. They were initially built by the Romans (RCAC 2013)[ii].

Key issues

AECOM did a water monitoring study on the water quality of Istanbul by collecting water from 20 sample locations in Istanbul. Water quality is assessed according to the Surface Water Quality Regulation's (MSWQR) classification, it contains four categories: class I means high quality water, while class IV means highly contaminated water. The report shows that "all watercourses sampled are classified as either 'contaminated' or 'highly contaminated'. Rivers and water courses that are associated with critical dams such as Ömerli, and Elmalı II supplying drinking water to the Istanbul Area are of special importance, however both resource are classified as 'highly contaminated' in the study. AECOM warns that the baseline conditions and future impacts in these locations should be determined and followed in a regular basis to assess and avoid creating any adverse impacts (AECOM, 2013). Nonetheless, the rivers are often used as waste discharge areas for industrial facilities and settlements sewage systems are connected to these rivers. The information provided by ISKI contradicts this report. During the interview with the Director of the Strategic Planning Office he stated that the quality of drinking water in Istanbul surpasses EU quality standards. According to a 2004 survey, 35% of the customers stated that they drink water from the tap; this number was reportedly only 10% in 2000. The claim is that water quality improved due to network repairs and the completion of new drinking water treatment plants (Altinbilek, 2006).

Key actors/partnerships

ISKI, Istanbul Water and Canalization Administration, is the biggest actor in water issues. It was established in 1981 and became a branch of Istanbul Metropolitan Municipality in 1984. ISKI's service area covers 5,342 km^2 and it servers to 4 and half million customers (ISKI, 2011, p. 52). ISKI is a private company owned by the Istanbul Metropolitan Municipality.

The second key actor is DSI, the General Directorate of State Hydraulic Works. It is a state agency under the Ministry of Forestry and Water Works of Turkey responsible for the utilization of country's all water resources. The Melen System project and other grant water supply projects are undertaken by DSI.

The third key actor is the Ministry of Forestry and Water Works of Turkey.

Key actions/measures/initiatives

Three large construction projects that are being planned on the Northern part of the city might constitute a risk to Istanbul water. The vicinity of the projects to the watercourse means that they might directly or indirectly be affected by the construction work and operational activities. The impact would be largely on the surface water resources, within the catchment areas of the dams that supply drinking water to the city.

Energy

Availability, affordability and consumption levels

The Electricity Distribution Company of Turkey, TEDAŞ, was privatized in 2004. There are two companies that function as distributors for Istanbul, Boğaziçi EDAŞ on the European side, and AYEDAŞ for the Asian side. Boğaziçi EDAŞ has 3,832,800 customers, and 12.5% of its share is held by TEDAŞ; while AYEDAŞ has 2,102,200 customers and 6.9% of its share is held by TEDAŞ (OİB, 2009). The total consumption in Boğaziçi EDAŞ is 18,947.6 GWh with 11% loss and illegal users, in AYEDAŞ this numbers are 8,947.6 GWh and 8.6% loss and illegal usage. The privatization of Boğaziçi EDAŞ was finalized in December 2012 and currently the company is owned by Cengiz-Kolin-Limak Consortium (Enerjienstitüsü, 2012); while AYEDAŞ was purchased by Sabanci Holding in March 2013 (En son haber, 2013).

According to the Infrastructure report published in 2012 the electricity infrastructure in Istanbul is in need of serious repairs and replacements but the subsidies to undertake this are few and available only on a micro scale. A second problem is the unsynchronized activities of transmission and distribution companies, which result in heavy load on the system and voltage fluctuations. The third problem is high percentage of loss and the illegal usage of electric power (IFM, 2012 p. 10).

The natural gas in Istanbul is distributed exclusively by IGDAS, the Istanbul Metropolitan Municipality owned private company. The distribution is done through steel and grossly elastic pipes to ensure safety from damages and leaks. The distribution system in the city is monitored through a GIS-based system, which contains a detail map of Istanbul as well as a database featuring the spread of the natural gas network at the level of streets and buildings (IGDAS, 2013). IGDAS has 4 million and 860,000 customers (Dogalgaz, 2012).

Key issues

There is no significant energy production in the city area; most of the energy is produced elsewhere and transferred to the city. The majority of the energy depends on fossil fuels and hydroelectric power plants. The projected energy need for the near future created concerns on behalf of authorities; therefore sustainable solutions are secondary in the midst of rapid development agenda and policies.

The portion of renewable energy is very limited, and few incentives are programmed to encourage renewable energy production. However, there are some attempts to spread more awareness. For instance, the Istanbul International Centre for Private Sector in Development and the Istanbul Metropolitan Municipality are cooperating on waste management-based energy production solutions (IICPSD 2013). Also, the traffic signalization systems as well as the monitoring cameras are powered by solar energy.

Key actors/partnerships

The Ministry of Energy and Natural Resources (ETKB) is the nationwide key actor in all energy related issues and policies. Critical decisions regarding Istanbul's energy policies are dependent on the ministry due the highly centralized hierarchy. According to Law No. 3154, the purpose of the Ministry of Energy and Natural Resources is to define targets and policies related to energy and natural resources in a way that serves and guarantees the defence of the country, security, welfare, and strengthening of the national economy (Enerji M. 2013).

Electricity distribution in Istanbul is controlled by Boğaziçi EDAŞ, which is owned by the Cengiz-Kolin-Limak Consortium and AYEDAŞ, which is owned by the Sabanci Holding All these actors are new in the energy sector.

Istanbul Metropolitan Municipality is also an important actor as it is the exclusive distributor of natural gas through IGDAS. The Municipality also owns Istanbul Enerji A.S, which functions as body that evaluates "the sectorial opportunities in the context of energy production and preparation of projects," as well as "decision making and implementation processes of the Municipality and dependent establishments regarding energy." (Istanbul Enerji A.S, 2013).

In terms of alternative energy, there are 61 wind power plant operations in Turkey, but two of them are located in Istanbul. One is Lodos Elektrik Ur. AŞ, established in 1998, its operation in Kemerburgaz has 24.00 installed capacities with 2 MW Tribune power. The other firm is Sanko Rüz. San. ve Ticaret AŞ, established in 2008 in Çatalca with 60.00 installed capacity with 3 MW tribune power (TÜREK 2013).

Key actions/measures/initiatives

According to the European Green City Index report, Istanbul energy consumption per head is quite low, estimated at 36.15 gigajoules, while the average is 81 gigajoules. This low figure is not due to Istanbul's energy efficiency or its successful implementation of energy preservation policies but it is because of low per head energy consumption; it is significantly less than similar GDP cities (European Green City Index, 2008). But it is expected that the current rate of energy consumption per capita will drastically increase in the near future. However, the government so far has no priorities in taking the necessary steps towards increasing the share of environment friendly renewable energy resources. On the positive side, legal framework regulations are being changed to enforce energy efficient and environmentally friendly buildings. The Ministry of Public Works is working on adapting the LEED certificate in Turkey, but green buildings still remain few (IFM, 2012, p. 11).

Green spaces

Availability, affordability and consumption levels

In 2010 the total green space in Istanbul was reported as 77,452,428 m² with 6.05 m² space per capita. Since 2007 the EU minimum requirement was increased from 7 to 10 m² and the Istanbul Metropolitan Municipality set the new value as its target (IBB-STATS, 2010). The amount of existing green areas in relation of the number of inhabitants to satisfy recreation needs of the city are not sufficient. Within the Istanbul City Centre the proportion of green spaces is very limited. However, several projects have been implemented in the last years towards redesigning and improving the existing green spaces within the urban area. These are the Urban Design Project of the Golden Horn between Unkapani and Galata, the

Topkapi City Park Landscaping Project, the Sadabad Picnic Site Protection and Improvement Project, the Eminönü Gülhane Park New Arrangement Project and the Golden Horn Shores Landscaping Project.

Key issues

The key issue is the danger of losing green area to the real estate development business. In this sense the future of the Northern Forests is of particular concern. The government intends to go ahead with the Northern Marmara Highway projects (Kanal Istanbul, the third airport and the third bridge) and is planning to develop the area in the North of the city despite opposition from civil society like the Chamber of Engineers and Architects of Turkey. It is feared that the projects will bring the end of Istanbul's last green forests (Altıntaş, 2013). The current master plan strictly avoids any construction on the green spaces along the Northern part of the city, but the new trends envisage city sprawl to the North. It is likely that the prices of the land in the North will increase, thus creating economic benefits through speculative income.

Key actors/partnerships

Istanbul Metropolitan Municipality is one of the key actors in the management and planning of green spaces. The responsibilities are divided in several departments. The Park and Garden Directorate is responsible mainly for design of the spaces. The City Planning Directorate is responsible for the city's master plan and its updates. The Infrastructure Planning Directorate carries out the works and coordinates and plans the construction of the urban projects.

A second key actor is the Housing Development Administration of Turkey (TOKİ). As well it has a lot of discretion in its decision regarding the city, its strength comes from its relatively autonomous position, since it is not tied to any ministry but is directly tied to the prime ministry. It regularly appropriates land and property to grant housing projects in Istanbul under the name of urban transformation projects (TOKİ, 2013).

The Ministries of Forestry and Water Works, The Ministry of Environment and Urban Planning as well as the Ministry of Transportation are also influential actors as they also have a say in policy making and master plan modifications of the city.

The least effective actors are the district municipalities which are responsible only for the maintenance of the green spaces within their territories.

NGO Platforms became more visible in the last year; however it is difficult to say how effective they can really be due to the political climate in the country.

Key actions/measures/initiatives

The Ministries of Environment and Forestry have requested that the forest area in the Northern part of Istanbul, which consists of 200 million square meters of forest, is to be converted to the nature of the urban forest project. This project will affect the forests both on the European and the Asian side (IBB Vizyon, 2013).

26.3 Governance and citizens' participation

Multilevel governance

The strongest feature of the Turkish administrative system is centralization. As a result it is difficult to talk about multilevel governance. As the politicians interviewed in course of the field research stated, there are several loci of decision making, but those who should be speaking first are asked last and frequently what they have to say is ignored. Moreover, there seems to be a tendency to exclude the technocrats "from the decision-making process where their knowledge and expertise are extremely important for the city's aesthetics and long-term growth" (Eder, 2013).

Province

Istanbul Metropolitan Municipality belongs to AKP, the incumbent party. Both AKP and none AKP party municipalities face serious problems due to strong centralization, and limited autonomy of the municipalities. This limits their ability to devise effective solutions to the local problems. District municipalities are hardly effective in guiding their territories towards more sustainable solutions. The urban transformation and housing projects are undertaken by TOKI, while other grant projects such as the metro, highway and bridge construction that have a huge impact on the city are undertaken by the Ministry of Transportation. Hence, local administrations have little say on these huge transformations taking place in their own territories. The government's overall policy towards city development is mainly shaped by its vision to provide the basic infrastructure of the city as fast as possible. This approach turned the city into a huge construction site; under this rapid transformation process managed by national level central authorities it is hardly possible to see adequate efforts on societal and ecological issues. This transition necessitates empowered politicians and more autonomous local authorities.

National

As mentioned in the previous section the characteristic of the Turkish case is over-centralization. At the national level all the legal framework and actions seem to suggest that Turkey is taking the necessary steps for environmentally friendly and sustainable development. In actual practice these are hard to see. The national level objectives and local level practices hardly coincide in the Turkish case.

EU

In the recent years due to disagreements on accession process EU has lost its anchor role in the large sections of the society. Euroscepticism in Turkey is rising. Since 2007, the number of opponents to EU membership started to exceed the number of supporters (Dedeoğlu, 2011). At the administrative level, the authorities still set EU standards as targets in their institutions. In the instances of new project implementations local experts tend to check first the EU practices. In the in-depth interviews all of my interlocutors mention that EU accession effort and its standards act favourably in achieving Istanbul's aim to be a more sustainable city.

Participation and bottom-up action

Participation

Turkish political structure with its electoral and party systems, its state tradition and the level of democracy does not contribute to citizen's lively participation and bottom-up actions. In its political culture starting from the family, active participation to decision making processes is discouraged. The citizens' attempt to take part in decision making has been often suppressed by police. The Gezi Park protests of 2013 are the latest example. The common practice is that procedures performed in the name of citizens are in fact imposed on them. Participation is perceived as a check list item by many state authorities; in actual practice authorities do not open channels for participation. NGO invitations and organized meetings are treated as venues for participation, but in reality those meetings are not decision making meetings.

Bottom-up action

Speculation

Especially after 2000s environmental movements gained momentum, it staged at remarkable accumulation of experience in all around Anatolia. This vibrant existence of various movements owes a lot to hydroelectric power plant (HES) construction projects in all around the country. It is estimated that there are more than 2000 such projects in Turkey located mostly in the Black Sea Region (Okumuşoğlu, 2012). Ever since the inception of these construction projects there have been tensions and increased protests. They have contributed to the enrichment of the experience and repertoire of contentions politics. The groups from major cities such as Istanbul and Ankara have been eagerly supporting villagers in HES construction sites. It is important to remember that these groups took part in Gezi Park protests and they were the ones who put the tents in Gezi Park inspiring the repertoire of the protests and bringing their experience to Istanbul.

For the future, the following issues will be important for participation resp. bottom-up actions:

- Women (against violence)
- Women participation in public life
- Education
- Secularism and its impact in education
- Kurdish issue and participation problems
- Traffic
- Rich and poor

The following groups are relevant for a transition to sustainability:

- Politicians
- Owners of big businesses
- Activists
- Youth

[i] A Eurostat study on continent-wide unemployment reported that the city's average unemployment rate was around 10.7 percent in 2012. This figure is very close to the average of 11 percent unemployment rates in the cities such as Gaziantep, Diyarbakır, Mardin, Batman, Şirnak, Siirt, Adıyaman and Kilis that are located in the southeastern Turkey, known with its poverty compared to other regions in Turkey (Today's Zaman, Eurostat, 2013).

[ii] All the empires established afterwards strived to supply water even from further distances. Those who were successful in supply were also able to bring peace and prosperity to the city. In this respect today's tendencies are not any different from the old habits.

Western Europe

27. Austria – Innsbruck

27.1 General city profile

Background information

Factual data

Innsbruck is the capital city of the federal state of Tyrol in Western Austria, an economic and cultural centre and a university and congress city. It is about half way between Munich (Germany) and Verona (Italy). It is located in the broad Inn Valley on 574 m above sea level, between high mountains of the Alps, the Nordkette in the North and Patscherkofel in the South (both over 2,000 m) at the junction with the Wipptal, which provides access to the Brenner Pass, one of the most important Alpine crossings in direction to Verona. It has a Continental climate, the average daily temperature lies about 8.5 °C, the average precipitation is 896 mm (with an average of 118 precipitations days resp. 65 days with snow per year and 1,872 sun hours).

Innsbruck is located along the A12/A13 motorway corridor, the railway station is one of the busiest in Austria and there is an airport at Kranebitten. Local public transport is provided by Innsbrucker Verkehrsbetriebe (IVB), a public authority operating a network of bus and tram routes. There exists also a S-Bahn and some regional trams and railway routes. Last year, the connection of two regional suburbs (Völs and Rum via Innsbruck) with a regional tramline was started. With 23%, Innsbruck is the city with the biggest share of bike traffic in Austria.

Innsbruck has an area of 104.91 km^2 and reaches as far as to the Northern mountains (more than 50% is mountainous area). 40% is forested, 35% is settlement area. Over 30% is nature conservation area and 18% is landscape conservation area, 15% buildings or roads, 8% is used for agricultural purposes.

The city itself has a population of 122,458 (2013) slightly increasing in the last years and this will go on in the future. The urban agglomeration around has 190,000 inhabitants. 30,000 students and other persons have their secondary residence there, and about 45,000 persons commute into the city (7,000 out of the city). In the year 2013 about 19% (2008 15.2%) are foreign nationals (51% from EU countries, 20% Ex-Yugoslavia, 13% Turkey). There are six different (approved) religious communities: roman – catholic, protestant, orthodox Christian, Jewish, Muslim and Buddhist with 17 organisations or ritual premises of the last four communities.

Basic government/administrative structure

Since 2010 Christine Oppitz-Plörer from the conservative citizen party “Für Innsbruck” is Mayor of the city (the first time after 1945 not from the people party). At the City Parliament (40 seats) there are actually (elections was April 2012 for a period of 6 years) 9 parties: conservative citizen party “FI - Für Innsbruck” (9), conservative people’s party (8), greens (8), social democrats (6), right party “Rudi Federspiel” (3), freedom party (3), pirates (1), seniors (1), “Elfriede Moser” on free mandate (1). The City Council (Executive) has seven councillors: 2 FI - Für Innsbruck, 2 people’s party, 2 greens, and 1 social

democrat. The city of Innsbruck is almost debt free. The local government is structured in five departments. The local utility supplier (IKB Innsbrucker Kommunalbetriebe) manages the following sectors: electricity, contracting, alternative energy, drinking water, waste water, waste, traffic, bathes and leisure, telecommunication, burials. It is financially engaged in six energy companies (small size hydro energy, wind energy, biomass heating plant, contracting), five local traffic companies (together with the city and the state), i.a. the ElectroDrive Tirol GmbH and five waste and recycling companies. The core theme for 2013 is energy efficiency. The company has also made three cross-border leasing contracts i.a. for the electricity grid, the wastewater grid and the sewage plant.

Economic conditions

Innsbruck is one of the most famous and substantial tourist centres, with 1.4 million overnight stays, tourism is the most important source of income for the city authority. There are 55,000 employees and about 8,000 places of work, 41 of them with more than 200 employees. Nearly 35,000 people shuttle every day into Innsbruck from the surrounding communities in the area. In the past, the traditional economy was the production of loden out of wool. Nowadays, asset management (32%), the public sector (14%) and traffic and telecommunication (13%) make the biggest contribution to the GDP. 12,000 employees work in trade and handicraft and the same amount in commerce, 7700 in tourism and 5100 in information and consulting. The unemployment rate lies at 6.4% (2013). The GDP is 10,600 million €, the financial power is about 1,273 €/inhabitant (2012), the GINI coefficient for Tyrol is 31.7. Five companies respectively organisations have made a common goods balance sheet.

Local lifestyle

The city is structured in nine cadastral communities and villages (Innsbruck downtown, Wilten, Pradl, Hötting, Mühlau, Amras, Arzl, Vill and Igls) without own administration. The local lifestyle is characterized on the one hand by a traditional and conservative way of life, living in a close touch to nature because of the agriculture roots. On the other hand the lifestyle is characterized by the middle European prosperity and consuming orientation in an industrialized society. All in all there is a high sensibility and orientation of everyday practises for sustainability. In Tyrol there is one of the highest shares of passive houses worldwide. On the other hand willingness of each individual is missing to confront him-/herself with the topic of sustainability and to change his/her lifestyle (actor 2).

Key challenges and trends

Economic issues and trends

The economic crisis of 2009 has not yet been overcome in Tyrol, but there is an upward trend. The demographic trend, with the lack of good educated professionals is a challenge for the companies, as well as to keep employees healthy and fit in the workplace so that they can work until retirement. Climate change and its effects on the forest and water, the decrease of glaciers is important for the utility suppliers, the government (spatial planning) and the tourism. The winter tourism business with its funiculars is confronted with the decision between getting always bigger and better or looking more for small size facilities. For the companies the issue of sustainability is getting more important, more and more thinking of a strategy and how they can get better. Some of the hotels offer CO_2-free holidays (actor3). Another problem is the limited space in between the mountainous surrounding, which causes conflicts between needs of housing, traffic, economy, nature conservation and recreational needs. It also causes air pollution problems by the emissions of heating and traffic. The sustainability strategy of Tyrol

as part of the local agenda 21 aims at providing a qualitative economic growth decoupled from resources consumption with more and better workplaces, social security and an intact nature for future generations. Therefore, supra-regional spatial planning for agriculture, industry and commerce and tourism as well as their infrastructural access including all sustainability and participatory aspects is crucial. The GDP basis has to be widened to evaluate the wealth of the society (out of sustainability and economy – from a regional economic perspective). Innsbruck is involved in the Euroregio Tirol – South Tyrol – Trentino Project Sinfonia for energy efficiency of 40-50% by smart grids and an increase share of renewable energy to 20%.

27.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Drinking water in Innsbruck is to 100% spring water (90% from the nature conservation area Mühlau) without any conditioning. For emergency cases there are two groundwater wells in Höttinger Au (airport) and a pipe to Hall in Tirol. In the year 2013 the delivered amount was 12 million m^3 (8.9 million paid for an average price of 1.45 € / m^3.), stable since 2010, but 25% less than 15 years before. In 2011, the local supplier spent 2011 more than 6 million € for enlarging and maintaining the grid. The loss rate is about 12%. The average consumption of drinking water is 178 l per person and day. The water grid in Innsbruck is approx. 460 km long and has 13,000 meters.

Key issues

Guaranteeing the level of quality and availability in the future.

Key actors/partnerships

IKB Innsbrucker Kommunalbetriebe AG (local utility provider): founded in 1858 as gas provider, later on as drinking water and electricity provider (more details see under “Energy”).

Key actions/measures/initiatives

“People do not care about the issue of water, because it pours out of the tap and the Karwendel Mountains are full of water” (actor 4), an opinion which was shared by all interviewees. The company itself is active to sell its know-how to clients outside the supply area. There are only two and a half pages to the issue drinking water in the 130 pages of the annual report.

Energy

Availability, affordability and consumption levels

The city of Innsbruck covers the major part of its electricity needs with the production of its own hydro power plants, partly within the city borders (i.e. the drinking water power plant covers about 33%) very economically, because most of the plants are old and written off which causes low tariffs. Therefore, the companies make good profits and the incentive to save energy is not very great. In 2013, Innsbruck consumed 773,000 MW and 69 million m^3 natural gas (for 6,314 houses). 34 million kWh were managed in 541 constructed plants. The IKB – Innsbrucker Kommunalbetriebe are planning a middle-sized hydro

energy plant (RMI Regionalkraftwerk Mittlerer Inn) in the region with a participation process, but the WWF and a citizens´ initiative are against this project because of groundwater risks. In 2009, the local government initiated a process for energy development (INNENERGIE – Innsbrucker Energieentwicklungsplan) corresponding to the regional Tyrol Energy Strategy and the national Austrian Energy Strategy. The analysis of the actual situation was done by the consortium alpS/Krismer/Spectrum. A road map for the realization until 2025 and an action plan 2012 – 2015 also exist. For 2009, the energy mix for heating of buildings was of 67.5% fossil, 15% long-distance heating, 11% biomass and 4.3% electricity.

Key issues

Because of the geographical and microclimate situation one of the most important issues is the reduction of air pollution. Therefore (solid) biomass is not yet favoured. There are also conflicts between the conservation of green spaces and the landscape and the production of energy. The inner city was not destroyed in the Second World War, and so there are also conflicts between building conservation and solar energy production respectively the insulation of facades. Another issue is the strategy of fossil energy exit respectively reduction. The different energy companies have different interests depending on their energy medium (natural gas / long-distance heat vs. electricity / heat pump). It has to be considered which energy medium or heating system was subsidized in the recent years. The refurbishment of buildings led to an increase of rents, which still are among the highest in Austria, and causes social problems (actor 3). Actor 2 observes counter movements from the housings cooperatives against an upgrading of the standards for new buildings and refurbishment.

Key actors/partnerships

- IKB Innsbrucker Kommunalbetriebe AG (local utility provider): founded in 1858 as a gas provider, later on as drinking water and electricity provider. In 1994, the company was converted to a stock-joint company with the sectors gas, water, electricity, public traffic, waste water, bathes, waste collecting and disposal, telecommunication and burials. In 2002 and 2006, 50% was sold to the TIWAG – Tyrolean hydropower and the sector natural gas was outsourced to the TIGAS - Tyrolean gas. The company itself invests in other regional traffic providers, waste treatment, and energy and water service companies. Current activities in the energy sector are the production of electricity, trading, grid management and contracting. IKB manages a landfill gas plant and a thermal power station with biogas from the defecator. They offer a service and information centre for renewable energies and energy efficiency and support the project “Sonnenscheine” (participation certificates for photovoltaic energy plants). The energy production amounts to 359 GWh hydro power (92.76 GWh in small size plants), 3.68 GWh eco caloric and 0.1 GWh photovoltaic. 7.03 GWh are produced by private producers.
- TIGAS – Erdgas Tirol GmbH was founded in 1987 as regional provider for methane gas (heating and currently also mobility). In the last years, they built long-distance heat grids to use waste heat from industry and offer energy facility management for industry and commerce clients.
- IIG – Immobiliengesellschaft der Stadt Innsbruck (estate management of the buildings in the property of the city) is a holding of three companies in 100% ownership of the local government. They manage 6,000 apartments, 360 allotment gardens, 80 schools, kindergartens and senior housings, 30 event centres, sports facilities, 300 shops, fire brigade centres, cemetery and so on.

- Energie Tirol: founded in 1992 by the state of Tyrol as an independent counselling organisation for environmental friendly energies and energy saving. Today there are 16 employees and 35 external counsellors offering services for municipalities, companies and private households.
- Alp S – centre for climate change adaptation: is a competence centre for research and consulting founded 10 years ago. The shareholders are the universities of Innsbruck, Vienna, the Austrian Academy of Sciences and two hydropower companies. They made the analysis for the energy development plan and are partners in the EU Sinfonia project.
- University of Innsbruck – research group for energy efficient buildings (Prof. Wolfgang Streicher)
- Citizens´ initiative against the regional power plant Mittlerer Inn (BI - RMI) fights together with the WWF against the power plant because of ecological (ground water) risks and resistance of the landowners against the selling of their ground.

Key actions/measures/initiatives

As successor of the energy group from the environmental plan of the year 2009, the local government initiated the IEP – Energieentwicklungsplan Innsbruck (energy development plan of Innsbruck). A study group analysed the situation and worked out four scenarios (time horizon 2025) and measurement proposals as a basis for political decisions. Objectives in discussions were a reduction of the fossil energies and CO_2 emission by 44% (reducing the outflow of purchasing power of about 100 million Euros), decreasing the yearly building refurbishment rate from 1 to 5%.1-2% of the yearly budget (3.5 – 7 million Euros) should be invested and move more than a billion €. This could produce an employment effect on 1,600 workplaces per year and generate communal taxes of 1.4 million €/a. In August 2011, the city parliament chose one scenario with the following objectives until 2025: 1) reducing the overall energy consumption (without traffic) by 17% - 20% (basis 2009) with energy efficiency and savings, 2) increasing the share of renewable energies by 27% to 52% of total consumption (beneath the biomass/ biogas and long-distance heat with a strong increase of heat pump and solar), 3) reducing fossil from 67.5% to 48% (oil -55%, natural -39%). The costs for the refurbishment are estimated at about 830 million Euros, and the investment for renewable energies would be 213 million Euros with a reduction of the monthly heating costs for a household from 92 to 27 Euros. In the last and in next five years there have been and there will be a lot of refurbishment at the buildings of IIG and housing cooperatives (i.e. Neue Heimat), also new great building complexes will have passive house standard and heat pump supply. “A major challenge is to take all on board, naturally we have social classes that have little income, I cannot tell them to refurbish their homes” (actor 1).

Since May 2011, Innsbruck has participated in the project “Fit4set – New Energy Demo (Smart City)”, which complements the IEP (Innsbrucker Energieentwicklungsplan) with the issues of electricity and traffic. Its time horizon reaches until 2050. Intelligent heat, cooling and electricity grids with intelligent storage technology and smart meters for a new tariff system in combination with thermal refurbishment (at 400 buildings a reduction from 140 to 30 kWh/ m^2/a and at 160 apartments a reduction from 40 to 10 kWh/ m^2/a) and an enlargement of the sewing plant Rossau to an energy centre (biogas and biomass from sewage sludge, photovoltaic, solar collectors and heat pumps for waste water with recovery of phosphor) which provides the smart grids with renewable energies. “Therefore, supply security will become an important issue. If there is a blackout, 80% will have no heating” (actor 2).

The concept “Mobil 21” focus´ is on the traffic between the city and its surrounding. The steering group consists of members of the city Innsbruck, three further municipalities, the regional government, technicians and socio-scientists.

Green spaces

Availability, affordability and consumption levels

On the one hand, 40% of the city's area is forested, over 30% is nature conservation area and 18% is landscape conservation area. On the other hand, green spaces in the settlement area are under heavy pressure by needs of housing, traffic and economy.

Key issues

The centre of the city hosts the "Hofgarten" (baroque garden of the former residence of the monarch, founded 1410), as a green and silent island with very old and shady trees. But due to its cultural conservation status, it is not allowed to use the meadows, have events or use them for other purposes. The situation is similar with the shore of the river Inn, where there are wildlife conservation areas with a strict regulation for barbecue or other usage.

Key actors/partnerships

- Office of spatial planning (with an extra professional agency for nature and environment) and office for green spaces (64 employees).
- Agrargemeinschaftsverband Westösterreich (AGVWÖ): communities for a specific purpose, which manage and use land (forest and meadows in mountains) on the basis of traditional certificates and habits (commons). Comparable to the Ortsbürgergemeinde in Switzerland. They are actually in a complex juridical clearing process of property questions.
- Bundesgärten Verwaltung Innsbruck (management of federal gardens): part of the ministry for environment, owner of the "Hofgarten" and "Amras Castle" in Innsbruck and further seven historical gardens in Vienna.
- Rucola gem.GmbH: in autumn 2012 the city (councillor from the green party) leased a meadow (2800 m^2) for three years to Eleonore Rangger, the founder of an urban gardening project. Yet, neighbours are divided into pro and contra. The conservative party brought the issue up in the last election campaign, and a lot of rumours were spread around. After two signature collection actions, the project had to be cancelled in the end.

Key actions/measures/initiatives

No specific activities from the local government. Some initiatives for alternative use of existing places and green spaces (see bottom up action "Rucola"), for nature conservation ("Nachbar Löhrbach") or protests against land use changes (of a green space nearby a shopping centre).

27.3 Governance and citizens' participation

Multilevel governance

International / European

Different wishes and ideas were mentioned from the interviewees: "There is not a wide cooperation in the European CSR-Strategy. […] I would recommend an exchange between all involved parties in all cities to make a best-practise comparison to catch new ideas how other cities manage their problems (i.e. expensive rents). […]. What actions and measures can regions set, especially on a small scale, for

subsidiaries, grants in the sector of energy?" (actor 2). "Making policy that the contamination of soils and foodstuffs and therefore also the poisoning of people can no longer take place" (actor 1).

National

In the sector of refurbishing housing and residential building a lot has happened at the regional level by setting higher standards, giving elaborate grants. At the national level, the grants are not so high and the bureaucratic effort is higher. The standards for air quality led to a transition from solid fuel to natural gas, later on to solar heating. The city has a free hand to refurbish its own buildings, but in cases of spatial regulations and building law it is more difficult to optimize something energetically. Actor 2 wishes more trimming on the national level between the different regional regulations in the sense of upgrading (learning from the leaders) and a higher taxing of energy. "At the national level we need not only the knowledge but also the action. In the case of nutrition supply/agriculture we need a very clear cooperation" (actor 1).

Participation and bottom-up action

Participation of citizens in the local decision-making

- 1996 was the founding year of the "Flughafen Umwelt Forum – FLUF" (environment airport forum) with representatives of the local government, the economy and the civil society because of the noise problems.
- 2008 The energy development plan was worked out with representatives of important stakeholders
- The government started 2011 with an online participation project with a weekly question to local issues. Also the regional planning concept is developed with a participatory approach.
- 2012 the IKB started the project "Sonnenscheine", in which every citizen can buy (virtual) participation certificates for photovoltaic plants, without the possibility to decide if and where they will be installed.

There have been a lot assessments and experiences mentioned with regard to the topic: i.e. in the sector of energy: "At the political level the key for success is to involve all (stakeholders), political parties, chamber of commerce, energy companies, consultant companies, corresponding to renewable energy. The first step was to get all together, calling expert teams, which can give us the data, who can acquire them, so we do have the right basis to discuss" (Actor 1). "… involving chamber of architects, chamber of commerce, residential building companies resp. cooperatives, real estate management, guilds, regional government, …" (actor 2). In general the participation possibilities of citizen seem limited. "The participation is more on the finding of ideas; the really substantial decisions were made by the companies and the politicians, because it is a matter of big money". This could be frustrating for the citizens, if participatory events are rather information about decided issues than a participation in a process with an open end. "The most important issue is to asks the visions and the sceptic, which has then been respected. If we do not succeed to manage the topic together, at the end it will be always a boomerang which makes it worse" (actor 2). "It is easy to realize participation in the sector of climate strategy, empty public buildings or traffic – in the case of green spaces you have always opposite needs: young people want to have events, the older ones want to walk through in peace. It is difficult and you need a sure instinct" (actor 3).

General overview on bottom-up actions

- project urban gardening “rucola”: see green spaces
- “BI RMI”: the landowners have formed a citizens´ initiative and are supported by the WWF. The aim is to get more visibility with regard to the mayor and the city council.
- Initiative „Nachbar Lohbach“: is an initiative for protecting a small habitat of a brook and making sensitization for biodiversity and nature conservation which is sponsored by the local saving bank.
- Once and again there are small projects, i.e. at the regional theatre, where students make some art exhibition at some places in the city or installing a disco globe and playing music (actor 3)

“I think, if there were more initiatives they would be more able. Especially with solar energy or everything connected with solar, if there was more pressure, more would happen. There would be a potential for raising awareness, but it is not realistic that there appears an actor in the next time” (actor 2).

27.4 Conclusion

Short summary

Innsbruck has a very specific geographical situation, which determines the sectors of housing, climate and traffic. Therefore, it is confronted with the situation of limited growth possibilities. There are no big problems with drinking water or energy supply. Due to the participation of the green party in the local government, there is more movement in sustainability topics. Also there are some participation processes but very few bottom-up initiatives.

Trends and challenges for the future

Challenges for the future are the truck transit traffic with its noise and air pollution (fine particulate) problems, the climate change and its consequences for tourism. Therefore, a CO_2 reduction by fostering the transition to renewable energies is very important for the city, bearing in mind a balance with nature resp. architectural conservation and the price level at the housing market. Also the participation possibilities and the civil society activities could be broadened

28. Austria – Linz

28.1 General city profile

Background information

Factual data

Linz is the capital of the state of Upper Austria (German: Oberösterreich) and the third-largest city of Austria. It is located in the North centre of Austria, near (30 km South) the Czech border, on both sides of the river Danube. The city is located in the centre of Europe, lying on the Paris-Budapest West-East axis and the Malmö-Trieste North-South axis. The river Danube as the main tourism and transport connection runs through the city. It has a sub oceanic and sub continental climate, the average daily mean temperature lies about 9.4 °C, the average precipitation is 832.4 mm (with an average of 125 precipitation days resp. 40 days with snow per year and 1,741 sun hours).

Linz serves as an important transportation hub for the region of Upper Austria and lies nearby an important motorway crossing (A1/A8/A9 at Wels). The central station lies on Austria's main rail axis, the West railway, linking Vienna with Western Austria, Germany and Switzerland. There is also river transport on the Danube (from industrial barges to tourist cruise ships). The airport lies about 14 kilometres southwest of the town centre, in the municipality of Hörsching. Local public transport comprises the city´s tram, trolleybus and bus network. The modal split in 2002 was 48.4% individual motorized traffic, 24% public transport, 21.9% pedestrian and 5.3% cyclists.

Linz is situated 266 m above sea level and stretches over an area of 96,048 km^2 in a large basin surrounded by mountains of moderate height (500 – 900 m) and very fertile agricultural landscapes. 48% (2005 62%) of the area is green space and forest, 21% (2005 13%) are housing area, 9% business area, 6% industrial area and 6% waters.

The city has a population of 191,501 (2013), which shrank from 205,000 (1971) to 183,504 (2001). The Greater Linz conurbation has a population of about 271,000. From this area (and further on) daily 90,000 people commute to Linz. According to the census of 2001, 60.9% roman-catholic, 21.6% atheists, 6.7% Islamic, 4.4% protestant, 2.5% orthodox, 3.9% believer of other religions live in Linz.

Basic government/administrative structure

The mayor (when the interviews were conducted) was Franz Dobusch (of the social democratic party), but meanwhile his former vice Klaus Luger (from the same party) is the current mayor. The reason for the step-back was the swap-crisis which lead to great financial problems for the local government. The city parliament with 61 seats (2009) has 26 (social democrats), 17 (conservative people party), 9 (freedom party), 7 (greens), 1 (communist party), 1 (independent). The city senate has 8 councillors: 4 social democrats, 2 conservative Party, 1 greens and 1 freedom party. The company group Linz includes 15 companies: magistrates, utility suppliers, hospitals, senior centres, event organisation, culture event organisation, ICT company, estate development, security service and is involved in non-profit housing (95%), traffic companies (50 resp. 54.1%), cultural resp. creative centres (85 resp. 50%). Linz AG holding as a multi utility provider was founded in 2000 and supplies the city Linz and over 100 municipalities in the surrounding with electricity, natural gas, long-distance heating, drinking and waste water, it manages the

harbour, bathes and cemetery in Linz. In 2010, the budget of Linz was 648 Million € and 138 Million € for investments.

Timeline of the sustainability policy in Linz: 1995 decision of sustainability principles, 1998 preparation of a concrete action program for the implementation of the principles with defined objectives and indicators, 2003 sustainability heading goals and indicators in the context of the Agenda 21 for Linz, 2005/ 2006 unpublished sustainability report, 2007 implementation measures for the Agenda 21; 2011 presentation of ZEUS (Zero Emission Urban Study) 2020 project outcome; 2012 Smart Cities project Linz 2050 – Stakeholder workshop; 2012 EU-Project TriNet Global (fair-trade, and global engagement in management, economy and science).

Economic conditions

Linz is one of the main economic centres of Austria. The Voestalpine AG is a large steel concern, founded in the Second World War. The former "Chemie Linz" chemical group has been split up into several companies. These companies have made Linz one of Austria's most important economic centres. The company group Linz represents more than 9,200 workplaces (fulltime equivalents) and is thereby the second biggest employer. Linz offers more than 154,867 workplaces for 83,245 persons living in Linz and 89,294 in the surrounding and other states. South of Linz are big industrial parks and shopping centres, which cause great traffic challenges. 6660 companies are located in Linz. 40% of the employees work in industry (with 6% of the companies), commerce and industrial arts employ each 25% (with 75% of the companies). The unemployment rate in Linz is about 5.5% (Nov. 2013). Linz has four universities (general, arts, music and theology) and one university for applied sciences. The GDP of the region Linz-Wels is 44,200 € per inhabitant, the middle monthly gross income is 1,940 €, 2,825 € for men and 1,715 € for women. The tax income for the city is with 1.9444 (communal tax 643 € per inhabitant) the highest in Austria. 23 companies have made a common goods balance sheet.

Local lifestyle

The city is divided into 9 districts and 36 statistical quarters. They are: Ebelsberg, Innenstadt (inner city), Kleinmünchen, Lustenau, Pöstlingberg, St. Magdalena, St. Peter, Urfahr, and Waldegg. For a long time, Linz had been a steel city and was well known for its bad air quality. But in the 1980s and 1990s it made a transition to a clean and cultural city (2009 European cultural capital, Ars Electronica aso.). The emission of air pollution substances could be reduced dramatically: SO2, fine particulate and NO2 from 45,000 t (1985) to 14,000 t (2003). Some examples: SO_2 private households from 1,000 t to zero; NO_2 chemical industry from 10,000 to 800 t, only traffic has increasing emissions (NO_2 and fine particulate). Lifestyle had long been characterized by the social democratic working class ideal “smoking chimneys guarantee work and wealth”. Yet, in the 1980s a radical transition towards a cultural and creative city started

Key challenges and trends

Economic issues and trends

The topic issue is to keep the core industry companies in Linz and to balance public, ecological and economical needs. Another challenge is to, on the one hand facilitate migration and integration into the labour market, and on the other hand to keep the elderly employed. Since future generations with a low birth rate will generate a lack of professionals with dramatic consequences on the labour market. The energy economy and especially traffic have to be changed in such a way that they are sustainable and

environmentally friendly. The amount of cars has more than doubled since 1971. The share of pedestrians, bikers and public traffic has decreased. The share of bicycle traffic is 5.3% and therefore one of the lowest in Austrian capital cities. The public transport has slightly increased but problems with its capacities on the North-South axis in the rush hour exist. Truck traffic is increasing much more than transport on the river Danube or rail traffic. The main challenge is „to put people and living space into the focus rather than financial interests“ (Actor 1).

28.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Six water plants with 29 wells in and nearby Linz manage the water supply of the city. Goldwörth is the biggest one in Upper Austria, near the Danube (sometimes affected in the case of floods) 11,061,026 l (50.48%), Scharlinz is the oldest and second greatest one in Upper Austria, in the middle of the city (within this well area a highway crossing) 7,259,293 l (33.13%), Heilham and Plesching are little ones near the city border. The daily average consumption is 64,000 m^3. The water is taken from the groundwater flow of the Welser Heide and the groundwater side flow of the Danube in the Northern Eferdinger basin and in the Urfahraner basin. The water quality is excellent; therefore an additional conditioning is not necessary. The water is directly given to the consumer in a grid of 1,142 km (600 km in property of Linz AG). 14.45 Million m^3 have been sold 2010 to 34,587 households with a tariff of 0.91 €/ m^3 incl. VAT for private customers.

Key issues

The authority of the city must widen the water protection because of European guidelines. This new area affects a lot of companies. Any new regulation is an intervention in existing rights and causes compensation payments for the authority. Therefore, the existing companies do not get restrictions, and the effects for the environment (groundwater) are low or zero. Because of this situation, the chamber of commerce made the proposal to strengthen the water supply security by a (better) networking of the different waterworks (groundwater well areas).

Key actors/partnerships

- Linz AG holding as a multi utility provider supplies the city of Linz and over 100 municipalities in the surrounding with electricity, natural gas, long-distance heating, drinking and waste water.
- Österreichische Wasserschutzwacht - Landesleitung Oberösterreich (Austrian water protection society – department Upper Austria): founded 1972 as a private non-profit association. This organisation observes pollution of rivers and lakes by industry, waste aso. resp. the consequences like dying of fishes. They try to explore the polluter and help to keep the waters clean.
- Wirtschaftskammer Oberösterreich (chamber of commerce): see „issues“

Key actions/measures/initiatives

The main actions are set in the increasing of the water supply security by an emergency electricity supply and the continuously maintaining of the storage container and the grid.

Energy

Availability, affordability and consumption levels

Linz AG runs 2 modern long distance heating plants (natural gas, biomass, waste), one peak load power - and reserve heat plant and four hydro power plants for electricity and long distance heat. The share of own electricity production was 2010 100%. Long – distance heat is produced with the power heat coupling principle in the power plants. 56% of the households are connected to the long distance heat grid. Dependence on natural gas delivery and transit partner countries is high. Data for 2012:

- Electricity: 3,575 GWh has been managed, 1,530 GWh sold, 909 GWh produced in own plants (7% biomass). In the year 2011 about 1,127 GWh has been produced.
- Natural Gas: 2992 GWh has been managed, 1,470 GWh sold to 60,076 clients in a grid of 2,030 km.
- Long distance heat: 1,033 GWh (17% biomass + 23% waste) has been sold to 63,247 apartments in a grid of 268 km.
- Long distance cooling: 5,853 MWh in 1,338 Tkm.

The energy mix of the delivered electricity contents 46.88% hydropower; 4.19% wind energy; 3.65% solid biomass; 1.23% other eco energy and 44.05% natural gas. The guarantee of origins are 59.09% from Austria and 40.91% from Norway.

The tariffs (incl. VAT) are for: electricity 17.72 ct. € / kWh 18.68 ct. € / kWh (with Smart Meter), natural gas 7.15 ct. € / kWh resp. 8.31 for an eco-mix (30% Biogas and 70% natural gas); long-distance heating 43.186 € / MWh

Key issues

The trend of increasing electricity consumption is going on. For an energy supply, which is orientated to sustainability, an organized and projectable transition to renewable energies is necessary. Regional, resource-sparing energy supplies are important factors for a stronger regional creation of value. There is still a problem of air pollution in Linz, by fine particulars and nitrogen dioxide caused by the motorized personal transport.

Key actors/partnerships

- Linz AG (local utility provider)
- ENAMO
- Energie Institut
- Johannes Kepler University Linz Institute for physical chemistry und Institute for organic solar cells (LIOS) Prof. Niyazi Serdar Sariciftci
- Bioenergie OÖ

16 energy companies (7 eco) offer electricity in Upper Austria. Most cooperative citizens´ energy plants (genossenschaftliche Bürgerkraftwerke) in the region are run with solid biomass (e.g. Energiegenossenschaft Eferding, Bioenergie Traunviertler Alpenvorland).

Key actions/measures/initiatives

Most of the power plants have a combined heat and power production, renewable energy is used in various ways. The city-owned energy firms, which are owned by Linz AG itself, include hydropower, a natural gas power station, a wood chip power station and a remnant waste power station. Furthermore, there is a modernizing programme for the hydro power plant Kleinmünchen. A solar potential registry for companies and citizens has also been started. The citizens' power station is a large initiative of the Linz AG and very popular. To a subsidized price of 300 or 600 Euro you can buy (max. 10 / household) solar panels as a part of a solar power plant. Ten (with 70 – 375 kWp on 2,400 m^2 module area) have been constructed in Linz by this programme, one on the cooling halls in the harbour. In return the customer gets 10 €/year and some bonus services. More than half of the income reaches the customers; a little part is used for maintenance and the rest as investment for further plants. After five years, every customer can sell his/her certificates. Within two weeks, all certificates were sold and were three times oversubscribed.

Linz AG implements the project EOPt – Energieasset Planungs- und Optimierungssystem (energy asset and optimizing system) for power plants, storages and energy contracts in the day-to-day energy market business, especially on the natural gas market. In about a third of all households there are smart meters, and more will be installed within the next years. In future it will be possible to read out also data of natural gas, heat and warm water consumption.

In the course of the project „eSESh – Saving Energy in Social housing", the possibilities of energy saving in real time consumption data will be tested. As a part of the energy efficiency programme, the energy consumption in the buildings belonging to the City has been analysed. Thereby, it was discovered that in some departments the energy pass agrees with the actual data, but in other departments it does not at all. Now, another project has emerged, looking at why this is happening. The findings that are gathered will be allocated to other businesses and of course to other buildings and housing cooperatives. About 1,000,000 kWh could be saved by optimizing measures of the energy counselling service, which offers also energy pass, blower door tests, pressure air control audit, diagnosis by thermographic photography, LED bulbs at a bargain price, LED concepts and local heating contracting for municipalities.

SolarCity: in 1990, the local administration decided to establish low energy building construction in the social housing sector. In 1992, Prof. Arnulf Rainer was delegated to design a master concept for the city development area Pichling (district of Linz) with about 5,000-6,000 apartments to stop the migration into surrounding villages. Norman Foster (GB), Richard Rogers (GB) and Thomas Herzog (D) and the energy technician planer Norbert Kaiser (D) were planning the first 630 units. Besides architectural aspects, the social function was very important from the very beginning. All three corner-pillars of sustainability, the economical, the ecological and the social one, have been taken into account with equal importance at the same time. In 1998, further eight non-profit housing companies came on board and constructed 1,294 apartments. In 1996, the local government called an architectural competition. Architect Martin Treberspurg (A) won the planning of the second part. In 1997, there was a landscape architectural competition to decrease the pressure of use to the alluvial forest of the river Traun and design high quality leisure and recreation area. In 1996, the Wohnbund Salzburg (association for innovative and participatory housing) received the order to develop and enable a sustainable population and social structure. In 1998,

the planning of the infrastructure (kindergarten, schools und centre) started. Between 2001 and 2005, the dwellings were built, and between 2003 and 2009 the apartments were handed over, and the district office (see chapter participation) was opened. The goals refer to energy, transport, maintenance, waste disposal and social diversity. The energy concept was based on passive and active solar energy use. The average energy indicator is 36 kWh/ m^2/a. 50% of the warm water use can be covered by solar energy. Heating needs are covered by long distance heating from a heat power coupled plant. There are also pilot projects for wastewater reduction resp. treatment and rainwater use. The solar city is easy to reach with tram and buses. The EU subsidized the whole project with 600,000€, and the local government gave grants of over 500,000 € for the thermal solar plants. This project got several international awards and is now a benchmark in Europe.

To the subject of mobility, there is now on the one hand a research project „CMO clean Motion Offensive", and on the other hand the local government introduced an environment ticket, which reduces the cost of the annual ticket for the public transport for residents by €100. There are now already 1,400 new customers, which is an increase of more than 20% in three months.

Green spaces

Availability, affordability and consumption levels

Half of the cities area is green space like the botanic garden, parks and recreational areas like alluvial forests, a lake (Pichlingersee), a forested hill (Schiltenberg), designated European conservation areas and the National Park Donau Drau Auen (alluvial forest of Danube and Traun). 2006 the city of Linz was titled as „Naturfreundlichste Gemeinde Österreichs" (nature friendliest city of Austria) because of the measures for species conservation, renaturation of creeks and supporting of ecological orientated landscape maintaining by farmers.

Key issues

One of the key issues is the access and use of the Danube (river banks) for new purposes (beach). Because of separated competences (river = national, city cleaning = local government) there are currently problems in preventing and cleaning the pollution of the guests. The same situation prevails in the Natura 2000 areas, where the competence for cleaning is not listed. In the inner city, green spaces like inner courtyards have been built by private individuals or by companies which often want to put parking spaces there. Sometimes, old, pre-existing plans allow the fruition of land allocation.

Key actors/partnerships

- Office of spatial planning (with an extra professional agency for nature)
- Office of city gardens
- Klima- und Bodenbündnis OÖ. (Climate and soil alliance Upper Austria)
- Office „Schwemmland": Dr Christoph Wiesmayr and Dr Robert Stögner, both from the Climate and soil alliance Upper Austria coordinate 20 emerging community gardens in Upper Austria with the support of the environment department of the state of Upper Austria, whose focal point „BESSER ESSEN" (eating better) bundles initiatives, e.g. on urban gardening.

Key actions/measures/initiatives

Since 1985, there exists a programme on the greening of the settlement area, especially by green roofs, exists. Based on a satellite picture of the settlement area, analysis with five parameters leads to an evaluation of area greening (Durchgrünungsgrad) in three levels. In 1989, the implementation of roof greening into the building law (in three intensity levels) followed, supported by financial grants and an information campaign. In 1991 and 2001 the green space concepts was updated. In 2010, there were 470 green roofs covering an area of 490,000 m². For businesses which want to expand into green spaces and cut trees down in the process, certain conditions exist, such as replacement planting, which helps to create green areas elsewhere.

28.3 Governance and citizens' participation

Multilevel governance

International / European

EU legislation and WTO policies influence the competition of the regions and this effect will get stronger. Because of European guidelines, the authority of the city must widen the water protection area for some wells of the drinking water supply. This causes negative effects to the companies settled in this (new) area or interested in settling.

Some actors have the impression that in the energy sector there is no fair distributive justice for the production companies and research projects of renewable energies in comparison to atomic research and nuclear energy industry in case of funding by the EU. It looks like it needs a change of paradigm, putting people and the environment in the limelight instead of economic interests in the sense of political patronage.

National

In an evaluation paper of SCWP Schwindhelm, it is noticed that the legislation and administration in Austria is stamped by a strong fragmentation in national and regional law and competences, which make it necessary to plan each renewable energy project differently in each state. One actor recommended to be careful in realizing further restrictions in addition to the EU ones in order not to hinder economy to keep it in Linz. Another actor advocated a sensible eco electricity law and subsidies on a national level to manage a transition to renewable energies also on a regional or local level.

Participation and bottom-up action

Participation of citizens in the local decision-making

- In the SolarCity exists a neighbourhood office with a group of interdisciplinary mediators (community social workers) for visiting activation (incl. street work) and empowerment. It is integrated in the local administration (based on a study of the Österreichischen Wohnbund) and manages the different and sometimes contrary needs and interests between the population, the economy and the administration. It is linked to different organisations and cultures with the goal of increasing living conditions, organizing networks, counselling, supporting or initiating various projects.
- The energy efficiency programme of the public administration successfully involves all stakeholders who consume energy or have an influence on energy consumption: the stakeholders are the departments of the local administration like facility management, civil engineering, environmental and technical centre and all the crucial players in the city itself, as the City of Linz Enterprise Group with the Linz AG. All stakeholders signed a binding agreement about their participation and commitment to this project and process.
- Solar citizen power plant: financed by a sale & lease back contract without ownership participation or right to vote (details see chapter energy)

General overview on bottom-up actions

- In the late 1970s in Steyregg (a suburb of Linz) a citizens' initiative for environmental protection fought against the heavy air pollution by industries in Linz. In 1979, this initiative got 18% of the votes as a citizens´ party (Bürgerliste) in the council and the leader of the initiative Josef Buchner (former worker in the VOEST), became vice mayor. In 1983, he became chairman of the VGÖ (Vereinigte Grüne - United greens, founded in 1982), which was one of the two roots of the green party in Austria. This movement made the pressure to engage with the topics of environmental protection and sustainability and leads to the transition of Linz from a dirty industrial city to a clean and modern industrial and cultural capital. It spreads not only in the city but also regionally and nationwide that economic success and ecological and social responsibility can fit together.
- Bottom-up initiatives also play an important role in the anti-nuclear resistance. Because of the neighbourhood of the Czech nuclear power plant Temelin, a strong and vital movement exists. Among others these initiatives achieved a nuclear free electricity supply in the Linz AG.
- Urban gardening: according to the regional programme (see chapter green space) several projects exist: „Hafengarten“: in the midst of the harbour area vegetables, fruits and herbs are planted on three fields. At the former tobacco factory, an association manages a small garden of 750 m², as another one does at the “Maderleitnerhof”. The gardening company “Leisenhof” offers citizens the possibility to help with sowing, planting and harvesting. Therefore, the helpers could take vegetables and herbs for their own needs at home.
- Mostly, in the case of (potential) tree cutting during building projects, there is active protest and hindrance.

28.4 Conclusion

Short summary

Linz is a best practise example that a transition from a dirty industrial city to a clean and modern industrial and cultural capital is possible. It shows that economic success and ecological and social responsibility fit together and jointly keep the city attractive for citizens as well as for companies. This results from a strong bottom-up engagement of citizens, a sensible local, regional and national government and an innovative and cooperative industry resp. economy. There is a decade long tradition of engagement in different sectors of sustainability up to now, pushed also by the participation of the green party in the local government within the last years. The situation of drinking water supply is very good, if the conflict between further water protection regulations and the companies in this area can be solved. The green space situation is good, too and stands in the focus of the local government. There is a broad range of activities for the use of various renewable energies and energy efficiency. One of the famous examples is the SolarCity project, which unites ecological, social and economic aspects in an innovative way.

This attraction causes a remaining problem: air pollution by the (commuting) traffic.

Trends and challenges for the future

The topic issue is to keep the core industry companies at the location of Linz and balance public, ecological and economic needs. Another challenge is demographic change, its effects on the labour market and the managing of migration to ensure an acceptance by the population. Further, the price effects of higher building standards could cause social problems in the housing sector, although renovation and refurbishment of buildings is one of the most important sectors to save energy, considering the long life cycle of houses.

Mobility is a key issue as well as the possibility to transform it by ICT and/or convert it in a more environmental friendly way by increasing the share of slow traffic (pedestrians, bikers and public transport) in the modal split of traffic. This aspect is getting more important, because there is no more space for developing industrial areas in Linz, only in the surrounding municipalities, which have to be tied in to solve the traffic problem.

Three of four interview partners' emphasized the importance of social issues, especially of education as a central part of sustainability in the future.

29. France – Nice

29.1 General city profile

Background information

Factual data

Nice is the capital of the department "Alpes Maritimes" belonging to the region "Provence Alpes Côtes d'Azur". It is the 5th most populated city in France and the second biggest city in the region after Marseille, its capital.

The city is located on the French Southeastern coast, around 30 km from the Italian border. Its geographic position between the Mediterranean Sea and the Southern Alps represents a particular challenge, especially in terms of expansion possibilities for housing and green spaces in the city.

Nice has a Mediterranean climate with sunny, dry summers and mild winters. The average daily summer temperature is around 25 °C and in winter around 13 °C. The annual average precipitation is 733 mm, but precipitations are mostly concentrated in winter months.

Nice, the main city of the French Riviera ("Côte d'Azur"), counted 343,304 inhabitants in 2010 (latest Census, Insee) on around 72 km²: the city of Nice is the main municipality of the Métropole Nice Côte d'Azur (NCA), a metropolis currently gathering 46 municipalities (around 550,000 inhabitants) on a territory of 1400 km². The Métropole NCA was the first metropolis to be created in France (2012): it enables to administratively manage this vertical area between the coast (Nice) and villages in the mountains.

There is almost no population growth in Nice, as the small increase in immigration is balanced by the negative growth rate: there are on average more elderly people in Nice than in other French cities: almost 30% of the inhabitants are more than 60 years old.

Nice is after Paris and Strasbourg the French city with the highest immigration rate (around 15%).

Basic government/administrative structure

As mentioned above, Nice belongs to the Métropole Nice Côte d'Azur (NCA): this administrative entity is divided into 14 Commissions, a Council of 46 Mayors and a Metropolitan Council gathering 147 people. The Métropole deals with most of the issues, except of green spaces, social issues and other sectors only relevant to the municipality concerned.

The current leading party is the French right-wing party UMP: Christian Estrosi (Vice President of the UMP Party in France) is both the Mayor of Nice (since 2008) and the President of Metropole NCA.

Economic conditions

In 2009, Nice counted a total of 145 180 employed people. The unemployment rate for people between 15 and 64 was around 13%. At the end of 2011, the total number of subscribed job seekers was 26 041.

In 2009, the average declared net income per tax household was around 22 000€.

Agriculture has almost no weight (0.7%) in local employment: tourism and services represent 70% of the activity of the city, while industry and construction work build 15% of it (2009, Insee). Around 25% of businesses have less than 10 employees.

Tourism plays a crucial role in the city, Nice having the third main airport in France after Paris (2) with 11 million passengers in 2012, and being a hub for the Riviera and Southern France.

Local lifestyle

Compound of inhabitants (demographic data) : in 2009, population density was in Nice 4737.7 inhabitants/km² in Nice. The compound of inhabitants was as such: 21.8% under 20 years old, 56.2 under 65 years old, and 22% above 65 years old. (Insee, 2009).

Infrastructure: the most important infrastructure in Nice is the airport (11 million passengers/year). The harbour is mostly used for cruises or recreational boats. Motorways around and in Nice are major infrastructures: for instance, the *Promenade des Anglais* (main motorway around the bay) is known to have 100,000 vehicles a day. Hence, the importance of developing the public transportation network with busses and tramways.

A new stadium (Allianz Riviera) was inaugurated in October 2013 on the *Plaine du Var* with around 35,000 seats. Four hospitals build the academic health centre (CHRU), and a major university welcomes around 25,000 students each year: Nice Sophia Antipolis.

Transportation: bus and tramway are expanding in Nice, but the role of the car remains very important: the coastal line "Promenade des Anglais" is a symbol for it, with a 7 km long sort of "urban highway" along the *Bay of Angels*.

A first tramway line opened in 2007 in the city centre and a second one is planned to link the Eastern and Western parts of the city. Efforts are made to promote bicycle (Vélo Bleu) and a car sharing system (Auto Bleue). However, the relief and the cultural use of the car make it difficult to permanently change the modal split in Nice.

Structure of the quarters, housing quality and housing rates:

The old district ("*Vieux Nice*") is the centre of an urbanization process that first took place in Nice on the East side of the river Paillon (now covered by the new green axis called "*Coulée Verte*") with Italian style buildings. Then, after the city became French in 1860, buildings with the French "haussmanian" architecture were built on the West side of the city. The city expanded on the West side along the bay, and North to the mountains in the 20th century, particularly after 1960 (decolonization process followed by an important immigration wave).

Nice is known to be a city with a difficult housing situation. The rental offer is insufficient and defined by small housing (56%). Moreover, rents in Nice are 20 to 35% (sources: Nice Matin and Insee) more expensive than in other cities. The average selling price per m² in Nice is around 4000€ in 2013, and rents are at around 16 to 17€ /m². Nice has around 11% social housing, which is under the legal rate (20%). The total number of housing in Nice in 2009 was 219,870, with 74, 5% principal residence.

Another public-led trend in Nice is the promotion of new information and communication technologies (NICT): contactless payment, e-healthcare, e-mobility, telemonitoring systems.

Nice is a residential and touristic city: the presence of elderly people and tourists is not a driving force for civil society involvement. However, there are some noticeable improvements in terms of sustainable development (Eco Districts).

Key challenges and trends

Economic issues and trends

Urban sprawl is naturally limited in Nice because of its geographic situation and important investments are made to build on remaining grounds around Nice, particularly in the Var lowland (Vallée du Var). The EcoVallée project (see below) plans to have an innovative business centre linked to sustainability issues (a new research university was created around sustainable development issues: the "'Institut Méditerranéen du Risque, de l'Environnement et du Développement Durable"). Trends towards "ecological tourism" remain marginal.

Environmental issues

The main challenge in Nice is to deal with a specific opposition: the important presence of natural resources around the city (rivers and the sea, forests and the climate) to be sustainably used and protected, and a growing urbanization within the city. This leads to urban/rural tensions (for instance in case of high voltage power lines or high-speed railway infrastructures) between people wanting to see the city provided with modern infrastructures and other preferring to preserve the natural environment around the city.

CO_2 emissions in 2010 were 3 352 154 TeqCO_2 on the metropolitan territory (around 6.3 Teq CO2/inhabitant), 34,000 for Nice alone. Greenhouse gas emissions are due to 36% to transportation, 26% due to residential and tertiary activities, 26% to food and 12% to other activities (2012).

Seawater protection is an important issue in Nice, as the city is defined by its coastal situation and touristic activities also rely on this aspect.

Waste management issues are highly debated and Nice is lagging behind in these issues: there is little waste recycling on the Riviera.

Another main challenge would be to foster renewable energy use, for instance to promote solar energy that could represent a significant investment considering the numerous days of sunshine.

29.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Drinking water in Nice comes from the Vésubie River (around 75%) and the Var groundwater table (around 25%). These sources coming from the Alps deliver high quality water: there is no water treatment except an ozone treatment: Nice was the first city in the world to use ozone treatment (1907). Water availability doesn't seem to be an issue in Nice.

Municipalities vote drinking water prices. In Nice, the average water price is about 3.60€/ m^3, above national average (3€/ m^3). The average drinking water consumption is 225 l/day/inhabitant on the Métropole NCA (2011). Tourism and residential activities (swimming pool, peaks in consumption) impact drinking water consumption in Nice and explain these high consumption levels.

Key issues

The most important issue concerning drinking water is the end of a contract with Veolia Eau (former Compagnie Générale des Eau). Veolia Eau is a private company managing drinking water in Nice since 1864 through a public service delegation contract. For all municipalities, the Métropole will manage drinking water from 2015 on: water will become entirely public.

The decision to transfer drinking water into public responsibility was taken after an audit made on the territory of the Métropole Nice Côte d'Azur. 27 out of the 46 municipalities of the territory had already public water services. However, Nice and other important municipalities (Beaulieu, Eze, Villefranche, Isola 2000 (a ski resort)) had their drinking water managed since 1864 by a private company, Veolia Eau, through a Public Service Delegation Contract.

The main argument concerns water prices: this long lasting contract without competition with other water management companies would have pushed the municipality to take control over prices. The upcoming municipal elections (2014) could be an explanation for this announcement by Christian Estrosi (Mayor of Nice and President of the Métropole) in 2013. The water services in Nice requires 6 million € investments a year.

A new public industrial and commercial entity (EPIC) called « Société Eau Azur » will be created and keep around 220 people from Veolia Eau under private contract.

This issue leads to the question of water system standardization: villages belonging to the Métropole, used to drink water from the source without any treatment, will now be compelled to drink water with common quality standards: it generates new operational costs to unify the water network. For instance, the presence of arsenic in water or national efforts to remove lead branches are particularly discussed in the Métropole. It also wants to reduce water losses in the network and foster hydroelectricity production in the water network. For the moment, the water situation for Nice and the entire Métropole should be considered separately.

However, the most important water issue in Nice remains seawater protection: the Mediterranean Sea is the main natural element in Nice, and more citizens' initiatives deal with seawater protection than with

drinking water quality. Water treatment issues are also linked to seawater protection, as effluents from the main wastewater treatment plant go directly into the Sea (plastic microfiber and medical substances issues).

Key actors/partnerships

Veolia Eau: former Compagnie Générale des Eaux, Véolia Eau has managed the water provision service in Nice and in surrounding villages since 1864

Métropole NCA: the Métropole is in charge of the water network of 46 municipalities and will manage all drinking water issues from 2015 on. The Métropole currently invests around 12 million € per year for drinking water and 15 million€ for sanitation services.

Agence de l'Eau Rhône Méditerranée Corse: this State entity (belonging to the Sustainable Development Ministry) aims at improving water management, protecting water resources and avoiding pollution. It provides the Métropole with technical and financial support on these issues.

Méditerranée 2000 is an association created in Nice to promote sustainable development in Nice, particularly by education and public awareness campaigns. Méditerranée 2000 organizes activities for school classes around drinking water, sanitation and seawater protection.

Key actions/measures/initiatives

Most of the measures lead by the above-mentioned actors concern awareness-raising campaigns for children. For instance, "Protégeons l'Eau" was a road show campaign launched in summer 2013 in villages of the Métropole to raise public awareness on water issues.

Initiatives and improvement in terms of wastewater management also concern seawater protection: research projects led by the Métropole and Degrémont are ongoing to anticipate problems that are going to arise concerning effluent quality.

There is overall more civil society involvement on seawater protection than on drinking water quality, and little concern arise about drinking water availability or quality.

Energy

Availability, affordability and consumption levels

There is no local energy provider in Nice: Nice is supplied by EDF, the electricity transportation company being ERDF (Electricité Réseau Distribution France). Electricity tariff set by EDF for domestic purposes is around 0.13€/kWh as everywhere in France. There are some other energy providers in Nice but they remain marginal.

Key issues

- Renewable energy: the Métropole produced 28% of its electricity in 2012 through hydroelectricity and 8% of its heating needs. However, renewable energies other than hydroelectricity are almost absent on the territory, despite its potential, namely solar energy and biomass through the wood sector. Thermal energy from the sea as well as superficial geothermal energy could also be widely developed. Projects are ongoing and some business actors wish to go further (i.e. produce energy through wastewater sludge, currently impossible because of European directives).
- Energy dependency: the territory is very energy dependent, and there are major electricity provision problems: Nice is located at the extreme East side of the regional electricity network. Nice inhabitants call it an "energy peninsula". The whole Alpes Maritimes Department is only supplied by one high-voltage line: it led in 2008 to a long power blackout. Problems arise through consumption peaks varying according to seasonal demand (for heating but mostly air conditioning purposes).
- Energy efficiency: the housing sector represents the main energy consumption sector in Nice. An aerial thermography survey is available for inhabitants and municipality to illustrate energy consumption in individual houses. The construction of energy-efficient buildings has started, and the main project "EcoValléee Plaine du Var" in the Var lowland promotes energy self-sufficient and low-consumption valley (*See BOX 2)* Tourism remains a major energy consumption factor (airport, hotels and services).
- There is no major civil society involvement in energy issues and no energy cooperatives.

Key actors/partnerships

Azurra Lights is a young association doing sustainable development consulting for the general public and the private and public sectors. They mainly work on fuel poverty issues and promote energy consumption reduction through awareness-raising campaigns in Nice and in the region.

CCI Nice Côte D'Azur: the local Chamber of Commerce launched an energy consumption reduction programme called "Energies Durables Azur". It targets businesses that represent half of the overall electricity consumption. The CCI, in partnership with other states or regional administration also informs businesses on issues like renewable energy and smart grids.

Key actions/measures/initiatives

Like all major cities in France, Nice develops a “Plan Climat Energie Territorial” (PCET), a public action programme on climate and energy issues. This programme is impelled by the “Grenelle 2” law in France (2010) related to a “national commitment for the environment”. Two PCET were realized for the city of Nice and the Métropole. Some of the projects developed in this framework are:

- On renewable energies: Nice Grid, a smart grid project in the “EcoVallée Plaine du Var”: it’s a small-scale experimentation with solar panels to assess the feasibility of a similar smart grid on a bigger territory.
    - Hydroelectricity is highly promoted in Nice, particularly on the Var River and on drinking water networks.
- On energy efficiency and public awareness raising: public-lead projects like EcoWatt (virtual alert system on individual electricity consumptions) or EcoFamilies (pilot project promoting household involvement in their individual electricity consumption).

An “Espace Info Energies” (information centre on energy issues) is located in Nice in the “Maison de l’environnement”. It is a nationwide programme led by ADEME (French environment and energy management agency) about energy consumption reduction and to promote individual renewable energy use.

- On public transportation: the Métropole launched specific projects on transportation (AutoBleue, VéloBleu) and public promotion campaigns to use the tram and busses. A second tramway line is planned for 2017.

Green spaces

Availability, affordability and consumption levels

The city of Nice counts a limited amount of urban green spaces. This is due to its geographical situation (between sea and mountains) as well as to urban sprawl in a touristic city were housing is expensive. There is not much room left for green spaces. The last remaining important space in Nice is the Plaine du Var (Var lowland), on which a project is being launched (EcoVallée, box1) with some areas reserved to green spaces.

Green Spaces management is a municipal prerogative: the situation in Nice should not be mixed with the one of the entire Métropole (small villages, woods, natural reservoirs…). 270 people work for the management of green spaces in Nice. A new green space was inaugurated in Nice end October 2013: the “Coulée Verte”, a green axis on 12 ha in the city centre (see below). On the whole green spaces are not always accessible (for instance delimited by fences or closed at night): for example the Parc Phoenix (7 ha) is public but with entrance fee.

However, outside the city, there is a high number of forests and natural parks: Alpes Maritimes is the department with most forests in France.

Key issues

- *Availability of and access to green spaces:* this issue is debated in Nice: many gardens or parks are covered with lawn, flowers and palm trees. Overall, green spaces in Nice represent a controlled nature. Nature is integrated in landscaped green spaces for residential and tourism purposes.
- *Use of green spaces*: the above-mentioned landscaped green spaces are symbols for an underlying conflict of use, between people who want to walk their dogs in a restricted area with palm trees and people who want to have endogenous nature in the city, to caricature it.
- *Urban agriculture*: there is no allotment garden in Nice: this can be explained both by the lack of cultural habit to grow urban gardens, and the geographical and housing situation that makes it difficult to free spaces to this purpose. A public debate takes place on the Var lowland around the protection of agricultural areas (see box 1).

Key actors/partnerships

Maison de l'Environnement : this service belonging to the municipality of Nice gathers all public information concerning air, water, waste, green spaces and energy consumption. Many projects deal with green spaces through awareness-raising on biodiversity and sustainable development issues (see above).

ARBRE : (Association pour la Réhabilitation, les Bienfaits et le Respect de l'Environnement) is an association created in 1991. This association is truly around green spaces and practical activities, for instance urban gardening. Arbre developed a job integration workshop and many activities for children organized within the *Maison de l'Environnement.*

Métropole Bleue is a young environmental protection association currently working on the preservation of agricultural activities in the Var lowland.

Key actions/measures/initiatives

Like in other French cities (Grenelle 2), Nice developed a green and blue path, a local biodiversity plan, and six Natura 2000 areas are located on the metropolitan territory. Some examples of recent initiatives related to green spaces in the city are:

- The "Coulée Verte", a major green area newly created on a former bus station in the city centre. This green axis covering 12 ha is debated because it is closed by fences and unavailable at night for security reasons. Other criticisms point to the "controlled nature" and the presence of many exogenous tree species rather than local species. However, it represents a new open green space for recreational purposes in the city.
- Trophées de l'environnement: this is a competition organized by the municipality of Nice to reward citizens´ initiatives to "improve the environmental quality of life in Nice", such as urban pedagogical gardens or tools dedicated to promote energy efficiency or waste recycling.

29.3 Governance and citizens' participation

Multilevel governance

The first multilevel governance process in Nice was to gather surrounding municipalities into one main entity: the Métropole. In sectors concerned, issues at stake are varying:

Water management differed according to the municipality, but will be unified. Coordination problems remain for municipalities that have been recently integrated into the Métropole. In Nice, water management will be a public service and will be handled by the Métropole from 2015 on.

Energy management in Nice is directly linked to regional and national networks, and there is no energy autonomy. However, the public sector promotes local renewable energy production (for the moment mostly through hydroelectricity). The main power blackout experienced in Nice led to a debate on energy dependency in Nice, still unsolved.

Management of green spaces is entirely local, but national or European directives give the impetus and financial means for most of the projects and programmes.

Some actors expressed complaints about the non-flexibility of European or national constraints, even those aiming at protecting the environment: the specific situation in Nice (relief, population, location in France) would require managing environmental issues locally or having flexible frameworks in terms of environmental protection. However, it seems that there is no major questioning about local autonomy in Nice.

Participation and bottom-up action

Participation of citizens in local decision-making

Participation of citizens in local decision making in Nice goes through district councils, or public inquiries in case of main urban planning projects. Some actors expressed the lack of citizen's participation in local decision-making and explained it in different ways:

- By a "monarchal" way of making public decisions in the city (critics of the political governance system)
- By a certain culture of non-involvement of the citizens.

However, other elements can explain this lack of organized action in terms of citizens' involvement. First, the new character of sustainability issues in the public sphere in Nice. Then, another explanation could be the new structure of the Métropole that gathers heterogeneous municipalities from small villages in the mountains to a major city on a bay.

Bottom up actions

Field research in Nice could not prove of any tradition of self-organized initiative in energy and water management. Associations in Nice mostly deal with seawater protection and natural environment surrounding the city. Some are also concerned about changing citizens' habits in terms of waste management, energy consumption etc. However, a recent civil society movement developed against the "OIN EcoVallée Plaine du Var" project which is major urban planning project launched in 2008 to organize

an important heterogeneous zone (10,000 Ha) and transform it into a sustainable area. This project was highly contested by groups of citizens. Criticism focused on a perceived lack of public debate before the project was agreed upon, an impression of “green washing” and expropriation methods to build a business area on the Var lowland.

29.4 Conclusion

Short summary

Nice is the capital of the French “Alpes Maritimes” department located on the extreme South-Eastern part of France. The city is defined by its geographical situation between the Alps (North), the Italian border (East), the Mediterranean Sea (South) and the remaining Riviera (West). Nice is known as a touristic and residential city due to its nice situation and warm temperatures. A conservative party leads the local government since 2008.

Water provision is planned to be entirely public in 2015, and the management of green spaces depends on the 46 municipalities that form the “Métropole Nice Côte d’Azur”. There are no main local energy provision companies and Nice is described as an “energy peninsula”, as the city is provided with electricity through only one high-voltage line, considered insufficient.

Environmental concerns highlight a major rural/urban opposition: Nice cannot be described as a “green city” as such compared to other French cities. However, its location brings to the forefront environmental issues, whether it is seawater protection, wood conservation or air quality issues.

Trends and challenges for the future

The main challenge in Nice is to transform residential, services and tourism activities into sustainable ones. Amongst others, managing urban development without enough space for it is one important issue. Actors also mention migration issues as important to them, as Nice is located on the coast and close to Italy, and thus sensitive to migration flows. The presence of elderly people (making up 30% of the total population of the city) is also of concern for the future of the city.

Issues particularly at stake concerning urban sustainable development are:

- Improving energy efficiency in housing in a city with major investments in the housing sector.
- Fostering sustainable public transportation (developing tramway lines and reducing the use of cars within the city)
- Developing renewable energy: this can be achieved with a local and national will to develop the solar energy sector. Hydroelectricity and energy production using the potential of the Mediterranean Sea can be further developed.
- Finding solutions to become less energy dependent.
- Promoting local food consumption will be difficult as there is a tiny amount of agricultural activities around Nice.

Finally, organizing public initiatives on sustainability issues in a coherent way and stimulating civil society involvement seems to be essential to foster sustainable development in Nice.

30. France – Paris

30.1 General city profile

Background information

Factual data

Paris is a city of 2.2 million people, but the urban area represents a population of more than 11 million. With 29% of the national GNP, Paris Region is not only a political centre, it is also the heart of France' economy (IAU 2011). Albeit a caricature, the vision of "Paris and the French desert" reflects a true historic tendency. This has deep implications for the city: for centuries, Paris has attracted very numerous and diverse new inhabitants. The city has become extremely dense (in 2009: 21,196 inhabitants/km^2) and is consuming all the space available. Urban networks have had to be adapted early in history and many of them (like the metro, sewage system, drinking water) date back to the 19th century. The river Seine was domesticated and now runs along stone banks. This is however only a partial control: the natural hazard most feared is a major flood that would entirely paralyse the city, with dramatic consequences. Atmosphere pollution and noise are a more day-to-day nuisance. With millions of people commuting every day, mobility is a key issue for Parisians. Cars have steeply developed between the 1960s and the 1990s until strong measures were taken to reverse the trend. Population decreased during the last decade but demographic growth is back at a modest rate (0.5%). It's much higher in the closest suburban cities. The demographic structure offers a particular pattern: on average, the population is more educated, less unemployed, better paid in Paris than in the rest of the country (average revenue: 36,085 Euros per fiscal household). Paris enjoys an oceanic climate, with average July temperatures of 19.6° and average January temperature of 4.2°. This helps make the Parisian Basin a fertile plain, where big farmers mainly grow cereals.

Basic government/administrative structure

Paris has a particular political organisation. It's a city ruled by a city council (the *Conseil de Paris* and a mayor (since the 1970s). But it's also a Département in itself. Thus, the *Conseil de Paris* is also a Département's *Conseil général.* Under this dual status, the local authority cumulates the legal competencies of both scales (the département has some attributions that can count in terms of sustainability, notably high-schools management, social aids). Another distinctive feature is that Paris is not part of a joint association of neighbouring cities, as all other cities are in France. The *intercommunalité* dynamics may however finally gain momentum in Paris too: there is an ongoing project of building a "Grand Paris" structure so as to gather Paris and the periphery under the same administration for some competencies. This could help organise transports and urban networks at a more adequate scale. Paris city/department has a total budget of 8100 million Euros (2013).

Economic conditions

As the nation's capital city, Paris concentrates third sector activities: public administration, central services of national and multinational companies, hospitals, cultural industries, tourism and museums, media. More than 90% of Paris jobs are in the third sector. Agriculture is inexistent in the city (0.1%), while industrial activities are also disappearing. Industries in Paris account for only 4.7% (construction: 3.3%). The official unemployment rate is 8.9% in 2013 (slightly raising: it was 8.2% in 2009) (INSEE – Chiffres clés).

Local lifestyle

In such a large urban area, mobility is a key challenge for sustainability. The use of individual cars leads to very high levels of air pollution: on average between 20 and 30 µg / m^3 for fine particles (PM 10), 32 µg / m^3 for nitrogen dioxide. European and national standards of good air quality are not met and levels of risk and alert are regularly over passed. The city authorities are well aware of this issue and seem to be closely monitoring the situation. Transport policies and active traffic reduction policies (along with progress in car engine designs) have helped to reverse the trend. Cars are now used for 7% of the travels inside the city. Traffic has decreased by 25% between 2000 and 2010. In the same time, the use of bikes has developed: + 100% in ten years, thanks to the construction of bicycle lanes and the creation of *Velib*, a popular offer of public bikes that accounts for one third of all bicycle trips. However decreasing, pollution levels remain too high. The EU is taking France to court on this subject. Noise is an additional concern: more than 100,000 inhabitants are exposed to 76 – 83 db noise volume alongside the ring road *(*Ville de Paris, rapport environmental, 2012). Public transport is a key factor to improving the situation. But in Paris, this is mainly a shared responsibility. Along with other public authorities of the Parisian region, the city of Paris is a partner of the *Stif,* a joint public association. The public transport network is old and reaches saturation. Improvements are made but remain slow (and expensive). The Grand Paris project may help impulse ambitious developments in this respect.

Key challenges and trends

Economic issues and trends

Paris remains prosperous despite the global (and national) slowing. The structure of its economy preserves the city as a whole from social difficulties. There are nevertheless some concerns with social mixing. Paris still attracts migrants from poorer countries and enjoys a rich cultural diversity. Nevertheless, the concentration of these populations is high in some districts (North and East) while only high-income families and expats live in the city centre (and West). Working classes, either French or not, seem to have no place anymore in a city that has become too expensive for the vast majority of workers.

Environmental issues and trends

Climate warming projections for Paris are between +2 and +4° in 2100. Emissions of GHG in Paris territory amount to 24.6 million teqCO2 (2009). The trend is decreasing (25 million in 2004) but there must be an acceleration to meet the objectives of the Paris Climate Plan adopted in 2007: reduction by 25% of GHG emissions by 2020 and by 75% in 2050 (reference year: 2004). The Climate Plan also sets goals for energy consumption (-25% in 2020) and for the use of renewable and recuperation energies (25% of the energy mix). The administration has more ambitious goals for itself: - 30% for the three landmarks. If they are to be met, the city must integrate these objectives in all its public policies. Efforts seem to go into the right direction: urban planning and construction operations now have to conform to compulsory guidelines for energy efficiency, reduced air pollution, maintaining of green spaces, favouring sustainable mobility.

30.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Half of Paris drinking water comes from underground sources, many of them natural emergences. The furthest ones are located 100 to 150 km away from the city, in Normandy and Burgundy. The other half comes from the rivers Seine and Marne. Paris drinking water system is completed by a unique network of non-treated water that has been conserved from the 19th century, and is still used for some activities such as the washing of streets. 177 million m^3 of drinking water have been used in 2012, a figure that has been in regular decrease in the last two decades (- 25%, on average - 2% / year at the moment). Industries moving out of the capital and more efficient domestic equipment explain this drop. On average, a Parisian today consumes 120 l. While this degrowth is good news for the environment, it raises question about the capacities of Eau de Paris, the water public company, to maintain a qualitative offer in the long-term (there is a scissor effect due to decreasing income but growing or stabilised expenses). The cost of water is 3.11 €/m^3 (it includes treatment). Network losses are reduced thanks to infrastructure monitoring and are not a major concern today (Efficiency : 92%).

Key issues

Water quality meets the legal European standards. The presence of nitrites is 29 mg / l on average, and never exceeds 38 mg / l. Nevertheless, efforts to maintain and improve quality are made through various actions developed with farmers on the catchment basins. Eau de Paris has a partnership with 140 farmers, among which 22 have been accompanied to shift to organic farming. The company also acquires and exchanges land to guarantee the safety of the capture sites most at risk (200 ha). Eau de Paris also works with local water authorities to monitor the sustainability of the resource, without known conflicts.

Besides maintaining quality, one key issue is information to the public. Awareness about sustainable water consumption is made complicated by the fact that many Parisians never see a water bill. Individual water meters are rare and the cost of water is usually included in the collective buildings maintenance fees. Eau de Paris makes a lot of publicity to convince Parisians to drink tap water instead of buying water bottles. A Pavillon de l'Eau serves as a relay with the population, while communication campaigns are very regular on the city's walls about quality and price ("300 times cheaper"). An artistically designed carafe is also on sale, and used in most Parisians administrations meetings and conferences (where water bottles are prohibited).

Key actors/partnerships

Eau de Paris

In 1985, the then mayor of Paris (Jacques Chirac) decided to privatize the water distribution. Veolia and Suez shared the market, with delegation contracts for 25 years. They were also share-holders of the mixed society in charge of production, along with public authorities. Following the election of a socialist mayor in 2001, this system was completely revised. Insufficient control on private partners' activities and profits, rising prices and low investment in infrastructure prompted a demand to public control on water management. Eau de Paris was created under the regime of the Régie Publique and took control of the entire drinking water process in 2010. Eau de Paris is an autonomous branch of Paris administration. Its

board of directors is composed of elected officials from the Parisian municipality, as well as representatives from staff, consumers associations (UFC Que Choisir), and environmental groups (France Nature Environment).

Observatoire de l'eau

The local authority also created a consultative body aimed at giving citizens a voice in water management. The Observatoire de l'Eau (Water observatory) can ask questions and monitor the administration projects, debate issues, make proposals. It has a small budget for ordering studies. The Conseil is also a member of the Board of directors of the Region.

Energy

Availability, affordability and consumption levels

In 2009, Paris consumed on average 30,677 Gwh (Ville de Paris, *Bilan du plan climat,* 2013). The city produces a minimal part of the energy it needs (3%) essentially through the urban heating system (121.6 Gwh + 0.8 Gwh electricity). The rest is based on the nuclear production, fossil energies and renewable sources (mainly hydroelectricity) managed at national scale. The renewable sources amount to a 12% share in the overall Parisian energy mix (Mairie de Paris, *Rapport environmental 2012,* p. 11). There was a 2% rise between 2004 and 2009 and the trend seems to be the same for the current period. Prices for electricity and gas depend on the providers. Electricity is sold to households at a cost of 0.1329 € / kw/h (EDF price, 2013). Gas is sold at state-controlled price of 0.0867 € / kWh (between 1000 and 6000 Kwh annual consumption). For urban heating hot water, prices range from 36.75 to 59.65 Euros /Mwh depending on the season, the volume of demand and the length of the contract. Overall, electricity prices have increased by 20% since 2004. Gas prices have increased by 55% (but are currently lowering following the shell-gas boom in the US).

A variety of potential sources of renewable energy exists in Paris and has been identified by public and private actors. Geothermal energy is promising: hot groundwater tables are present in Parisian soil, at a temperature of 60°. A handful of construction projects already make use of it. Since 2012, 12,000 households (representing 8 Mw) in the North-East get hot water from a 1800 m deep well. Following a recent refurbishment, a municipal cinema centre in the 10th arrondissement also makes use of this energy for its heating and cooling systems. The potential of geothermal energy from Parisian underground is expected to reach 291 Gwh in 2020. Solar energy is another resource, although national regulations in this matter have severely handicapped their development (reduction of the national buying price). Paris city already has a surface of 25,000 m^2 installed, but local authorities have launched a program aiming to reach 200,000 m^2 (both in thermal and photo-voltaic energy).

Key issues

With 96% of its energy imported, securing the resource is an important issue for the city. Taking a role in energy production could also help the city reduce the level of Ghg emissions, which impacts both air quality and global warming. Paris municipality is the owner of the city's electricity grid and of the urban heating, urban cooling and gas networks, but has control of only two sectors in terms of production: heating and cooling systems. Consequently, strategic choices focus on these instruments.

Key actors/partnerships

CPCU

The Compagnie Parisienne de Chauffage Urbain (CPCU) is a joint venture of GDF Suez (65%) and the City of Paris (35%). The society operates the city's heating network under the regime of Délégation de Service Public (the contract runs until 2024). The common goal of CPCU and Paris is to reach a 50% share of renewable and recuperation energy by 2015 (60% by 2030). To meet this objective, the company counts on power plants using incineration and methanisation of domestic waste as well as biomass (wood), which is progressively replacing coal in existing plants. Geothermal energy is also harvested by CPCU (1% of the mix in 2013). Many construction programs led by the city favour the use of this heating network. (There's an equivalent for cooling delegated to Climespace).

Agence Parisienne du Climat

L'Agence Parisienne du Climat is a municipal agency that was created in 2007, as a part of the Plan Climat. Its mission is are to inform, advise and produce expertise about energy transition issues in the city of Paris. One of the agency's key activities is helping (co-)owners of buildings improve energy efficiency (program "Copropriété Objectif climat !"), in partnership with the State Agency for Energy Monitoring (ADEME) and the Region Ile de France. The agency also provides training to architects, construction professionals and private society managers and tries to gather strengths and build networks on related themes.

Key actions/measures/initiatives

Along with the Climate Plan adopted in 2007, Paris' transition policies rely on various strategic documents that span across all sectors: mobility (plan de déplacement de Paris), construction (Plan local d'urbanisme), food (plan d'alimentation durable - 2010) or biodiversity (plan biodiversité – 2011). The goal is that all fields integrate sustainability objectives in terms of GHG emissions limitation, energy efficiency and quality of life. Regarding energy efficiency, the local authority can act through building regulation, subsides to private actors, and through direct action for its own social housing programs. The Climate Plan states that all new buildings must comply with a maximum energy consumption of 50 kwh/m^2/year, which is under the national obligation (RT 2012). Refurbishments objectives are set to 80 kwh/m^2/year. Paris City administration is also involved through its own practices, both for the buildings it manages (offices and schools are progressively made more efficient) and in the public space (public lighting practices have been revised to match sustainability objectives).

Green spaces

Availability, affordability and consumptions levels

Paris´ development in the 20th century and the need for housings led to the sacrifice of most of the inner city green spaces. Two large surfaces have however been preserved and serve today as green recreation spaces for Parisians: the bois de Boulogne in the West and the Bois de Vincennes in the East. In the centre, most green spaces are made of historic gardens carefully cared of (such as the Jardins des Plantes, du Luxembourg, des Tuileries) and more modest neighbourhood public parks. There are 500 parks and garden in Paris, and more than 100,000 street trees. The Seine and the Canals don't have

vegetal banks anymore in Paris. Overall, the extent of green cover in the city of Paris is 4000 ha (Ville de Paris*, Plan Biodiversité,* 2010*)* which represents 23% (11,3 m^2 /inhabitant) of the city's surface.

Key issues

The place of nature in Paris has long been small, which creates difficulty for maintaining a good level of biodiversity. Vegetal (around 2000) and animal species (2000 too) remain relatively numerous, but scarcity and fragmentation of green spaces hinders their development. The rarity of green spaces also raises a social issue of equal and easy access to nature.

Key actors/partnerships

Paris City

The Green Space Administration (Direction des Espaces verts et de l´ Environnement – DEVE) is leader in adapting Paris policies to sustainability standards regarding quality of green space and the monitoring of biodiversity. An Observatoire de la Biodiversité has also been created by the city of Paris in 2012. Its missions include collecting data about the city´s natural species, making studies about the impact of projects, and sharing knowledge with associations, scientists, professionals (architects, landscapers, etc.) and the general public

L´association Graine de Jardins

This association has been created in 2001. It is very well organized and provides information, resources and backing of all sorts to individuals, groups of individuals, cities or any other structure that wants to create a collective garden. Its scope is not only Paris but the whole Ile de France Region. The association has a social view on the role of collective gardens (integration and solidarity) and also commits to promote sustainable gardening practices. It has a good relationship with the city of Paris and with other collectives, to which they provide advice on adequate regulations and policies.

Key actions/measures/initiatives

There has been a growing interest for the city´s green spaces in recent years. Strategic documents tend to show that they are increasingly taken into account to help tackle warming and improving the quality of city life. In 2012, the Paris Council adopted a Biodiversity Plan that gives great role to the city´s green spaces for the preservation of natural species. The plan sets a wide range of objectives. The main one is the protection and development of the "trame verte et bleue" ("green and blue thread"): the river Seine, planted avenues, cemeteries, public parks etc. form a continuity of natural milieus that is recognized essential for the city. Measures are taken to protect it and improve its quality. New green spaces are created: 32 ha have been opened to the public between 2001 and 2007 and 30 more during the period 2008-2014. They help fulfil the goal of each Parisian living less than 300 m away from a public park or garden. Many of these new spaces are collective gardens. Paris often backs such initiatives, generally proposed by inhabitants. Their number increased from 14 (2005) to 84 (2012).

Vegetal roofs are to become a new feature of Parisian life. The Biodiversity Plan also sets objectives in this respect: 15 gardens installed on roofs in 2020 and a total of 7 ha new greened roofs by the same year. Sustainable gardening practices have been introduced for all green spaces managed by the city. They will lead to the complete stop of the use of phytosanitary products in a near future.

30.3 Governance and citizens' participation

Multilevel governance

During the course of the fieldwork, many actors highlighted the great importance of the Grand Paris project for an effective enactment of the strategic transition goals. This new administrative structure will coordinate efforts of Paris and its neighbouring cities to help manage a territory of 4 million people in a coherent fashion. The Parisian heating network already goes beyond the city's boundaries. The overproduction of good quality drinking water could be absorbed by neighbouring cities still under contract with Veolia or Suez. Biodiversity and air pollution also know no city's frontiers. By many landmarks, the interconnection of all municipal networks in this dense territory could help manage precious resources more effectively.

Regarding multilevel governance, the only problem that is often raised is coordination with national efforts on energy policies. The Grenelle de l'Environnement (2007) has given a local action framework that is generally coherent with Paris efforts. But in recent years, a chaotic national policy regarding solar energy prices severely undermined the development of important projects in the capital. The city has had to provide new guarantees to private investors whose project had been made much less profitable. Such erratic regulations are a severe obstacle opposed to ambitious reforms regarding the local energy mix.

Participation and bottom-up action

Participation

Citizens' participation in the policy process varies widely across sectors. In the field of energy, their involvement seems very limited. On water, there has been a more open approach. The city seems willing to integrate the views of concerned citizens and associations in new public governance, by giving them a voice in the directors' board. Finally, green spaces is the sector where people participation is most expected and valued. The Paris Biodiversity Plan was drawn up following a consultation of inhabitants and relevant parties. 300 of them took part in discussions and workshops that led to the adoption of a "White book" (2010) containing 95 proposals, which paved the way towards strategic action. Moreover, the development of new collective gardens relies extensively on bottom-up initiatives. The DEVE backs many initiatives but is also concerned that such gardens may sometimes have a paradoxical effect of exclusion, by creating a reserved space for "happy-few" in public gardens.

30.4 Conclusion

Short summary

The dense urban organisation of Paris makes the city very much exposed to the consequences of global warming and environmental degradation. The river Seine has long been polluted to the point that only three species of fish live in it. Heavy car traffic has led to high levels of air pollution that the city still strives to lower, with only limited success. Green space was also scarce in the city centre and the value of nature in the city unrecognised. The good news is that local authorities seem now decided to face these issues head on: water has been reaffirmed as a precious public good and is back under public control, with renewed objectives in terms of quality and sustainability. Greenhouse gas emissions and fine particles are decreasing (however slowly) thanks to new transport policies that favour bicycling and that reduce the number of cars. Ways of saving energy in offices and housing stock are implemented through building

regulations, public awareness and the city administration's own initiatives. Renewable energy resources are also actively sought for to help meet targets that go beyond the EU 20-20-20 frame. In this context, the mobilisation of all sorts of actors could appear as paramount in order to make the transition effective at every level. However, one may notice that the city authorities take leadership in nearly all initiatives (with the exception of bottom-up actions for collective gardens) and that only limited role is left to other actors. Efforts are currently being made, for instance through the "Acteurs of Paris durable" instrument, which aims to value citizen's involvement in sustainability practices. But they could easily go further. If the Paris transition efforts are to last beyond the current political majority and have enduring effect, the extensive mobilisation of the city's civil society is needed. This asset could be more valued.

Trends and challenges for the future

- Strengthen efforts to reduce air pollution. Investments in collective transport infrastructure are needed but a city toll could also be contemplated.
- Gather forces and organise multilevel governance with EU and the state to develop energy efficiency refurbishments in Parisians housings and offices
- Maintain efforts for the diversification of renewable energy sources, especially in the urban heating network (CPCU)
- Encourage civil society actors to take the lead on certain initiatives. An extension and revitalisation of consultation processes (on energy, water, and air pollution) could help success in this respect.
- Help giving a coherent and ambitious frame to the Grand Paris, in liaison with the state and partners cites.
- Engage action to maintain social and cultural diversity in Paris central districts.

31. France – Rennes

31.1 General city profile

Background information

Factual data

Rennes is the capital of Brittany (Bretagne), in North-West France. As a peripheral region, also prone to regionalist mobilisations (the last one taking place in November 2013), Brittany has often received close attention by the state. The preoccupation to connect this mainly rural territory to the rest of the country, both physically and economically, led to various development policies in the 1960s: a network of free highways, railway infrastructure, state subsidies for the industrialisation of agriculture (productions of pork, chicken) and for maintaining fishing activities.

Rennes Agglomeration is located in Eastern Brittany, 360 km from Paris and 250 km from Brest. Rennes is 100 m above sea level and the closest seaport is 50 km North (Saint Malo). The river Vilaine crosses the city, but it is covered in some parts of the city centre. The climate is mild, oceanic, with average July temperature of 18.9 °C and average January temperature of 6° C. Average annual precipitation of 684 mm slightly below France's average (770). In 2013, Rennes Agglomeration is an urban entity of 416,000 inhabitants but the overall population figure for the whole urban area is nearly 700,000. The population is increasing at an average annual rate of 1% (1990-2013). Rennes´ city itself is 207,000 inhabitants (Insee).

Basic government/administrative structure

As all French local territories, Rennes is organised both as a city and as an association of cities. While this territorial organisation called "intercommunalité" is 40 years old, national policies in the years 2000 have given a new impulse to city grouping dynamics. In Rennes, this led to the devolution of a large range of competencies to "Rennes Metropole", the agglomeration level. Rennes Metropole is composed of 38 individual cities, with 5 more expected to join the "Agglomeration" in the coming years.

Rennes Metropole has a budget of 493.15 million Euros (2013). Competencies include town planning, education and research, culture and sports, public transport, transport infrastructures of agglomeration interest, social housing, and waste management. Other sectors are managed at the cities' level, but with close cooperation and common frames through charters, actions plans, etc. Rennes city has a budget of 516 million (2013).

Economic conditions

As the region´s capital, Rennes concentrates on third sector activities: administrations, services to businesses, public hospitals, education and culture. Although decreasing, the food industry remains strong in Rennes. Another traditional asset is the car industry, with a PSA (Peugeot and Citroën) factory that used to provide more than 10,000 jobs. Relying both on these strong industries and on the wide range of public and private service jobs located in Rennes, the economic situation has long been prosperous, with an unemployment rate that used to be far below France average. In 2009, industry accounted for 24,158 jobs (14%), construction 12,613 (5.2%) commercial activities 116,240 (45%) and

public administrations, health and education 76,086 (43.5%) (Insee, chiffres clés 2009). Average net income is 25,610 Euros (2009 - by fiscal household).

Local lifestyle

The University

The University is a very important feature of Rennes city profile. Students are 60,000 and live mainly around the two exterior campuses and in the city-centre. Researchers are also numerous.

Mobility

Rennes has built a metro line in the 1990s, amidst tense debate with ecologists opposing this move. However the metro is today generally praised for having greatly favoured urban mobility and permitted the reduction of car circulation in the city centre. A second metro line is in construction (with much less opposition) and should be open in 2015. Public transport also includes buses and globally accounts for 71 million travels a year (2011). The polycentric shape and large extension of the urbanised zone makes sustainable mobility a difficult challenge, with a marked tendency to use private cars. This mode remains indeed a very common means of day-to-day mobility (53.5%). Traffic is increasing regularly, although there is also a raise in car-sharing. Cycling represents a modest share: 4.2%. Pedestrian mobility amounts to 28.2% (Rennes Métropole “Baro’Métropole”, 2013).

Key challenges and trends

Economic issues and trends

Contrary to the industrial regions of Northern and Eastern France, the economy has expanded continually in Brittany. However, recent events (notably the end of EU funding for some agro-industries) put the territory at a socio-economic risk and may lead to a model change. This concern (which is also an opportunity to renew the growth model) is shared by many of the actors interviewed. Following the international slowing of the economy, Rennes has experienced a retraction of activity and raise of unemployment in 2009, for the first time in 30 years. 6,000 private sector jobs were lost between 2008 and 2009, mainly in interim (mostly in industry), construction and transport. Also, the PSA factory continually decreases its workforce, with a current situation of 6,000 jobs and very uncertain perspectives for the future. Unemployment remains since 2009 at a level of 7.8%, still under France average of 9.7% (in 2012).

Given the place of research and education in Rennes, the city’s “collective intelligence” has been identified as an asset to foster a “knowledge-based” economy locally. Public efforts have concentrated on creating links between research and the economy. Clusters and “Poles de compétitivité” are structures that seek to foster innovation and entrepreneurship by putting together public and private actors of promising fields. Health, ICT, eco-activities have been identified as key sectors for this strategy.

Environmental issues and trends

Rural landscapes surround Rennes, with good quality agricultural lands mostly used to grow cereals or for dairy farming. To some extent, agriculture green spaces can also be found *in* the urban area, as the city’s morphology follows a pattern of “archipelago”, with a dense city-centre (Rennes city) but a fragmented and dispatched suburban belt. This notion of a “Ville-Archipel” (*City-archipelago*) or polycentric growth is a

carefully preserved structural basis that is taken into account when designing policies for urbanism, transport, energy, economic activities, housing. A common view is that the absence of “suburbs” helps maintain a cohesive social life and proximity with the environment. However, it does not help fighting significant urban sprawling (145 ha/year between 1999 and 2010). Current policies aim at setting aside land to preserve alternation between city and countryside, densifying existing poles.

31.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Water resources in the Rennes region are mainly composed of surface water (83%). Groundwater resources provide for the remaining share. A total of 21 million m^3 are sourced, mainly from drawings from three rivers. The furthest point of channelling is located 42 km North East of Rennes on the river Couesnon. It provides 23% of the total potable water. Another source is the Barrage de Rophémel on the river La Rance, (West) 37 km away from Rennes and accounts for 37% of Rennes consumption. The river Cheze, 22 km away in the South West, provides for 33%. The level of consumption in Rennes city is 9.85 million m^3 for about 70,000 clients, which represents an average daily consumption of 110 litres per inhabitant (2010 - source: SMPBR). The trend is slightly decreasing. A part of the water produced by the Rennes City infrastructure is delivered to other cities.

Nearly all cities of the Agglomeration have a contract with Veolia for the production and distribution of water. The price of potable water varies widely within the agglomeration, from city to city. It’s 3.18 Euros/m^3 in Rennes (including all fees and sanitation) but reaches more than 5 Euros in some cities (average price in France in 2009 : 3.62 Euros including taxes and wastewater treatment; average for Brittany: 4.25 Euros). Net of treatment costs, the price for drinking water in Rennes is 1.68 Euros / m^3. The price does not change with the quantity delivered.

Key issues

Water quality was a general problem in the 1980 and 1990, due to a high level of nitrates and pesticides (river water rates were around 40 mg/l, from time to time above the legal quality threshold of 50 mg/l). The water delivered was also of mediocre quality. This quality issues are now more under control for the water distributed (thanks to better filtration and treatment), while the overall quality of surface rivers remain bad because of industrial practices (industrial pig farming notably).

Meeting the needs of Rennes´ growing population makes no difficulty now and for the near future, both in quality and quantity. Despite population growth, the overall demand is more or less stable because of reduced individual and industrial consumption. Network losses have also been greatly reduced in the last years thanks to new infrastructure investment and are not a major concern today (Efficiency: 92% - one of the best rates in France).

Key actors/partnerships

For more than a century, the production and distribution of drinking water have been delegated to a private company, the Compagnie Générale des Eaux, which is now known as Veolia. Under this regime, the city of Rennes and other neighbouring cities remain the owner of the infrastructure and decide

investments through a joint association called “Syndicat Mixte de Production du Bassin Rennais” (SMPBR). The private operator takes charge of producing the water, distributing it and collecting payments. 70% of the French cities are under similar regime, either with Veolia or Suez. Wastewater treatment is also often delegated to the private sector (although not in the case of Rennes city). This situation has been increasingly contested during the last decade in Rennes (as in various cities in France, including Paris), with citizens´ movements and green parties pushing for an entirely public management of water. As the contract with Veolia terminates in 2014, big changes have been introduced. Rennes City and SMPBR will take charge for the whole process of drinking water production and distribution. They are not going to operate directly, as under the “Régie Publique” regime (the Greens advocated this solution). Instead, they will create a “Société Publique locale” (SPL - *Local Public Company*) entirely under public ownership, to which the task will be delegated. Expected ameliorations are: better public control of water, better control of prices and cost reduction. Discussions are ongoing about the question of the place of users / citizens´ movements in the new architecture. Public authorities have accepted the presence of environment and consumers´ associations on the board of the local public company (3 seats). Associations would also like a “Conseil de l’Eau” to be created. This would be a consultative body in charge of examining public choices and indicating directions. One such body exists in Paris (Observatoire de l’eau). No decision has been made on this subject.

Key actions/measures/initiatives

The City of Rennes has a price-winning program of information about water saving called “Ecodo”. Its contribution to the preservation of water is evaluated at 2 million m^3 until 2020.

Energy

Availability, affordability and consumption levels

Rennes Metropole overall energy consumption is composed of oil and oil based products (43%), Natural Gas (27%), Electricity (22%), Urban Heating (5%) and Others (Wood, coal : 3%). (Source : Audiar/Alec). The share of local renewable energy production is 4.6% in 2011 (3.7% in 2009), still far from the national goals set for 2020 (23%).

Two urban heating networks operate in the city under a public service delegation regime. One plant provides heating for a dense neighbourhood in the South. It used to produce energy from fuel oil and gas (220,000 MWh in 2011). From 2014, it will be replaced by a new facility based on biomass (wood) built and managed by Dalkia, a Veolia/EDF subsidiary. It will also produce electricity, potentially 7% of all the electricity used in Rennes. The company says it will source all the wood locally (<100 km) and according to sustainability standards, a commitment that ecologists think cannot be met given the scarcity of local resources. The other heating network is operated by Cofely, a GDF-Suez subsidiary, in a Northern section of the city. It produces energy from collected domestic waste (80%) and natural gas (20%) (distribution: 135,000 MWh in 2011).

Other sources of energy (more than 90%) are not local. Aside from oil, the main energy providers for Rennes agglomeration are the former national company EDF for electricity (75% of which of nuclear origin) and GDF-Suez for Gas. Prices are set on a national basis (EDF electricity 2013 : 0.1329 Euros / kw/h for domestic use).

Key issues

Brittany is in a fragile situation regarding energy. It relies heavily on nuclear power plants disseminated elsewhere in the country for electricity. The installation of local renewable capacities may increase autonomy, but initiatives concentrate on onshore / offshore windmills that are not decided at the city level. Therefore, the main instrument of intervention in the field of energy is the organization of transport (transport amounts to 50% of Rennes overall CO2 emissions) and consumption efficiency, both for public and private activities.

Key actors/partnerships

EDF / ERDF

Despite liberalisation, EDF (provider) and ERDF (infrastructure) remain key actors of the field and the energy landscape remains very centralised. State incentives in terms of price, regulations and subsides are the dominant determinant factors for renewable energy production facilities.

ALEC

The Agence Locale pour l'Energie du Pays de Rennes is a publicly funded agency, created (with EU support) to encourage and accompany initiatives by local authorities, private actors and individuals in the field of energy. It realizes studies and gathers information about technical and juridical possibilities.

The Chamber of commerce and Cluster Eco-Origin

The cluster Eco-Origin was created in 2006 on the initiative of the Chamber of Commerce. It brings together companies, local authorities, higher education and research, financiers and business support networks with the view of fostering activities and job creation around key sectors that can support both growth and environment preservation: eco-construction, water, vehicles without greenhouse gas emissions, bio resources (biomass, seaweed), and health and the environment.

Citizens´ groups and individuals seem not to be particularly interested in getting involved in energy policies locally, with only few grassroots initiatives (mainly in transport, for instance promotion of bicycling). No consultation or deliberation body exists. The highly centralized dimension of the sector, with only limited power on the local level, may likely be a deterrent for such initiatives.

Key actions/measures/initiatives

The City Administration´s commitments are listed in local schemes and action plans (often made mandatory by state regulations) such as Agenda 21, or Climate-Territory Plan, Sustainable Energy Action Plan, etc. They often rely on governance processes with regional and state agencies. The main targets are in line with the 3X20 frame set by EU and French regulations.

The main action instruments are transport policies, urbanism rules, subsides and public communication. Rennes Metropole makes energy an important dimension of its social housings programs. Compact homes, density, proximity to amenities are encouraged in liaison with social landlords, using certification instruments. A new district (mixing private and public housing programs) is being developed as an "eco-quartier" (ecological district), with constructions meeting the highest standards in terms of energy efficiency (La Courrouze).

Green spaces

Availability, affordability and consumption levels

Due to the "Archipel" morphology of the city, access to natural green spaces is quite easy for Rennes´ inhabitants. The general quality and biodiversity of theses spaces is good. Parks and green spaces are also common in urbanised zones. A famous historic garden in the city centre, the Thabor park, is a touristic highlight and recreation spot, especially in the summer. Another large public park in the North (Gayeulles) offers wilder green spaces with sport training facilities. Rennes green cover is also composed of river banks along the Vilaine (except in the very centre of the city where it's covered) and the Canal, although those spaces seem not to be carefully watched by public services. Community gardens exist and are in expansion, with individuals and associations pushing to develop them, but the number remains limited (around 20 in the Metropole, of different sizes).

One can notice that green spaces are not considered a central aspect of the city's sustainable policy. They are rarely or not mentioned at all in plans and strategic documents. One interview partner was surprised to see them included in the research, judging that green spaces are important for life in the city but not "strategic" to tackle environment problems.

Key issues

The development of the city could be an issue for Rennes' green spaces on the outskirts. However, there is a shared understanding that farming/breeding on green spaces has to be protected and their place preserved within the city´s perimeter.

Key actors/partnerships

The main actor in the field is the city´s green space administration. They seem to take care of the quality of new green spaces proposed both by public decision and private initiative. An agreement can be passed with private real estate actors through which the private actor opens green spaces to the general public while the city takes responsibility for maintaining it.

Other actors in the field include private operators such as landscape gardeners. They interact with the city for operational missions but are not involved in the decision process.

Two associations exist in Rennes with the view to promoting community gardening. *Vert le Jardin* is from Brest and is active on all Brittany. They promote community gardening in cities and good gardening practices. There is also a more recent association which is also more focused on Rennes city: *Jardins (ou)verts*. It pushes for the opening of new collective parcels in municipal spaces and offers formation and education about gardening and especially permaculture. Both are small structures relying on a handful of volunteers. Relations with public authorities are good.

Key actions/measures/initiatives

The city of Rennes has been a pioneer in the transition towards sustainable practices of green space maintaining. They have started in 1996 to reduce the use of phytosanitary products until making them completely disappear. This plan called "zero phyto" has been an acclaimed success, with the last spot of resistance (the city cemeteries service) being now in line with this policy. Between 2000 and 2007, use of herbicides fell by 87%. In 2005, a publicity campaign was launched to invite inhabitants to ecological

practices at home: "*Jardiner au naturel, ça coule de source"* (natural gardening, the natural way"). It is based on a charter that invites retailers to advise consumers on the risks of pesticides and promote alternative solutions.

In addition, the city´s green spaces service initiated a programme of differentiated management of green spaces. Practices are now carefully adapted according to the type of garden, from the most "wild" (which is cared to remain such) to the most carefully modelled (patrimonial gardens *à la française* in the city centre). The public was incited to change their expectation (and taste) about public green spaces, with the view to making them understand that less "clean" green spaces are better for the environment, biodiversity and city life.

31.3 Governance and citizens' participation

Multilevel governance

Multilevel governance has vastly expanded in France in the last decades. Several recent laws (Loi Chevènement, Loi Voynet, Loi Raffarin) have revised the organisation of the local territories, with growing attributions given to associations of cities (Frinault). Schemes, plans and strategies at the local level are also encouraged to fit natural "basins'" (employment basins, water basin, etc.) instead of institutional boundaries. Coordination between public actors has become paramount. As a consequence, charters, contracts and agreements have become a common feature of local government (Gaudin). While local powers are gaining power, the state remains the principal authority in some strategic sectors. Immigration for instance is not a local competency. Higher education, research, energy policies also remain largely centralized. On the contrary, water, local transport and economic development have been local competencies for long time.

In Rennes, the governance process seems to work smoothly. There are no political cleavages between the region and the city. Both are dominated by the same political tendency (socialists with allies from the regionalists and green parties). While Brittany does have some economic and cultural particularities, national frameworks are applied (and sometimes negotiated) the same way they are elsewhere in France. There is no specific regional autonomy. The consequences of EU policies are felt less strongly in Rennes than in rural Brittany, where the Common Agriculture Policy developments are carefully monitored. Therefore, defiance (or support) for EU frameworks is much less palpable. There seems not to be a particular governance problem in this respect.

Participation and bottom-up action

Participation

Citizens´ participation in the policy process varies widely according to the sector. Citizens can have a role, for instance when big territorial projects with deep impact on people's life are proposed (such as transport infrastructure, airports, TGV lines, etc.). In such a situation, a formal process of public inquiry takes place in order to take citizens' opinions into account. However, consultation can very often be by passed by national or local powers. Globally, for many sectors, the policy process remains quite strictly the reserved domain of elected representatives and high ranking civil servants.

In Rennes, the local authority relies on citizens´ involvement in some fields. The process of drawing up Agenda 21 and Climate Strategic Plans included consultation of local stakeholders. Associations can also

receive a public mission and get funding to fulfil it. In the environment sector, the Maison de la Consommation et de l'Environnement (MCE - *House of Consumption and Environment*) plays such a role in close liaison with the city's administration. The MCE is an umbrella structure that gathers various associations in the field of consumers´ rights (UFC - Que choisir for instance) and environment (*Greenpeace, Amis de la terre, etc.*). They systematically take part in consultation processes on related subjects. They can also launch awareness campaigns in partnership with public authorities. Their role in the water sector, for which they have long advocated a return to public management, is recognised. They are also involved in campaigns on energy efficiency and the promotion of renewable energy. Conversely, the recent choice of a new power plant for the South urban heating network was decided without a consultation process, to the disapprobation of the MCE, among others. In fact, the perspective upon the degree and effectiveness of the consultation process varies significantly from one actor to another and from one project to another. What is certain is that there is neither formal methodology nor strong commitment to include citizens´ participation in all sustainability public projects.

Bottom-up action

Self-organisation under the form of cooperatives is not a tradition in the Rennes region. As in the rest of the country, the development of state and territorial power tends to create expectations of strong political action more than a will to auto-organise in order to manage common resources. Local power, and in particular city authorities, still benefit from a good level of legitimacy among the public. This may help explain the scarcity of bottom-up initiatives and the strong and leading presence of public institutions regarding all the sectors studied.

31.4 Conclusion

Short summary

Rennes is a medium-sized regional capital situated in a fairly well preserved environment. A long tradition of urban planning has helped prevent the most negative effects of urbanisation, such as uncontrolled urban sprawl, social tensions or loss of biodiversity. A notable exception to this good environment is the quality of surface water, which remains poor because of persistent industrial farming in the rural surroundings. The diversification of its economy preserved the city from employment and social issues until the recent crisis. Rennes can also take advantage of being a regional university pole with high level research capacities. In terms of concrete transition to sustainability, the local authorities have taken important steps in the field of public transportation, although the share of car mobility remains high. Water resources are also adequately preserved and may continue to be so under public management, at potentially lower cost. Green spaces are not scarce and are managed according to high sustainability standards. They also benefit from emerging grassroots initiatives that may foster a better appropriation by local people and a diversification of uses. Energy is probably the sector for which local authorities seem the most ill-equipped (apart from transport). Bottom-up initiatives are virtually inexistent in this field, for which many inhabitants feel unconcerned or powerless. Regarding energy sourcing, policy levers lack at the local level to encourage the production of renewable energy. Consequently, energy efficiency is made a priority for local action in this field. While communication campaigns and public awareness are on the city agenda, they are not sufficient to initiate a dramatic change. Refurbishment of housings to enhance insulation could help a lot (both environmentally and economically), but the cost of public measures in this field vastly exceeds local capabilities. National and EU intervention in this domain can be seen as a key priority to help Rennes to enact its transition towards sustainability.

Trends and challenges for the future

- Find efficient policy levers to enhance energy efficiency in houses
- Mobilise other government levels and private actors on this key issue
- Monitor the reality of sustainable practices for the urban heating systems. Develop the number of housings connected.
- Launch an efficiency program for the city's buildings, offices and schools.
- In liaison with the state and the region, better organize the wood and biomass sector to take advantage of Western France capacities
- Pursue efforts to improve the quality of surface water (rivers)
- Car traffic reduction must remain a central goal. Densification is an adapted strategy
- Diversification of urban green areas and close coordination with grassroots initiatives
- Rennes cultural diversity is a hidden asset that deserves more recognition and valuation.

32. France – Strasbourg

32.1 General city profile

Background information

Factual data

Strasbourg is the capital of the "Département Bas Rhin", part of the "Region Alsace" in the North-Eastern part of France. It is located on the border to Germany, represented by the Rhine. Strasbourg is also called the "European Capital", as the European Parliament, The Council of Europe and the European Human Rights Court as well as other European Institutions are located in the city. Strasbourg is the 7th biggest city in France.

The inner city of Strasbourg counted 271 708 inhabitants in 2010 (latest census, Insee). However, Strasbourg is mostly defined within the "Communauté Urbaine de Strasbourg (CUS)", an urban community made of 28 municipalities and representing a total of 468 386 inhabitants (2010). The annual growth rate in the last ten years has been about 0.3%. The CUS was created in 1967 to manage better the territory around Strasbourg and optimize public services.

The climate in Strasbourg is oceanic, with sunny and warm summers and cold winters. The average daily temperature in summer is 20 °C and in winter around 4-6 °C. The annual precipitation is around 665 mm, below national average.

Strasbourg is located on the "Alsace Plain" limited on the East and West by two mountain ranges (the Vosges and the Black Forest), and is leant against the Rhine. The Rhine represents the French-German border: Kehl is the German city located on the other side of the Rhine.

The CUS territory represents 305 km², Strasbourg itself 78 km². The city of Strasbourg is made of a historic city centre forming an island delimited by the river Ill. One third of the CUS area serves an agricultural purpose.

Around 15% of the population are foreign migrants (from the EU and outside). Thus, Strasbourg is the second city (behind Paris) in France to have the most foreign migrants. Strasbourg is also a young city with many students, and around 46% or its inhabitants are under 30 years old (Insee, 2010).

Basic government/administrative structure

The CUS is in charge of many aspects of local governance. This administration divided into 6 different departments employs on the whole 7000 people. In 2012, it had an operating budget of 759 million Euros and an investment budget of 302 million Euros.

The administrative bodies of the municipality of Strasbourg are included in the CUS administrative bodies. The leading party since 2008 has been the Socialist Party (PS), the current mayor being Roland Ries.

Economic conditions

In 2009, Strasbourg counted around 160 000 employed people, 246,215 within the CUS. The unemployment rate is around 9.5% (CUS).

Key industries are located along the Rhine, with some important ones like Kronenbourg, and Headquarters like Lidl France, Credit Mutuel.

A project to create the Alsace BioValley supporting green economy businesses and industries is in development.

In 2012, 52% of employed people worked in the business, transportation and service area, around 10% in industries, 32% in public services, education, social and health work, 5% in construction work.

Local lifestyle

Transportation

Strasbourg is known to be one of the French "green cities". Strasbourg rebuilt the first tramway line in France in 1994. The city is now serviced by 6 lines and 70 stations: it is the most important tramway network in France.

The fact that Strasbourg is a flat city enables cycling within the city. The cycle track network is also the most important in France (550 km). A bicycle rental service (*Velhop*) with 4400 bicycles has provided inhabitants with public bicycles since 2010. On the whole, the city is keen on developing innovative mobility options and fosters the use of public transportation, cycling and walking within the city.

Bicultural aspect

Strasbourg is developing towards Germany. In 2010, Strasbourg and surrounding cities united with German cities to create the "Eurodistrict" to facilitate intercultural exchange and cross-border activities: for instance, the next tramway line opening in 2014 will cross the Rhine to reach Kehl.

Key challenges and trends

Economic issues and trends

The city encourages making the city denser and developing Eco Districts (ecological districts, "*Eco Quartiers*": there are currently 6 official Eco Districts on the CUS). Indeed, urban sprawl is developing on agricultural land. Self-promotion initiatives are also encouraged to enable citizens to have a say in their way of living.

There is also a growing involvement in local food consumption supported by the CUS. Overall, Social Solidarity Economy (*ESS: economie sociale et solidaire*), an alternative way of developing the territory at the local level, is a new and growing economic trend on the territory.

However, the CUS wants to foster economic growth on 4 thematic areas: medical new technologies and therapies, mobility and multimodal hub, international "upper tertiary" sector (European Institutions, universities, etc.), and creative activities (multimedia, craftwork, etc.).

Social issues

Like all main cities in France, Strasbourg developed its « Urban Social Cohesion Contract », a series of policy measures promoting urban equality in targeted districts. The CUS particularly enhances the housing sector, access to right, education and employment, and health care.

Immigration issues in France are handled on the national level. However, in 2009, the CUS created the Council of Foreign Residents (*Conseil des Résidents Etrangers (CRE*) gathering foreigners' representative and taking into account their demands.

Environmental issues

CO_2 emissions per inhabitant were 7 t in 2009. This represents 25% more than the average level in France. The CUS has started an involvement in energy issues with public projects (detailed after). It decided to be ambitious and set European 20/20/20 targets at 30%, apart from renewable energy).

The preservation of the Rhine and rivers around the city (Ill River) is important in Strasbourg. Moreover, there is a special concern for conserving good water quality in the widest groundwater reservoir in Europe.

32.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The average water price within the CUS is 3.14 €/ m^3 (average cost in France: 3€/ m^3) for an average annual consumption of 65 m^3/inhabitant (2012): 47 228 members more than 27 million m^3. (1 member = 9 inhabitants).

Key issues

Water provision is public in Strasbourg, and organized by the urban community CUS for 12 out of 28 municipalities.

Water is of good quality and availability because Strasbourg is located on one of the biggest water reservoirs in Europe (Rhine Valley groundwater table, 35 billion m^3). The main issue is how to preserve its good quality in the future: organisations like the Industrial Pollution Watch Department (*SPPPI: Secrétariat Permanent pour la Prévention des Pollutions Industrielles*) as well as the public service are controlling water quality to avoid pollution: indeed, groundwater coming from shallow table in a dense urban area is more vulnerable to pollution.

There is almost no water treatment in Strasbourg: only a compulsory chlorination to avoid network contamination (a *Plan Vigipirate* measure, a national security alert system). However, the network provides inhabitants with hard water due to its source (groundwater).

There are 4 drinking water productions plants and 4 wastewater treatment plant within the CUS. On the whole, 321 people work every day on water and sanitation.

Agricultural activities and industries represent an important share of water consumption in Strasbourg: to name a few, industries consuming much water are Heineken (Schiltigheim), PunchPower Glide (former General Motors), as well as public utilities like water treatment plants.

Key actors/partnerships

Service Eau de la CUS: the main actor for water issues in the urban community is the Water Service within the CUS administration. 189 people work for it.

Commission Locale de l'Eau: this local water commission gathers important actors concerned by water issues. Their work is to monitor and raise important issues for the preservation of rivers and groundwater in general.

SPPPI Strasbourg-Kehl: the Industrial Pollution Watch Department belongs to the regional Environment, Development and Housing Department DREAL (*Direction Régionale de l'Environnement, de l'Aménagement et du Logement)* and aims at gathering different actors concerned by industrial pollution (water, but also noise, air, waste management, etc.) to make them collaborate and prevent industrial pollution risks on the French-German territory.

APRONA (Association pour la Protection de la Nappe phréatique de la plaine d'Alsace): association for the protection of Alsatian groundwater table. This association is a network of regional observatories on groundwater level, qualities and overall monitoring of the biggest European groundwater table.

Key actions/measures/initiatives

The key action lead by the CUS is about informing and communicating on drinking water quality and the necessity to drink tap water instead of bottled water.

A promotion campaign was launched around a designed glass bottle "eau de Strasbourg" to put tap water in. Then, public water sources (fountains) were put within the city and in schools to promote tap water consumption.

There is overall good public information on water quality and availability, and little public concern on water quality for the moment.

Energy

Availability, affordability and consumption levels

Energy consumption in the CUS is made of 55% electricity, 31% natural gas, 9% urban heating, and 5% domestic heating oil. The housing sector is by far the most energy-consuming sector.

A common tariff for domestic purposes is set on the national level by EDF (Electricité de France) at around 0.13€/kWh.

Key issues

The specificity of Strasbourg is to have its own historical energy providers, ES (Electricité de Strasbourg) and GDS (Gaz de Strasbourg). GDS is a mixed-economy society, belonging to 51% to the city of

Strasbourg. ES actually belongs to the national energy provider EDF. The company “Strasbourg Energies” manages an urban heating network through a public service delegation.

On the whole, the energy management system in France is very centralized. Even though the market was officially liberalized from 1999 to 2007, there is little choice in terms of energy supply. This explains why there is no big associative or community involvement.

The main “local” conflict linked to energy is actually a national debate on nuclear energy: a nuclear plant (Fessenheim) is located 100 Km from Strasbourg on Alsatian territory: hence, there is an important civil society involvement to close this nuclear plant.

Energy issues focus on two important topics:

Energy efficiency: Strasbourg is mostly working on improving its public transportation network and reducing energy consumption in the housing sector.

Public transportation and new mobility issues are highly supported by local authorities. Eco Districts focus on public transportation (cf. *local lifestyle*), with the use of tramways, buses and bicycles, to prevent people from using individual cars.

Housing: an important focus for the CUS administration is to foster low consumption housing: it represents 30% of greenhouse gas emission in the territory. There are many renovation projects and an “Agency for Energy” is in creation to financially support energy-efficient renovations.

Reducing the carbon impact is also an issue in Strasbourg. For instance, since 2009, the CUS has promoted local consumption and organic food in school cafeterias.

Renewable energy: there is no real advance of the Alsatian territory on renewable energy for the moment.

- Almost no solar and wind energy is developed.
- Hydroelectricity produced along the Rhine is handled on the national level.
  However, there is an important urban heating network supplied with natural gas and some projects supported by the CUS: deep geothermal energy, for the moment as a project because of regulation issues (mining permits are delivered by the State) is being discussed: indeed, Strasbourg is located on the Rhine rift valley enabling to have access to deep geothermal energy. This issue is currently at stake and research is being conducted.
- Then, the production of bio methane from incineration plants is newly handled by the CUS, GDS and other partners.

Key actors/partnerships

ES: Electricité de **Strasbourg** is a local electricity company belonging since 1954 to EDF, (Electricité de France), the major French electricity supplier.

GDS: Réseau Gaz de Strasbourg is a semi-public limited company: its capital belongs to around 50% to Strasbourg, to 25% to a public investment bank (Caisse des Dépôts) and to 25% to Gaz de France. Réseau GDS supplies each year more than 110 000 clients with around 5 billion kWh of natural gas.

Alter Alsace Energie is an association working since 1980 to promote rational use of energy and the development of renewable energy on the Alsatian territory. It is a consulting association working as well with individuals as with municipalities or public institutions.

The CCA (Chambre de Consommation d'Alsace) is an association gathering 17 consumer associations in Alsace, informing the public on many issues and working particularly on energy consumption and energy efficiency.

Idee Alsace is an association promoting sustainable development in Alsace and gathering 110 companies. Supported by the Region, this association mostly helps companies to improve their carbon impact, especially by enhancing energy efficiency and reducing their overall environmental impact.

Green spaces

Availability, affordability and consumption levels

Green spaces are numerous in Strasbourg, with 140 ha within the city (Citadelles, Contades, Deux Rives, Orangerie, etc.) and forests and natural spaces surrounding the city centre. The city has launched many projects and started an institutionalized differentiated management of green spaces (managing different green spaces in a different way and adapting ecological-friendly methods whenever it's possible). Overall since 1979, the CUS moved from 175 ha to 410 ha covered with green spaces on its territory.

All green spaces are managed by the city and all citizens have free access to it. However, green spaces are not accessible at night. 150 gardeners work every day on public green spaces.

Strasbourg counts almost 5000 community gardens managed by associations or by the city: it is the most important concentration of community gardens within a city in France, with a growing demand: people currently have to wait for four years to get a plot in an allotment garden.

Key issues

Urban sprawl in a growing city is a major issue for green spaces: there is an important rural/ urban tension linked to agricultural land at the periphery. However, the CUS seems to be aware of this issue and develops "the city over the city" (make the city denser) while integrating more and more green spaces preservation into urban planning.

Three natural reservoirs are on the territory, an alluvial forest along the Rhine. Two close important mountain forests, the Black Forest and the Vosges shape the territory around Strasbourg.

Key actors/partnerships

The CUS is active on green spaces (see "*Key actions*"), promoting community gardens, agricultural activities and a diversity of green spaces with gardens, parks and natural reservoirs within the CUS.

There is an important network of environmental associations working on green spaces and natural environment issues, among which:

Alsace Nature is a federation of around 140 Alsatian environmental associations involved in many issues, but particularly on the preservation of green spaces in- and outside the city. Alsace Nature is very present in public debates and discussions concerning urban planning in general.

Jardins de la Montagne Verte is an association that is both supporting local small-scale farming (*AMAP: Association pour le Maintien de l'Agriculture Paysanne*) and an insertion workplace ("back-to-work project") for people with disabilities.

LPO (Ligue de Protection des Oiseaux) Alsace: the Birds Protection League is a national association particularly active in Alsace and even working in urban areas (in collaboration with the CUS for the green and blue corridor)

On the whole, green spaces seem to be a quite important topic in Strasbourg, where the municipality and associations collaborate frequently.

Key actions/measures/initiatives

Biodiversity: a Biodiversity Charta was signed with major companies for them to protect their direct environment: they have to choose between 10 implementation points and commit to 6 of them. Moreover, the "Zero Pesticides project" launched in 2007 is a policy of non-use of phytosanitary products within the CUS area.

Urban gardening: almost 5000 gardens are managed by associations or municipalities. The CUS decided to give district associations the management of some public spaces (on the street, around trees). Moreover, it supports agricultural activities close to the city and local and seasonal food supply.

Green spaces in the city: the "Green and blue corridor" (*Trame verte et bleue*) is a nationwide project for main cities to include a continuity of natural ecosystems in urban planning. In Strasbourg, this project is lead in collaboration with LPO Alsace (*see above*) for ecological studies and planning recommendations 2013-2015.

The Urban Natural Park (*Parc Naturel Urbain "PNU Ill Bruche", detailed in Box 1*) is an innovative project on three districts (with a common reflection on urban planning, biodiversity and green spaces, cultural heritage issues as well as agricultural activities). The project, launched in 2010, is about preserving the whole environment including existing housing and natural spaces. The overall aim is to experiment how an environmentally-friendly city should look like.

32.3 Governance and citizens' participation

Multilevel governance

Governance in Strasbourg differs from the sectors concerned:

Energy management is mostly on national level despite a trend to decentralize energy issues (the recent national debate on energy transition discussed it). Agencies (e.g. ADEME, DREAL) at the regional or national level monitor energy consumption and head most of the projects concerning renewable energies and energy efficiency. Some local projects are still lead by the municipalities (research on deep

geothermal energy, bio methane), and the fact that GDS is a local natural gas supplier remains an exception in France.

Green Spaces management is entirely local, but many actions lead by the municipality come from national (Grenelle de l'Environnement) and European directives (*Trame Verte et Bleue, Opération "Zéro Phyto", etc.*)

Water management is handled at the local level as it is a public service in the city of Strasbourg. Some higher-level agencies monitor water quality, but on the whole water is a local issue. European and national governance are present on quality standards in terms of pollution.

On the European level, there is a wish to expand policies to Germany in the framework of the EuroDistrict (mostly concerning public transportation and labour market).

Participation and bottom-up action

Local decision-making

Energy, Green Spaces and Water issues in Strasbourg can easily be classified in terms of participation of citizens in the local decision-making:

- *Green Spaces* is far above. As far as local management, the promotion of urban community and allotment gardens and the general trend towards environmental preservation are concerned, citizens are involved in issues of green spaces. However, there are still conflicts on usage and different ways to consider green spaces in urban areas (much landscaped, French spaces vs. German, more "natural" green spaces).
- *Water* in terms of drinking water isn't an issue with much involvement on a local level, as water quality is good and water is directly available. The preservation of the Rhine is part of the work of environmental conservation associations.
- *Energy* is obviously still a national issue in France, and citizens' participation remains individual (trying to save energy individually) or as an involvement on national debates (i.e. the Fessenheim nuclear plant). There is no energy cooperative.

Participatory democracy is something relatively new in France. The Mayor of Strasbourg is implicated in fostering participatory democracy. For instance, there are District Councils to make public policies closer to the citizen. However, these are not administrative bodies as such and are not often mentioned.

Bottom-up actions that aim at improving sustainability locally

- Noticeable actions are visible on the Internet about how Strasbourg citizens want to shape their city: many discussions concern environmental or sustainable issues:
    - Rue89 Strasbourg (www.rue89strasbourg.fr) is a participatory information website with many articles on sustainable issues in Strasbourg and the CUS.
    - Strasbourg2028 (http://strasbourg2028.carticipe.fr/) is a participatory website where citizens can indicate on a map how they would like to change the city (transportation, housing, green spaces, cultural activities, etc.) until 2028.

- Self-promotion initiatives in the housing sector are newly expanding in Strasbourg, with citizens wanting to have a say on how their house is built, how to manage waste, water, energy, heating and green spaces around them.
- As everywhere else in France, “collaborative economy” for example with car sharing is in development (Auto’trement in Strasbourg: a carpool to avoid having an individual car).
- On consumption and agricultural issues, the above-mentioned AMAP to eat locally are very present in Strasbourg. Another example is the “Incredible Edible” (*Les incroyables comestibles),* an association gathering citizens who take over streets and green spaces and plant fruits and vegetables to share.

32.4 Conclusion

Short summary

Strasbourg is the capital of the French Eastern region “Alsace”. The city is the location of major European institutions and directly lies on the French-German border delimited by the River Rhine. This aspect shapes the city and can be an explanation for its advanced stance on some sustainability issues compared to other major French cities. The local government has been left-wing and engaged in sustainability issues.

There are two “local” gas and electricity companies (*see above*), but little renewable energy production except of hydroelectricity coming from the Rhine. Urban heating needs are covered with gas. Strasbourg is particularly active in developing public transportation and has the first tramway and bicycle network in France. The city´s targets on CO_2 emissions reduction are ambitious: 30% until 2020.

Overall, Strasbourg can be defined by:

- a flat and compact territory, enabling a developed use of bicycle within the city
- an important associative network with involved citizens (especially for green spaces)
- a relatively good cooperation between institutional actors and civil society
- a strong and expanding bi cultural, French-German relationship

Concerning urban sustainable development, issues at stake and particularly handled are:

- public transportation
- energy efficient buildings
- promoting local food consumption
- developing renewable energy
- overall, decentralizing energy

Trends and challenges for the future

One main challenge in Strasbourg will be about its capacity to further expand (there is enough space) while remaining a pleasant city. A urban/rural tie is an important issue, as there is no delimitation of the city borders: making the city denser can be possible with citizens´ participation and with the maintenance and improvement of green spaces available.

Improving energy efficiency and fostering renewable energies is an important challenge that should be discussed on a national level in France, so as to give more weight to local policies.

Then, the city's attractiveness is an issue in terms of economic growth: the public´s wish to develop eco-friendly and innovative industries around Strasbourg should be followed in the future.

Finally, one main challenge is how Strasbourg will manage to remain a truly European city, opened to Germany and to sustainable ways of developing a city while keeping its cultural and natural heritage.

33. Germany – Dortmund

33.1 General city profile

Background information

Factual data

Dortmund belongs to the Eastern part of the Ruhr and to the federal state North Rhine-Westphalia in the North-Western part of Germany.

The climate is temperate with comparatively mild winters and rather cool summers.

The biggest city of the Ruhr counts a population of 580,000 people and has only slightly grown within the last two years after decreasing tendencies due to missing job opportunities the time before (Stadt Dortmund, Dortmunder Systemhaus – Bereich Statistik 2013).

As almost all over Germany, the population is comparably old and ageing.

Thanks to past and on-going migration, Dortmund´s population is culturally very diverse. There are approximately 190 nationalities represented in Dortmund. The share of foreigners was 13.3% in 2012 with Turkish as biggest group, followed by Polish and the Greek. 30.5% of the local population has a migration background with Turks being the biggest group, followed by the Polish (Stadt Dortmund 2013a). Foreigners are represented in the Integrationsbeirat. This advisory body has the right of proposal in the council. It is the only official representation for third-country nationals from outside the EU that normally do not have a German passport.

The Emscher originates in the South-East of the city and flows below ground within city boundaries (except of in the newly created working, living and recreation around the Phoenix lake, see below) before flowing into the Ruhr in the West of the city. The Dortmund-Ems canal connects the harbour of Dortmund with the Ems.

Basic government/administrative structure

The City Council determines the guidelines of local policy. The SPD *(Social Democratic Party)* has lost its absolute majority that it had had for a long time. Though, it is still the strongest party, followed by the CDU *(Christian Democratic Party)* and the Green Party.

Due to the “Kommunales Selbstverwaltungsrecht” (municipal right to self-administration), German local authorities have a comparably high degree of local autonomy and can decide themselves on what to spend their money on. Yet, this is restricted by a difficult fiscal situation. Though Dortmund managed to reduce its debts continuously since 2005 and is still in a better situation as the majority of comparable cities in the Ruhr, per capita debts at the beginning of 2013 ranged at 1411 Euro (due to investment loans of 819,704,721 Euro). Yet this figure must be complemented with an extremely high ways and means advance of ca. 1,313,302,203 Euro (2,261 Euro per capita) to picture the overall debt rate of the city (Landesbetrieb Information und Technik Nordrhein-Westfalen (IT.NRW) 2013).

Economic conditions

30 years ago, Dortmund was a city based mainly on mining and heavy industry (black coal, steel and their neighbouring industries). Brewing trade also played a role, and the majority of jobs were to be found in these three sectors, so that it was spoken of the "Dortmunder Dreiklang" *(the triad of Dortmund)*. These industries broke down causing the loss of almost 80,000 working places from which the city has not yet completely recovered. This can be seen on an unemployment rate of 12.9% in 2012 (Stadt Dortmund, Dortmunder Systemhaus – Bereich Statistik 2013), ranging above the national average of 6.5 per cent.

The city has undertaken big efforts to cope with the decline of the mentioned industries and the resulting immense economic structural change. In 2010 more than 80% of the working population was employed in the service sector (Stadt Dortmund, Fachbereich Statistik 2011). In 2000, the Dortmund project, a public-private partnership between the city and the Thyssen Krupp AG in collaboration with the consultancy Mc Kinsey emerged to support the structural change. It was integrated in 2008 into the city´s economic promotion. With its help, the sunrise industries in the service sector (information-, micro-, nano- and production technology, technical services, logistics and biomedicine) have been fostered by projects and measures, financed by EU, federal state, city and private means. From this, a sustainable network for the promotion of economy, science and city development has evolved in which the public and private actors communicate, interact and adjust goals. Meanwhile, Dortmund hosts one of Germany´s biggest technology centres with more than 8000 employees (Technologie Zentrum Dortmund) and in a ranking of the 15 biggest cities in Germany with regard to the share of industries, Dortmund is now included.

Special characteristics

Like other cities of the Ruhr that were all affected by the decline of the mining and heavy industry sector, Dortmund has turned the obsolete industrial sites into tourist attractions (e.g. Zeche Zollern, Phoenix West: to learn about local industrial history and culture), art places (e.g. Dortmunder U), leisure facilities as well as new living and working sites (e.g. Phoenix West and East).

One outstanding project in this regard is "Phoenix", the transformation of a big industrial zone, where until 1998 blast furnaces produced liquid raw iron, into a greened technology, service and science site for technologies for the future, remaining a heritage-protected industrial site (Phoenix West), as well as into a living and recreational area (Phoenix East) with a groundwater-fed lake.

For its efforts in sustainability issues, the city was one of the three nominated cities for the "Deutscher Nachhaltigkeitspreis 2013" *(German sustainability award)* as Germany´s most sustainable major city.

Local lifestyle

Mobility

Local public transport (bus, tramway, underground and urban railway) within the city and also connecting the city to the greater region Ruhr is very good. In fact, about 30% of Dortmund´s citizens were very, and circa 50% of them were rather satisfied with local public transport in 2009 (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2010).

The city participates in the project "metropolradruhr" that started in 2010 as the biggest bike rental system in Germany. 62 stations cover the city area.

With 120 charging stations for electric-cars, the city is Europe-wide one of the leading cities in electro-mobility. To coordinate the activities of the involved actors from economy, science, associations and city administration and to strengthen their cooperation in 2012 the "Regionaler Lenkungskreis Elektromobilität" (regional steering committee e-mobility) was created, following a decision of the City Council (Stadt Dortmund, Umweltamt 2013b).

Key challenges and trends

Economic issues and trends

The city was the first one in North Rhine-Westphalia to initiate the cooperation project between municipalities and enterprises called ÖKOPROFIT ("Ökologisches Projekt Für Integrierte Umwelt-Technik")[i], about 12 years ago. The idea is to create a local network for environmental protection and to support enterprises to introduce or improve an operational environmental management. The system examines production processes with regard to energy, material and resource use with the aim of reducing costs.

The city participates in the regional network "Faire Metropole Ruhr", and in 2013 the first international fair trade fair, FA!R2013 – Fair Trade Friends, was organized by the association "Eine Welt Netz e.V." *(one world)* in cooperation with the city of Dortmund. In cooperation with the network "Nachhaltige Schülerfirmen", the consumer advice centre and the city´s agenda office, pupils were trained as fair-scouts, accompanying youth and adults on the fair explaining thematic issues.

The city´s Wirtschaftsförderung *(promotion of trade and industry)* has been active for eight years in the field of local economy in the Nordstadt. The Nordstadt is a district with one of the highest unemployment rates in Dortmund. It records the highest migrants´ share (65 per cent) of all districts. In 2008 the first cooperative of its type in Germany, the Modellvorhaben NordHandeG, was founded. This locally active micro financer now counts 125 members. It units the local small entrepreneurs and gives them access to micro credits. This was complemented in 2010 by the foundation of the "GründerinnenZentrum Nordstadt" *(founder centre)*, a place providing coaching and office spaces (first free of rent and later at rising prices) to starting female entrepreneurs.

The city awards a "Ethnischer Wirtschaftspreis der Stadt Dortmund" (ethnical economy award) to entrepreneurs with a migration background.

Social issues and trends

Public and private poverty is comparably high in Dortmund. Following the nation-wide trend, the social split measured on the income has increased within the last eight years, and the city´s fiscal situation is very tight (see above).

The financial dilemma of the city could be solved by a federal law on a reallocation of the personal income tax, which is currently still linked to the residential location. If it was additionally linked to the working location, the municipalities in the fringe areas would be less interested in designating residential areas. People would move back to the inner city again, reducing vacancy rates there and generating more municipal taxes which could be used for the common good.

In a survey comparing 26 German cities in 2009, Dortmund ranges second as far as the population´s estimation of the relevance of poverty is concerned: to the statement “Poverty is a problem in Dortmund” approximately 30% fully agreed and almost 50% rather agreed (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2010).

Affordable access to housing is comparatively easy in Dortmund. In a survey amongst 26 German cities, Dortmund ranges third when it comes to the question “It is easy to find a good flat for a reasonable price”. Almost 20% very much agreed with this statement, almost 40% rather agreed to it (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2010). Yet, due to a relatively high and rising share of low-income households combined with increasing energy prices that are developing into a second rent, housing and energy costs are a factor to be considered. This is also due to the fact that the costs of the German “Energiewende” (energy transition) are mainly allocated to the citizens, not to industry, and the costs for energy refurbishments are also allocated to the tenants.

EU citizens can choose freely their residency all over the EU. After the accession of Bulgaria and Romania to the EU in 2007, poverty migration from these two countries has risen. A share of the city´s budget has been used for providing housing and social benefits to EU citizens that come to live in the city, yet do not have a job (either due to the already high local unemployment rate or due to the fact that they are Bulgarian or Romanian citizens who will only be allowed to work on the German labour market from 2014 onwards, due to national regulations). The immigration of Roma people from Bulgaria and Romania has created some tensions and efforts are necessary to counter xenophobia and to foster their integration via providing education opportunities and creating job perspectives.

The city has set up the “Aktionsplan Soziale Stadt Dortmund” (action plan social city) in 2008 aiming at reducing social inequalities, e.g. by the setting up district offices.

Environmental issues and trends

Environmental conditions have improved a lot during the last 30 years. Due to the structural change, the former heavily polluted air is now not more polluted than in other German cities of a comparable size and share of industry. Yet air pollution from traffic in general and fine particulate air pollution in particular are a problem in some parts of the city, particularly in the Nordstadt, where there is already a lack of green spaces and people live directly on the city´s main roads. A circuitous road has already been planned but not built yet due to lacking funds.

Due to on-going climate change, hotter dryer summers and warmer, more humid winters are expected. Heat island effects could then provoke health problems in summer, and more heavy rain events must be expected. Thus, climate adaptation measures (such as providing free spaces where cold air aisles can form), will be necessary to let the inner city remain liveable.

Due to its mining history, only after the end of mining industry, the open, unearthly sewage drains (of which the Emscher was part) were replaced by underground sewage drains and the Emscher has been re-naturalized. The conversion of the whole Emscher system between Dortmund and Duisburg is one of the biggest investment projects in the whole of Europe with overall costs of circa four billion Euros. It is done by the Emschergenossenschaft *(cooperative)*, in which all municipalities along the river Emscher are part of. The Emscher, the former “Schmutzwasservorfluter” *(sewage discharge system)*, had been canalised in the 19th century in ten meters depth below ground. Within the city boundaries of Dortmund,

the re-naturalization process has already been finished and within the Phoenix area, the Emscher now flows over ground again.

The environmental office offers special guided city tours about the environment and nature protection.

33.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Drinking water in good quality comes in large part from surface waters, the Ruhr. A minor share comes from renewable ground water resources. It is provided to all households in Dortmund by the public utility company DEW 21. The demand can be easily satisfied in terms of quality and quantity.

The population never had to suffer shortage or severe pollution of drinking water. The demand can be easily satisfied in terms of quality and quantity. Water prices are affordable and losses in the network are marginal.

Due to the decrease of industrial production, population loss and efficient water saving measures, consumption levels have decreased by more than 50% since 1980. Since 1994 the per capita / per day consumption of private customers has decreased from 174 litres to 148 litres in 2011 (Stadt Dortmund, Dortmunder Systemhaus – Bereich Statistik 2013).

Key issues

Today, water is not a hot topic in Dortmund. Up to date, no conflicts have been experienced in the city regarding water, and there are no civil society actors especially active in the field of water issues since water prices are moderate and the quality of drinking water is good.

The sinking consumption levels coupled with a tense budgetary situation are a challenge for the drinking water system until 2030. It will be a challenge to guarantee net maintenance to prevent leaking and the intrusion of pollutants from agriculture and industry without rising current water prices. Thus, it will not be difficult to deliver enough drinking water, yet it will be difficult to deliver good drinking water at a stable price.

Since the major share of drinking water comes from surface waters, the preventive protection of surface waters from interventions such as fracking and other types of boring is paramount.

Problems can arise if private persons dispose of rain water facilities that are not properly separated from the drinking water system

Key actors/partnerships

There is no local self-organized or cooperative management of the resource water. The most important actor in relation to water issues in the city is the city´s public utility company as local water provider. It takes a leading role since knowledge is bundled there and increases in the water price are decided by the executive directors of the public utility company and the water works.

DEW 21

The joint venture of Dortmunder Stadtwerke AG (DSW21) (belonging to 100% to the city of Dortmund) (53 per cent) and RWE (47 per cent) provides natural gas, electricity, heat and water (drinking and waste water). It was created more than ten years ago, and local municipalities hold shares. Its subsidiary Wasserwerke Westfalen (WWW) (55% belonging to municipalities), resulting from a cooperation of DEW21 with GelsenwasserAG, is responsible for the water sector and takes the leading role in this field.

Thus, provision is guaranteed by the local government, even if DEW 21 functions like a private enterprise.

Key actions/measures/initiatives

Apart from the on-going big re-naturalization project of the Emscher, another project of the "Emschergenossenschaft" (see above) is to show citizens how to reduce the discharge of rainwater into the canalisation.

Since water prices are moderate and the quality of drinking water good, there are no civil society actions that focus specifically on water.

Energy

Availability, affordability and consumption levels

DEW 21 supplies eco power to customers who demand it. In the standard energy mix delivered, it is around 20% and bought to a large share from outside the city since the current share of locally produced renewable energy for electricity production in the total local energy mix is still very low. So far less than 5% of energy that is consumed in Dortmund is produced there. Renewable energies for heat production were only of marginal importance in 2010. Via solarthermics, solid biomass (woodchips, wood pellets) as well as the use of ambient heat via electrical heat pumps one% of heat consumption could be covered (Wuppertal Institut für Klima, Umwelt, Energie / Stadt Dortmund, Umweltamt 2012).

Landfill and methane gas (form the former mining sites, exiting from time to time in the city boundaries) are sucked off, pumped down, extracted and then processed into electricity via respective turbines.

Key issues

The preconditions for solar energy use are good, and panels have been installed on private and public buildings. Almost all municipal buildings are equipped with photovoltaic facilities.

There are seven wind power stations within the city boundaries that are operated by DEW21. This is the maximum of what the current land development plan allows and the city has installed horizontal little windmills on its buildings.

Due to the German "Energiewende" (energy transition) which can be considered as a decentralised revolution of energy supply, citizens have the chance to participate in energy production which is also fostered locally. DEW21 has made offers that citizens can take a share in PV-facilities, biomass, block heating works and the cogeneration of heat and power. DEW 21 also offers contracting options for block heating works to the private sector. Some have already been installed in the city, e.g. for a salt water swimming pool (Revierpark Wischlingen GmbH).

DEW21 operates an extensive long distance heat grid.

The reduction of CO2 emissions by 20% in relation to 1990 has been achieved by the mentioned activities. The set targets for the reduction of CO2 emissions until 2050 are more ambitious than the national /EU average. The “Handlungsprogramm Klimaschutz 2020” (programme of action climate change 2020) is the comprehensive policy framework on how to reduce a CO2-reduction of 40% until 2020 and of 80% until 2050 in relation to 1990 as base year in Dortmund. The city´s public utility DEW21´s target for 2020 is to achieve a 25% share of renewable energies from own facilities. Thus the city´s goals are more ambitious than the EU goals. The programme is an essential part of the “Masterplan Energiewende” which is currently elaborated in a participatory process with more than 130 involved actors with approximately 100 different measures without an additional budget. Dortmund ranges amongst the first German cities doing this. First propositions on how to assure a safe sustainable, affordable and socially just energy and resources supply will be reached in spring 2014.

Energy consumption of the city of Dortmund has decreased by seven% between 1990 and 2010 and CO2 emissions were decreased at 13% in the same time span (Stadt Dortmund 2013b). 70% of the total amount of energy that is consumed in Dortmund is used for heating and warm water. In the last years the city of Dortmund has taken a model function by achieving approximately 30% of energy savings in heating as well as in electricity in Dortmund. Nevertheless, the city administration only holds a two% share of total energy consumption in Dortmund. In 2010 private households consumed most energy (38 per cent), followed by the business sector (30 per cent) and traffic (31 per cent) (Wuppertal Institut für Klima, Umwelt, Energie / Stadt Dortmund, Umweltamt 2012). The city administration, which has only a share of 1.3% in local CO2 emissions reduced its emissions by 38 per cent, followed by the business sector with 22 per cent, private households with 9.6% and traffic with 3.1% (Stadt Dortmund 2013c).

The aim of a CO2 reduction of 40% until 2020 will only be reached with increased efforts. This is due to the following reasons:

- Electricity consumption in private households increased between 2008 and 2010 .
- The yearly rate of building refurbishment stagnates at one% (Stadt Dortmund, Umweltamt 2013b).

Key actors/partnerships

There is one public provider (DEW 21), as well as private regional, national and international providers, due to the EU-wide liberalisation of the energy market. Energy cooperatives within the city boundaries do not exist yet, but can be found in the surroundings of Dortmund.

DEW 21

The company agreement of the DEW 21 expires at the end of 2014. The “Dortmunder Bündnis Demokratische EnergieWende“ (Bündnis DEW kommunal) campaigns for the re-communalization of energy supply at 100% and against a renewal of the contract with RWE. It advocates a locally steered energy supply, based on decentralised production, short grids and renewable resources.

KEK (Konsultationskreis Energieeffizienz und Klimaschutz)

The consultation circle for energy and climate protection was founded to pool activities, programmes and projects in climate and energy, bringing together different societal groups: civic institutions, local

enterprises, science, associations, initiatives and citizens. Currently, 28 organisations are members. It participates in the elaboration of the “Masterplan Energiewende”.

Solarplus

Solarplus is an association of local enterprises with the aim of expanding renewable energies in the region of Dortmund. It offers professional expertise in solar energy, wood pellets and energy performance contracting.

Key actions/measures/initiatives

There are numerous initiatives in the field of climate protection that show that the city provides incentives for environmental standards and also takes a model function.

In the scope of the brand “Dortmund Klima ist Heimspiel” (climate is home game) which has been developed by the city in 2012, a climate week in September 2013 sensitised citizens for renewable energies, energy efficiency, energy saving and sustainable consumption (Stadt Dortmund, Umweltamt 2013a).
Linked to that is the participatory campaign “Wir sind Klimafans” (We are climate fans) to induce citizens to apply CO2 saving measures by following proposed climate tips.

The campaign “100 energy plus houses” aims at realizing 100 energy plus housing units from 2011 to 2016 for which the city of Dortmund provides 75 pieces of land. The campaign is carried by a working group, led by the City of Dortmund in cooperation with DEW 21 and further local partners. Seven semi-detached houses have already been finished (Stadt Dortmund, Umweltamt 2013b).

The “Dienstleistungszentrum Energieeffizienz und Klimaschutz” (DLEZ) is part of the action programme „Handlungsprogramm Klimaschutz 2020“. The local service centre for energy efficiency has recently been inaugurated and provides energy consulting free of charge.

Since 2012 the Solarkataster, an online-solar cadastre, developed by the city of Dortmund in cooperation with the Technical University of Dortmund, exists. It gives information about the individual solar potential of each house free of charge to help house owner plan their own photovoltaic facility.

Green spaces

Availability, affordability and consumption levels

Dortmund is a green city with parks well scattered all over the city. Only in few city districts and in the inner city there is a lack of green spaces. In the centre of the city construction is very dense. Most of the green spaces are owned by the municipality and are freely accessible to the citizens free of charge. In some districts, green areas are increasingly used by the citizens to create different forms of urban gardening. In 2009 more than 40% of Dortmund´s citizens were very satisfied with the green spaces like public parks and gardens and circa 40% were rather satisfied with them (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2010).

Key issues

Dortmund disposes of twice as much fallow land as Essen, a city of comparable size. In order to limit urban sprawl, the current land development plan of 2004 does not designate new commercial areas but transforms the industrial wasteland that emerged from the structural change into housing and building areas, but also into green spaces.

From an environmental point of view, for each newly sealed place, compensation spaces would have to be created, meaning somewhere else a space of the same size would have to be unsealed and vacated for green public spaces.

Key actors/partnerships

Apart from the traditional institutional actors like the urban department for green spaces, there are local self-organized groups, some of them having existed for a long time, others having emerged only recently, that partly also interact with the city administration. Those that have emerged only recently have changed the function of public green spaces.

Department of green spaces

The department support the project „Nordstadt blüht auf“ (Nordstadt flourishes) which is run by the community work office in the district. Citizens can become sponsors for “Baumscheiben”, meaning they can plant the soil around trees in the district and win a prize for the most beautiful “Baumscheibe”.

Stadtverband Dortmunder Gartenvereine e.V.

This association unites more than 120 allotments clubs of Dortmund. It leases allotments of which 90% belong to the city. There are not only allotments to rent, but there are also community green spaces. The green spaces are public and can be used by every citizen without being a member of the association. Recently, inter-generation gardens have been initiated. This means that there are special beds for children, broad paths as well as beds suitable for senior citizens (raised beds that can be worked on from the wheelchair or the wheeled walker). Moreover, there are 13 gardens that are visited by children form school and kindergarten. The association tries to increasingly attract young families and migrants.

Die Urbanisten e.V.

The association aims at improving communal life and creating new perspective for urban living spaces. It is a network for citizens´ active co-creation of their city. It bundles all urban gardening initiatives of Dortmund as well as in other parts of the Ruhr on their internet site, which also includes a blog as a network platform in which all initiatives can participate. There are several urban gardening initiatives, for example the „Bürgergarten Kleine Heroldwiese“ or the Aquaponik-project.

Transition Town initiative

This initiative in the city district Schwerte reflects on the transformation of city planning against the background of rising resource prices (“peak oil”).

Key actions/measures/initiatives

Five kilometres South of the city centre, Phoenix East has been created on an old smelter area where the huge steelworks Dortmund-Phoenix was located. The former giant steel mill site has been transformed into a modern living and leisure area. The Phoenix lake is surrounded by a park that yields positive effects for biodiversity within the city and for the whole city climate. The re-naturalised Emscher crosses the park and is surrounded by pasture land. A green corridor connects the lake with the Emscher valley and Phoenix West, and the bike tracks in the park are connected to inter-regional bike tracks.

The BUND (Friends of the Earth Dortmund) has initiated the project "Apfelsaft und Streuobstwiesen" (apple juice and meadows with scattered fruit trees) which links the three sustainability dimensions. BUND members pick the apples which are then processed to apple-juice in a factory which is affiliated with a sheltered workshop. The initiative has received the agenda-seal of the city.

33.3 Governance and citizens' participation

Multilevel governance

National

Two recent policy measures on the national level have impacted heavily on the state of city´s budgets:

a) The "Schuldenbremse" (debt brake) is a constitutional national rule in force since 2011 with the aim of reducing the public debt by making binding requirements to the federal government and the federal states to reduce the budget deficit.

b) Due to the national law to guarantee every child from the age of one a place in the kindergarten from the beginning of August 2013 onwards, a big part of municipal resources have been used for the construction of kindergartens and for the employment of new staff.

National / EU

As mentioned below, poverty migration from East-EU member states constitutes a challenge for municipalities. Solutions can only be found across all governmental levels from local to EU, also including the country of origins and financial means must be made available to support the cities in coping with this challenge.

Participation and bottom-up action

Participation

The local government supports and creates room for NGO´s and other local initiatives. The business unit "Zivilgesellschaft und Bürgerinteresse" (civil society and citizens' interests) as well as the agenda 21 office are both part of municipal department 1, belonging directly to the Lord Mayor.

Citizens were involved in the elaboration of the "Handlungsprogramm Klimaschutz 2020" and are currently involved in the elaboration of the "Masterplan Energiewende".

Bottom-up action

Apart from the mentioned examples of sector-specific initiatives, the following initiatives also contribute to a sustainable development of the city of Dortmund.

Open Globe Dortmund

The group was founded in January 2012. There are currently six to ten people involved.

It is part of the "EineWeltNetz NRW e.V." and is concerned with global learning issues. The idea is to inform about consumption critique and to get into a conversation with them. Amongst its activities it offers consumption critical guided city tours and clothes-swapping. They are regularly invited to the working group education of the City of Dortmund. The agenda office has helped to apply for funds. This year a very successful clothes change party has been held and six from eight successful city tours have been done.

Project "Zweitsinn"

The project was originally a research project of the Technical University and has meanwhile evolved into a company (ecomoebel GmbH). The portal is a platform for furniture producers and designer to bring their upcycling-products to market.

VMDO Verbund sozial-kultureller Migrantenvereine DO e.V.

The VMDO was founded in 2008 by representatives of different migrants´ organisations. Meanwhile comprising 34 migrant organisations, it is an institutionally well-established umbrella organization. It issues the magazine "Echo der Vielfalt" (echo of diversity) and has its seat in the "Haus der Vielfalt" (house of diversity) since summer 2013 which is supported financially by the city.

Here the organizations find space for their manifold cross-generational intercultural offers, including children and youth work, educational work, work with parents, work with women and elderly people and socio-political participation activities.

Multicultural education for people with and without a migration background is the overall aim.

Local policy or programmes

"Politik Mit-Wirkung" - Wege des Stadtbezirks zur Integration

The goal of this project (Politics with impact- ways to integration of the city district), is to show people with a migration background possibilities of political participation in order to achieve a higher involvement of these people in local policy. In information sessions in the districts, local politicians and local administrative staff talk directly with the people and local politicians present their life career. It is rooted in the Masterplan on Migration and Integration and led by the City´s Migration and Integration Agency, which is part of the mayoral office. While migrants make up almost a third of the population, they are significantly underrepresented in the local politics. The first event was visited by more than 80 people who discussed intensely. Some participants completed political party membership applications. Many visitors stressed how they appreciated to be asked and invited to participate. Other events of this kind are planned. The project is not supported by other government levels.

LaGoTa (Local Action Group on Talents)

This group emerged in 2012 from an INTERREG project dealing with the question of migration of skilled employees in border regions. The focus of the project was on regions that, due to structural preconditions, such as demographic development, infrastructure, have problems receiving highly qualified skilled employees. The consortium of the sub project LaGoTa consisted of the city of Dortmund, the state North Rhine Westphalia, region Navarra (Spain), Euregio Gronau (Netherlands) and Regio Achterhok (Netherlands, project leader). With a duration of 16 months and a total budget of 246,000 Euro it was finished in June 2013. In the project labour market policy at the local and regional market were first made explicit. At the end, local joint strategies on talent in each local labour market were shown. The local action group serves as platform after the end of the project. One of the active members in the local action group was the "DB Schenker AG" which lacks professional drivers. The enterprise has subsequently initiated a pilot project to train professional drivers in the Spanish car pools.

33.4 Conclusion

Short summary

Dortmund is located in the Ruhr, Germany´s former main industrial site for mining and heavy industry. It has undergone an immense structural change within the last 30 years, improving environmental conditions but causing also high unemployment rates.

It has a diverse population with a share of 30% migrants.

The local government is open to sustainability issues and there are numerous activities especially in the field of energy. The structural change has been a challenge but at the same time an opportunity to transform the city into a more sustainable one.

Citizens´ participation and migration issues have been put high on the political agenda. Migration is seen as a cross-sectional task, being taken into consideration not only in social and integration policy.

As far as the management of energy and water is concerned, institutional diversity is still very low since there is no locally self-organized or cooperative management of these resources. In the case of green spaces, self-organized initiatives can be singled out. Yet whether they allow for a better internalization of related social and ecological externalities in order to achieve higher levels of equity, sustainability, and efficiency remains to be seen.

Renewable energy production has started but is still to be developed. Thus, no self-organization or cooperative management in this field can be detected within the city´s boundaries and no tensions or conflicts have emerged so far.

The city´s high autonomy in the management of the resources water and green spaces and its relative autonomy in the field of energy is restricted by its difficult budget situation. Since so far there are no self-organized groups and organizations cooperatively managing resources in the field of water and energy, it cannot be judged whether the city prevents them to develop or collaborates and fosters them. Emerging initiatives in the field of green spaces were not prevented and in some cases even fostered.

Trends and challenges for the future

- Stagnating respectively decreasing public budgets
- Energy refurbishment (by contracting) with social compatibility, further construction of energy plus houses
- Further development of long-distance heating and power-heat coupling
- Rising the city´s attractiveness for young people in order to counter outmigration of young people
- On-going immigration especially from Eastern EU member states →integration into the educational system and on the labour market
- Increasingly old population →develop an age-appropriate city with care-options but also the possibilities of participation for active elderly people
- Increasing social split → assure affordable housing and energy prices
- Further conversion of former industrial sites into living, working and leisure spaces with a preference of the reduction of the vacancy rate in the existing building stock
- Further development of Dortmund as location for science
- Satisfying the demand of technologically orientated skilled employees by keeping Technical University graduates in the region

[i] This is a registered trademark for an environmental management system, in which more than 100 local enterprises participate. They document what measures there have undertaken, how much they have invested in them and how much they have already economized by that or what other benefits they have gained in sustainability terms (Stadt Dortmund, Wirtschaftsförderung 2012).

34. Germany – Freiburg im Breisgau

34.1 General city profile

Background information

Factual data

Freiburg im Breisgau belongs to the federal state Baden-Wuerttemberg in the South-Western part of Germany, circa 20 kilometres away from France and is part of the Euroregion Oberrhein.

Surrounded by the Black Forest, it is known for its picturesque position and for its mild and dry climate with one of the highest number of sun hours per year in Germany and a very low precipitation rate. This constellation turns it into an attractive tourist location.

Between 2000 and 2012 the official total population has increased by 13.2% to 229,144 people (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2013b). Being the fastest growing big city in Baden-Wuerttemberg, the city expects a population growth until the middle of 2020. This is due to a comparably prospering economic situation.

Due to the large share of students, the population is comparably young, yet still ageing like almost all over Germany. With an average age of 41 years, it is the youngest of all “Stadtkreise” (German towns directly subordinated to a region as opposed to a district) in Baden-Wuerttemberg.

Thanks to past and on-going migration, Freiburg´s population is culturally diverse. Altogether, there are people from 171 nationalities. Foreigners’ share is 13.1% with Italians being the first group, followed by Turks. Migrants’ share is 27.7 per cent. Foreigners are represented in the “Migranten- und Migrantinnenbeirat” (migrants´ advisory committee). The committee has 19 members of which five equally belong to the “Migrationsausschuss” (committee of migration). This is an advisory body to the City Council with the right of proposal but no voting right. It is the only official representation for third-country nationals from outside the EU that normally do not have a German passport.

Basic government/administrative structure

The “Gemeinderat” (City Council) determines the guidelines of local policy. The strongest party are the Greens, followed by the CDU (Christian Democratic Union) and the SPD (Social Democratic Party).

Due to the “Kommunales Selbstverwaltungsrecht” (municipal right to self-administration), German local authorities have a comparably high degree of local autonomy and can decide themselves on what to spend their money on. Though not receiving a big amount of business tax since it is not an industry location, Freiburg is in a comparably good situation as far as the city´s fiscal situation is concerned and even tries to reduce debts. At the beginning of 2013 per capita debts ranged at 1,300 Euro (due to investment loans of 218,459,000 Euro). Since some years Freiburg is in the lucky situation not having had the need to raise ways and means advance (Stadt Freiburg im Breisgau, Stadtkämmerei 2013).

Economic conditions

The economic situation in Freiburg is stable and prospering compared to other German cities. Freiburg has a prestigious university, a good job offer and a prospering development of the labour market. The unemployment rate in 2012 was 5.9 per cent, ranging below the national average of 6.5% (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2013b).

The city never had a big share of industry. Key businesses are in the service sector (tourism, commerce). In fact, Freiburg is increasingly known and popular as business, science and tourism location. The city promotes itself as "Green City", having turned its reputation into a brand and attracting ever more professional and trade tourists as well as political delegations from all over the world.

Special characteristics

Freiburg has always had a big share of university students, and civil society has been very active since the Seventies, and self-confidently negotiates its interests with local politics and administration.

The parties in the City Council have all had a higher environmental conscience than in other parts of Germany, at least since 1986, when four weeks after the reactor disaster of Chernobyl the City Council decided the local energy concept which is still valid today. It rests on three pillars: energy saving, energy efficiency and exit from nuclear power to renewable energies.

Sustainability is considered to be a cross-sectional steering task and coordinated since 2009 in the "Stabstelle Nachhaltigkeitsmanagement" (executive department sustainability management) which was affiliated directly to the Lord Mayor´s office in 2009.

After signing the Aalborg Commitments in 2006, the City Council has adopted local goals for twelve policy fields, subdivided into 60 sub-goals, in 2009, serving as political guideline for a sustainable city development policy (Stadt Freiburg im Breisgau 2009).

For its efforts in sustainability issues the city has received several prizes, the most recent one being the "Deutscher Nachhaltigkeitspreis" (German sustainability award) in the category of Germany´s most sustainable big city in 2012.

Local lifestyle

The district Vauban has been created according to ecological standards on the grounds of a French barrack where now 5300 people live. It was initiated by local initiatives of people who now live there. Inhabitants of this district are proud of their sustainable way of life. Low-energy construction is obligatory, and the zero-energy and energy-plus construction, long-distance heating on renewable energy and the use of solar technology are standard for most buildings (Stadt Freiburg im Breisgau, sustainability office).

One of the city´s landmarks are the "Bächle" (little watercourses), a system of narrow shallow canals carrying the water of the Dreisam through the city. The water is clean and children enjoy tearing their little boats in them. The water is taken from the small river Dreisam in the East of the city and then channelled through the city in the "Gewerbekanal" (industry channel) and the "Bächle". The system stems from the Middle Ages, when it was not possible to use the ground water from within the city since the city centre is located on an alluvial fan, meaning that ground water there is too deep. Therefore, a dual water provision

system developed: drinking water was taken to wells in the city centre from outside the city, whereas process water came from the channel system.

Mobility

The bike is the most used means of transportation, be it for work, school, traineeship, groceries or free time (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2013b). This is due to a comparatively very good infrastructure (big bike rental station at the main train station, highly developed cycle tracks network). The city is currently planning the construction of three fast cycle tracks allowing cyclists to cross the inner city even quicker.

Local public transport is currently being extended with the construction of three new tramway lines.

Citizens in Freiburg are highly satisfied with the quality of life and the infrastructure in Freiburg (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2013a). Concerning public transport, the city ranges first in a survey done in 26 German cities in 2009 as far as citizens´ satisfaction with the public urban transport is concerned. A bit more than 50% were very satisfied and about 40% were rather satisfied with it (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2010).

Key challenges and trends

Economic issues and trends

The image as “Green city” known for a sustainable development attracts more than 25000 trade visitors per year. Those so called eco-tourists come from 45 different nations and do not only visit the yearly international green fair but also take part in guided city tours with the focus of sustainable city development to look for best practice examples (Stadt Freiburg im Breisgau, sustainability office).

Also as location for science Freiburg specializes more and more in sustainability issues, intensifying links between research and the private sector.

A daily farmers´ market with more than 180 booths around the cathedral promoting the consumption of local products and supporting local farmers, as well as 13 weekly and farmers´ markets in different districts exist.

An exemplary case of linking the three sustainability dimensions is the hotel Vauban. The building was constructed on passive house standard. The city receives business tax from it, accessible rooms for people with impairment are available and people with impairment are employed.

Social issues and trends

The fact that Freiburg is a comparably rich city is also reflected by a survey comparing 26 German cities, in which Freiburg ranges second last when it comes to the statement: “Poverty is a problem in Freiburg”: Less than ten% fully agree to it, and 40% rather agree to it (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2010). This, however, should not hide the fact that also in Freiburg there is a widening gap between the rich and the poor, following the nation-wide trend. It is a challenge to reduce this gap which can be seen along the lines of different urban districts.

As in other prospering German cities that have been attracting people for years, the most urgent social problem is housing. This issue is not new in Freiburg. There were already broad squatters' movement in the seventies. This is a hot issue because on an already tense housing market rising energy costs are developing into a second rent, especially for low-income households. This is also due to the fact that the costs of the German "Energiewende" (energy transition) are mainly allocated to the citizens, not to industry, and the costs for energetic refurbishments are allocated to the tenants.

Pressure on the housing market is very high, on the one hand because of the high number of incoming students every semester, but on the other hand because there is a lack of social housing options. Conflicts of interest exist between international investors trying to achieve high prices on the housing market by treating housing space as profitable speculation object, and thus providing housing space only in the upper market segment, and the need of local flat searchers without the equivalent financial means for affordable housing options. Especially younger and poorer groups have to change the apartment because it is too expensive (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2013a).

In a survey in 2012, in which citizens were asked to indicate their satisfaction with different aspects of life in Freiburg, they were least satisfied with the offer of housing space and the housing market. To the question which aspect was especially important to them, the "offer of housing space, housing market" came second, after "employment and earning possibilities" and before "situation of the environment". According to the citizens, especially the housing situation in Freiburg (e.g. prize, size) needs to be improved (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2013a). This corresponds to an international survey of 2009, in which Freiburg ranged second last amongst 26 German cities when it came to the question "It is easy to find a good flat for a reasonable price". Only circa one% agreed very much with this statement, and only about five% rather agreed with it. 40% did not agree at all, and the majority of approximately 50% rather did not agree (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2010).

Assuring adequate and affordable housing spaces for all population groups has been set as one of the city´s sustainability goals in 2009, and a local programme of action has been put up in 2012 that aims at maintaining existing and creating new sufficient, adequate and affordable housing space.

There has been no specific major conflict to date yet between different migrant groups or between migrant groups and the local population.

Environmental issues and trends

Due to the fact that the city has never been a site for heavy industries, environmental conditions have always been comparably good.

Due to on-going climate change, hotter dryer summers and warmer, more humid winters are expected. Heat island effects could then provoke health problems in summer, and more heavy rain events must be expected. Thus, climate adaptation measures (such as providing free spaces where cold air aisles can form) will be necessary to let the inner city remain liveable, since already now Freiburg belongs to one of the hottest regions in Germany.

A sustainability council was founded in 2006. It is composed of four status groups: lay experts from the local agenda 21 movement, de facto experts from Freiburg regarding specific topics, administration experts from the administration in certain specialist subjects and members of the City Council.

A new climate-neutral district is currently planned which will be built in 6 to 7 years' time.

The city ranges amongst the German cities in which the highest rate of domestic waste-recycling is achieved (70 per cent).

34.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The public utility company badenova provides drinking water for all households in Freiburg in very good quality. It runs two distinct water works: one in the Black Forest and the other one in the Rhine plain. Water supply is exclusively fed by groundwater sources.

The population never had to suffer shortage or severe pollution of drinking water. The demand can be easily satisfied in terms of quality and quantity. Water prices are affordable and losses in the network are marginal.

When the two water works were built in the Seventies, water demand was estimated at 280 litres per capita and day and rates of growth in water consumption were predicted. Due to efficient water saving measures, consumption levels have significantly decreased to currently less than 100 litres per capita and day.

Key issues

In the eighties the problem of rising concentration of agrochemicals (nitrogen nitrate and pesticides) was solved in the following way, preventing conflicts from the start: the former head of the water works built up an exemplary contact to agriculture by employing a farmer that would communicate face-to-face on eye level with his colleagues to inform them about alternatives to pesticides and nitrate fertilization. This way the pollution could be reduced significantly. Still, the deposition of agrochemicals remains a challenge, and the city has already sentenced farmers to fines because they pushed asparagus by nitrogen fertilisation to receive higher prices for the first asparagus on the market.

A circular water economy has not yet been implemented. Sewage plants are still the biggest local energy consumer, since nutrients and the energy contained in the sewage are for the most part destroyed. The model of a sustainable urban settlement water management consists in the recycling of the substances that are contained in the sewage. Sewage plants could produce more energy than they consume which would be an economically lucrative issue on the long run for the city.

Ongoing decreasing water consumption levels might raise water prices in the future, since maintenance of the infrastructure will be more cost-intensive due to the required long-term adaptation to decreasing consumption levels.

Key actors/partnerships

There is no local self-organized or cooperative management of the resource water. The local water provider is the leading actor in water issues doing water economy policy since the expertise is with him.

badenova AG & Co. KG

Badenova is a provider for drinking water and energy. Provision is guaranteed by the local government, even if badenova functions like a private enterprise.

RegioWasser e.V.

The association is the only civil society group that explicitly focuses on water issues. Founded in 2002, it promotes a sustainable regional water management. Its chairperson also takes the role of expert for water issues in the City Council. It is a working group of the initiative "Arbeitskreis Wasser" *(working group water)* in the "Bundesverband Bürgerinitiativen Umweltschutz" *(federal association citizens´ initiatives environmental protection)*.

Key actions/measures/initiatives

Since water prices are moderate and the availability and quality of drinking water very good, water is not a hot topic in Freiburg, and there is hardly a public debate regarding drinking water issues. There is only one civil society group that exclusively focuses on water issues.

Yet, for ten years there has been a yearly lecture session on the occasion of the international water day. It is organized by the water authorities in conjunction with the university and between 100 and 200 people were present the last time.

Energy

Availability, affordability and consumption levels

Since 2011, the public utility company badenova has only supplied green, totally nuclear power free energy to private customers, and the tramway also runs on eco power or regional power. This energy is not locally produced but bought since so far the overall electricity consumption of the city of Freiburg can be covered only to 4.9% with locally produced renewable energy. Photovoltaic makes up the biggest share, since preconditions for solar energy use are very good and 1700 solar facilities have been installed on public and private buildings. The second biggest part of renewables is biomass (including landfill gas), followed by currently six wind power stations. The share of water power is negligible due to the local situation (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2013b).

Key issues

In 2007 the City Council has set itself the goal to reduce CO2 emissions by 40% until 2030 and to become carbon-neutral by 2050. A study showed that this is only possible in cooperation with the two neighbouring administrative districts, provided that energy consumption in Freiburg is halved until 2050 and of the half of demand that is left over 90% must come from locally produced renewable energy (Öko-Institut e.V. 2011).

The biggest potential for increasing energy efficiency is to be found in the building stock. Therefore, it is necessary to reduce energy consumption of residential buildings by 70% compared to 2010 (Öko-Institute e.V. 2011).

To reach this goal, the local building standards of the land development plan are more restrictive than regional and national regulations as far as climate-house standards (energy-efficiency and –saving measures) are concerned. For example, passive house standard has been prescribed for new buildings since 2011.

Since the eighties local energy standards have always been around 30% better than the nation-wide standards, every time the federal government has approached the standards of Freiburg, the city has put its own standard higher again.

Key actors/partnerships

There is one public provider (badenova), as well as private regional, national and international providers due to the EU-wide liberalization of the energy market. There is a very active energy scene with actors from the private sector and civil society. Energy cooperatives within the city boundaries are emerging, offering the possibility of citizens´ participation in energy production which was facilitated by the German "Energiewende" (energy transition) that can be considered as a decentralised revolution of energy supply.

badenova AG & Co. KG

The company has created a special climate protection department and encourages the expansion of renewable energies as well as the construction of block heating works. Badenova is member in the KOM9 GmbH Co. KG. This is a nationwide association of public utility companies and regional energy suppliers to strengthen the municipal structures in energy and water supply.

Förderverein Energie- und Solaragentur Regio Freiburg (fesa e.V.)

The association promotes the diffusion of renewable energy technologies. It initiated some of the first collectively owned PV plants in Germany in the mid-1990s. Starting from a non-profit third sector initiative, it evolved into a private enterprise in 2001, the fesa GmbH. Due to the German "Energiewende" (energy transition) which can be considered as a decentralised revolution of energy supply, citizens have the chance to participate in energy production which is also fostered locally. Some energy and photovoltaic cooperatives have evolved. Recently, fesa has supported the development of the energy cooperative "Solar-Bürger-Genossenschaft" (Schreuer 2012).

Öko-Institut e.V.

Founded in 1977 out of the protest movement against Wyhl (see below), the original idea of the institute for applied ecology was to create counter expert knowledge regarding environmental and specifically energy topics to counter the then alleged experts of nuclear industry. Today climate change is one research focus of this research and consultancy institute working for a sustainable future.

Private actors

A lot of private enterprises have been founded, specializing in renewable energies. The Solar Info Centre hosts some of them, such as the Energieagentur Regio Freiburg GmbH, a company promoting energy saving systems and solar energies.

The Fraunhofer Institute for Solar Energy Systems (iSE) is Europe's largest solar research institute.

The "Ökostromgruppe Freiburg" regionally produces green electricity with the aim of increasing the share of renewable energies on the electricity consumption in the region and keeping the added value in the region. It offers shares for citizens in wind power stations and photovoltaic facilities.

Key actions/measures/initiatives

Various projects show that the city provides incentives for environmental standards and also takes a model function.

The project "kraftwerk wiehre" (power plant Wiehre) is a municipal project for more power-heat coupling in the district Wiehre, coordinated by the Energieagentur Regio Freiburg and receiving financial support by the city. It offers information, a check on the spot free of charge for homeowners and supports them financially to put up an energy concept for the real estate.

The city´s environmental department initiated the funding programme "Energiebewusst sanieren" (to refurbish energy-consciously) in 2003. It promotes heat insulation, energy pass with consulting and heating optimization.

The environmental department initiated the project „KlimaKlub" which was running in 2012. Under the motto "gemeinsam macht Umweltschutz Spaß" (together environmental protection is fun) citizens could examine own living and consuming habits and discover climate-friendly alternatives. It was an exchange of experiences, also across national borders since the partner cities Besançon (France) and Padua (Italy) were also involved.

The city´s company for waste management has turned a landfill that has shortly been closed down and become a spot for biogas production, into the biggest solar panel park of the city. The produced energy is fed into the grid.

The city´s public housing association has refurbished the worldwide first multi-storey building according to the passive house standard.

The city participates in the cooperation project between municipalities and enterprises called ÖKOPROFIT[i] ("Ökologisches Projekt Für Integrierte Umwelt-Technik"). Its idea is to create a local network for environmental protection and to support enterprises to introduce or improve an operational environmental management. The system examines production processes with regard to energy, material and resource use with the aim of reducing costs.

Green spaces

Availability, affordability and consumption levels

Freiburg is a green city with a big number of parks, in the inner city as well as along the river Dreisam, which are used by many inhabitants for leisure activities and which positively influence the micro-climate. In some districts, green areas are increasingly used by the citizens to create different forms of urban gardening. Most of the green spaces are owned by the city and are freely accessible to the citizens free of charge. In a survey done in 2009 more than 40% of the citizens were very satisfied and more than 40% were rather satisfied with the green spaces such as public parks and gardens in Freiburg (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2010).

Key issues

A conflict exists between the sealing for the developing of new housing spaces and the preservation of green spaces.

Due to its high standard of living, Freiburg is continuously attracting new inhabitants and thus facing severe affordable housing shortage. This has led to an increasing development of land on the city´s edges. In the current land development plan which is still valid until 2020 there are only two bigger areas left in the outer area that can still be developed. The ongoing setting out of free spaces for building activities often contradicts the interests of local civil society groups focusing on the protection of green spaces.

To counter housing shortage, the City Council is currently elaborating a municipal action programme for housing with the aim of creating and maintaining affordable housing space. The programme provides for increasing municipal influence on the housing market by acquiring real estate via the city´s public housing association. The aim is to build 1000 new dwellings per year of which 300 shall be in the social housing sector. In order to limit urban sprawl, this is supposed to be done primarily in the inner area. In its sustainability goals the city commits itself in the field of city planning and development to incrementally reduce land consumption in the outskirts against 0 and to achieve the coverage of land requirements for housing and industry via temperate inner-city development (Stadt Freiburg im Breisgau 2009).

Civil society actors in the field of green spaces suggest to also incorporate meadows with scattered fruit trees in the category of protected areas to protect them from construction plans. Furthermore, they suggest to first do a registration of the vacancy rate of the existing stock (which has not yet been done in Freiburg) in order to create new housing spaces there, before setting out new free spaces for housing, be it in the inner or outer area.

Key actors/partnerships

Apart from the traditional institutional actors like the department for green spaces, local self-organized groups have emerged, having changed the function of public green spaces, that partly also interact with the city administration or other city institutions.

<u>Plan B e.V.</u>

The citizens´ initiative was founded to protect green spaces in the city. It criticizes that new building areas are designated and constructed on to two thirds in the upper market segment and that not enough

housing space is provided in the lower market segment and for social housing. It proposes to take housing policy from the free market since currently dwellings are speculation objects on the international market and to strengthen the city´s housing company influence in the matter. The association also demands that for each newly sealed space, compensation spaces need to be created, meaning somewhere else a space of the same size has to be unsealed and vacated for green public spaces.

Urban gardening

Several locally self-organized urban gardening groups have emerged in various city districts. They are coordinated by the Transition Town Freiburg.

"Haslachgärtnert" for example started in May 2013. So far only three people are regularly working in it. The idea is to create a district garden with the involvement of local actors like the kindergarten, schools, sheltered workshops and the intercultural women's´ café. Each potential actor has been approached personally, flyer have been distributed. The aim is to raise conscience about the handling of food, to show where it comes from and that it needs a lot of work and time to grow vegetables and fruits. The project is done in cooperation with the city of Freiburg, "Garten- und Tiefbauamt" (gardening and public works service). The city provides the space as well as water and a first load of soil. The garden is growing, yet more active gardeners are needed. A meeting at the beginning of 2014 will take place and some people have already shown interest.

Urban gardening is also done on the ground of the city´s theatre. In cooperation with the theatre a mere lawn has been transformed into a garden and public events have taken place, e.g. baking bread using the corn that had been harvested in the garden.

Key actions/measures/initiatives

The initiative „Freiburg packt an" (Freiburg sorts things out) initiated by the department for green spaces bundles all citizens´ actions with regard to public green spaces. Citizens can be active in single events or assume a long-term sponsorship for a public green space.

34.3 Governance and citizens' participation

Multilevel governance

National

Due to Freiburg´s comparably good fiscal situation, the city is in a better position than other cities to deal with the requirement of guaranteeing every child from the age of one a place in the kindergarten from the beginning of August 2013 onwards which entails the construction of kindergartens and the employment of new staff on the local level.

It is criticized that the current course of the federal government in the energy transition lacks a clear concept and thus does not provide planning security for actors on the local level willing to invest in the energy transition. Consequently, a lot who would be willing to become active refrain from doing so.

National / EU

EU citizens can choose freely their residency all over the EU. After the accession of Bulgaria and Romania to the EU in 2007, poverty migration from these two countries has risen, and citizens from these two countries will only be allowed to work on the German labour market from 2014 onwards, due to national regulations. Efforts are necessary for their integration such as providing education opportunities and creating new job perspectives. Due to a relatively good budget situation Freiburg is in a better situation than other cities to cope with this challenge. Yet, also here solutions can only be found across all governmental levels from local to EU, also including the country of origins.

Participation and bottom-up action

Participation

A very active civil society emerged already in the seventies in opposition to the construction plans of the nuclear power plant Wyhl in the Kaiserstuhl, 30 kilometres North-West on the Rhine. There was a building site occupation. The alliance between left students and local wine-growers is the nation-wide only citizens´ initiative that was able to stop the construction of a planned nuclear power plant. It can be considered as the cradle of the German ecological movement.

The myth “Wyhl” was the reason that in the region of Freiburg environmental awareness and sensibility developed earlier and on a broader scale than in other parts of Germany. The process that started in most German cities only after the Rio conference in 1992 with the creation of agenda 21 offices, had already started earlier in Freiburg. The then ecological movement has entered the institutions which can be seen by the fact that a lot of former civil society actors have meanwhile taken over positions in politics and administration or promote the idea of sustainable development in the private sector and that new institutions within administration emerged fostering the idea of sustainability, such as the Sustainability Council (see above).

Relations between actors from the state, the private sector and civil society are very dynamic. For administration and politics it is a challenge to bundle the numerous, often very innovative ideas and interests emanating from citizenry.

The local government supports and creates room for NGOs and other local initiatives. For example, the local sustainability goals have been elaborated in a participatory process with representatives from politics, civil society, experts and city administration who gathered in the “Freiburger Nachhaltigkeitsrat” (Sustainability Council).

One of the goals is the city´s commitment to achieve a higher level of direct democratic participation in local decision processes (Stadt Freiburg im Breisgau 2009).

Numerous interactions exist between civil society and city administration and this relationship is not always free of conflict. For many people from the environmental and sustainability scene administration is simply to slow, considering too much the so-called factual constraints. Civil society representatives fear that Freiburg runs the risk to rest on its ecological laurels. Local politics and administration are moderately criticized for not sufficiently listening to civil society actors, though it is them to a large part that the city owes its world-wide green image to.

Bottom-up action

Apart from the mentioned examples of sector-specific initiatives, the following initiatives also contribute to a sustainable development of the city of Freiburg with one of them specifically addressing the hot topic of housing.

Forum Vauban e.V.

Long-time existing local citizen´s participation organised itself in an association in 1994 to promote the creation of a sustainable city district more professionally and efficiently. It was financially supported by the city, yet aimed for more independency and thus applied for several funds on EU and national level. Four were granted, which allowed for a professional planning and the realization of the meanwhile internationally known district.

The website is a forum for all activities taking place in Vauban (given in German, English, French and Italian).

„Recht auf Stadt“ (RaS) Freiburg

The network consists of local initiatives and individuals that campaign for affordable housing space, urban free spaces and the preservation of public green spaces.

Freiburger Initiative für ein bedingungsloses Grundeinkommen

The local group of the „Netzwerk Grundeinkommen“ (German affiliate of the Basic Income Earth Network (BIEN) has been founded in 2013. Being convinced that an unconditional basic income is the first step for a sustainable change, it wants to carry its idea into society and show its far-reaching chances and impacts.

“Freiburger Wahlkreis 100%”

This association campaigns for communal voting rights for third-country nationals from outside the EU being residents in Freiburg but not having the right to vote.

Local policy or programmes

FRIGA Sozialberatung in der Fabrik

This social counselling service was founded in 1983 to give unemployed the possibility to exchange views about problems and experiences with unemployment, representing their interests on the local and federal state level.

34.4 Conclusion

Short summary

Freiburg is located in advantageous surroundings with a very good environmental situation. It disposes of a lively involved civil society and a high consciousness of sustainability issues amongst citizens, as well as in local politics and administration.

Institutional diversity is highest in the energy sector, followed by the green spaces sector, where locally self-organized and cooperative management has started. Cooperatives are so far only to be found in the energy sector. In the water sector, only one self-organized initiative specifically focusing on water can be singled out. This is also due to the fact that water is not, in opposition to housing, a hot topic in Freiburg. So far, no major tensions or conflicts have emerged due to starting self-organization.

Renewable energy production, linked also to self-organization and cooperative management, has started, but is still to be developed.

The city has a high autonomy in the management of the resources water and green spaces and a lower one in the field of energy. It does not prevent self-organized groups and organizations that cooperatively manage resources to develop and also collaborates with and fosters them.

Trends and challenges for the future

- Energy refurbishment (by contracting) with social compatibility, further construction of energy plus houses
- Further development of long-distance heating and power-heat coupling
- Construction of high speed cycle tracks within the city
- Further population growth → provide affordable housing while minimising the conversion of further green spaces into building land by reducing first the vacancy rate in the inner city and then giving preference to inner-city before outer-city development to limit urban sprawl
- On-going immigration especially from Eastern EU member states → integration into the educational system and on the labour market
- Increasingly old population → develop an age-appropriate city with care-options but also the possibilities of participation for active elderly people
- Increasing social split →assure affordable housing and energy prices on a very tense housing market

[i] This is a registered trademark for an environmental management system, in which more than 100 local enterprises participate. They document what measures there have undertaken, how much they have invested in them and how much they have already economized by that or what other benefit they have gained in sustainability terms (www.cpc.at/oeko/oe_WasIst.htm [26.11.2013]).

35. Germany – Kiel

35.1 General city profile

Background information

Factual data

Kiel is the capital of the German Federal state of Schleswig-Holstein which is the Northernmost state of Germany. Kiel is located at the South-Western shore of the Baltic Sea, called Kiel Fjord (Kieler Förde), and likewise at the Kiel Canal (Kaiser Wilhelm Kanal) which is an artificial waterway connecting the Baltic Sea and the North Sea and flowing through the North-Western part of the city. Two smaller natural rivers flow through the city towards the Kiel Fjord; those are river Eider and Schwentine. The city surrounds the natural sea port of Kiel Fjord in a half-cycle.

With its 239,000 citizens it is one of the smaller German state capitals. 46,744 citizens of Kiel have a migration background, a share of 19.6% (Kiel, 2013b). The share of citizens with a different nationality was 7.6% (Potsdam, 2012). The city's territory sums up to 118.6 km² which results in a comparatively high population density for German standards of 2,014 citizens per km² (Kiel, 2013). The city is divided in 30 districts. The number of citizens has risen during the last 8 years after stagnation in the beginning of the 2000s. During WWII, the population peaked at 306,000. In a prognosis dating from 2013 it is expected to continue to grow until 2030 (Kiel, 2013c).

Kiel's climate is temperate and oceanic. Westerly winds predominate and rain falls all year round. On an average of 130 days per year Kiel offers 782 mm of precipitation. Winters are relatively mild (around 2 °C) while summers are cool (around 17 °C) (Kiel, 2013).

Founded in the 13th century, Kiel has long been a major maritime centre at the Baltic Sea with its history being dominated by seafaring, ship-building and international trading. After being taken over from the Danish by the Prussians in the 19th century Kiel became one of the main naval bases of Germany and remained so until today. Because of its status as Germany's main naval base and production site for submarines during WWII, Kiel was heavily bombed and a major part of the city (approx. 80%) was destroyed. The reconstruction in the 1950' and '60 left the city with a modern and spacious city centre following the architecture of those times and the concept of the car-friendly city. Started in the 1990s, another wave of reconstruction has the intention to rebuild parts of the historical old town and retrieve Kiel's former maritime flair. The process is still continuing.

Basic government/administrative structure

The city council (Ratsversammlung) represents the legislative and is elected every 5 years by the citizens of Kiel during municipal elections in Schleswig Holstein. Since the last election in May 2013, there are 53 councillors of whom 35.7% are Social Democrats (SPD), 29.7% belong to the Christian Democrats (CDU) and 17.6% the Greens (Bündnis 90/ Die Grünen). As there is no 5% hurdle, 10 seats are covered by smaller parties such as the Liberals (FDP), the Left (Die Linke), the Pirates and the Danish minority party (SSW) besides others. The Social Democrats have formed a coalition with the Greens (Kiel, 2013f).

The local executive in Kiel is headed by the Lord Mayor who is elected every six years in direct elections. After the resignation of Social democrat Susanne Gaschke in October 2013, the new Lord Mayor is supposed to be elected in March 2014. The Lord Mayor is head of the public administration and of the first of four departments. The first department covers the tasks of central governance, guidelines and local economy. It includes the coordination office for shares in privatized companies held by the city of Kiel such as Stadtwerke [public utility company] and the public transport. The second department focuses on urban development and environmental protection and is headed by (vice-) mayor Todeskino. The third department covers finances, human resources, culture and regulatory issues while department four includes the units on social issues, youth, health, education and sports. The four departments cover 25 units (Kiel 2013d).

Economic conditions

Kiel's economy is mainly based on the service sector. Over 83% of Kiel's employed population have their jobs in this sector. The major rest, however, is employed in the industry sector. The service sector is based on retailing, insurances, finances and education. The public administration is another major employee. Tourism increasingly plays a key role for the local economy. The numbers of cruise ships entering the port, the number of visitors and nights spent in hotels per year have grown throughout the last 20 years. The industry sector is based on ship building and engine construction (Kiel, 2011).

Kiel has a slightly growing economy. The number of businesses is constantly increasing and so does the gross value added in Kiel. However, the unemployment rate is above the German average of 6.5%. After a peak of 16.5% in 2005 it has dropped since then to the current rate of 10.1%. This unemployment rate still compares unfavourably to other German cities. Only Bremen, Berlin, Dortmund and Saarbrücken show similar rates. The average per capita income lies below German average (Kiel, 2013; Destatis, 2013).

Kiel is a highly indebted city and its budget shows a growing deficit. In 2012 public debt made another leap and reached 536 million Euros. This means 2,240 Euros per capita and is the highest since 1993. (Kiel 2013).

Special characteristics

Kiel has a maritime character. It is set 90 km North of Hamburg and Southeast of the Danish Jutland peninsula. In Kiel the Kiel Canal ends into the Baltic Sea. This geographical setting enables Kiel to remain a hub for sea transport in Germany. Several ferries to Sweden, Norway and Russia operate from here. It is also the destination for around 140 cruise-ships per year. The ferry port is located closely to the city centre Cargo shipping has a subordinate relevancy for the port. Kiel emphasizes this seafaring tradition: there are numerous sailing supply shops in the city centre. It is common to see people in red sailing jackets with neon-yellow hoods and wellington boots. Water has become an important design element for the urban setting. Ponds and lakes are numerous, along the Föhrde important leisure areas are located, e.g. beaches and running trails. Once a year, Kiel becomes the venue for the sailing festival "Kieler Woche". It is the largest sailing festival of its kind in the world offering ship racing championships and a parade of over 100 tall ships (Windjammer) from all over the world.

Local lifestyle

Mobility

Despite the rather unfavourable weather conditions of high levels of precipitation and wind and the historical preconditions of the car-friendly city, Kiel has turned into one of the most bike-friendly cities in Germany. In the latest Fahrradklima-Index of the German Biking Association in 2012, Kiel was one of the 4 bike-friendliest cities with a population above 200,000 (ADFC, 2012). Since the 1980s, the modal split for bikes has slowly increased to over 20% today. This is the result of the successful implementation of a transport development concept which emphasises biking. The Fahrradforum, an advisory committee formed by representatives from public administration, civil society associations and political parties is another key for this positive development. Kiel was also one of the first German cities to have a speed limit of 30 km/h in residential areas (BMVBS 2008).

However, the car remains the favourite means of transportation with around 45% of the modal split which is easily visible in the city not only in terms of driving cars but also in terms of parked cars. The public transport system is based on a bus system, with has long been discussed to be complemented by a tram-train-system.

Key challenges and trends

Economic issues and trends

The Federal State Schleswig-Holstein is economically the least prosperous of the West-German states. Kiel is often understood as being in the shadow of the Metropolitan Area of Hamburg. Economically, it had a hard time in these last years. The ship-building industry, formerly an important one on the German coasts, has suffered significantly from competition in Asia. In a regional development concept Kiel wants to focus on retailing and the maritime industry and emphasize the location as logistic hub for goods and passengers. They hope for an increase in logistic interaction with the Baltic countries and Russia and for the formation of cooperation with the neighbouring Danish regions (Region Kiel 2013).

The limitation of public funds and high debt of the city have limited its options to support important initiatives (e.g. integration projects) and it makes it easy for private investors to put pressure on the City of Kiel. While the unemployment rate in Kiel is still rather high, industry issues warnings about a lack of qualified workers.

Social issues and trends

Kiel is a growing city again. After decades of shrinking due to a death rate which was higher than the birth rate, an influx of younger people into the city is currently buffering the tendency for aging in Kiel. This puts pressure on the housing market. The increasing number of single-households and the fact that established elderly tend to keep on living in their houses despite the fact that their children have moved out, result in a trend of increasing living space per capita in Kiel and rising rents (Kiel, 2010).

At the same time indicators for poverty are drawing a negative picture of Kiel's social situation. The number of heavily indebted households has increased during the last 10 years. The numbers of elderly and children who need to get financial state support have also increased in the same time. These trends

are often concentrated in certain problem districts, e.g. Kiel-Gaarden where high unemployment rates meet with low education and lack of prospects (Kiel 2010).

Environmental issues and trends

The existing green belts around the city centre are threatened to be consumed by new building projects. On the one hand, the demand for housing fosters the conversion of green space into residential areas. On the other hand, rising public debt pressure the municipality to sell green space in order to attract private investors and their taxes onto Kiel territory.

Kiel has a historical heritage of contaminated soil. This partly originates from industrial developments prior to WWII, but also from the rubble of bombed Kiel after WWII which was simply covered with a thin layer of dirt. This is seen as an ongoing task with no certain end.

Kiel has put an emphasis on climate mitigation in recent years in terms of political concepts. In 2004, Kiel became a member of the climate alliance pledging to reduce their CO_2-emissions by 10% every 5 years and to decrease CO_2-emissions per capita by 50% until 2030 based on their emissions in 1990. In 2008 the City Council voted in favour of the climate action plan 2008 which translated these targets into concrete measures (Kiel 2008). In 2006, Kiel had decreasing CO_2-emissions of 1,504,000 t or 6.5 t/capita and year (Siemens 2010).

The City of Kiel recently decided in favour of the construction of a so called StadtRegionalbahn (a combination of tram and suburban train which can run on the rail system of the German trains). It should complement the little popular public transport system which is currently based on busses.

35.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Stadtwerke Kiel is the only provider for drinking water in Kiel and at the same time they are responsible for taking care of the water grid which has a total length of 1,778 km. In 2012, they provided 82,620 households with drinking water. The supplied area reaches beyond the territory of the City of Kiel. Up to 100% of all households have a connection to drinking water. The drinking water is sourced from ground water. 35 wells and 4 water treatment plants make sure that the quality of the drinking water is one of the best in Germany. Constant controls show best results (Stadtwerke, 2013).

Despite the growth of the city and the expansion of the water grid, the total water consumption decreased throughout the last 20 years from 21,500 million m³ to 17,248 million m³ in total.

A cubic meter of water costs 1.77 Euros net. The annual basic fee depends on the maximum use per hour (62.26 Euros for max 10 m³/hrs; 289.06 Euros for max. 50 m³/hrs and 963.53 Euros for above 50 m³/hrs) (Kiel, 2013).

Key issues

Availability and quality of drinking water in Kiel are extremely high. That is why no one seems to be preoccupied with drinking water. The responsibility for the water provision was given to the Stadtwerke who are fulfilling their task. The public administration monitors water quality through the health department and the economic performance of the company. Public information regarding the quality of the grid is limited. It is unknown, for instance, if water gets lost due to leakages in the grid. Grid connections on private property are not subject to regular controls.

RWE Dea AG has recently applied to restart the exploitation of petrol and natural gas with unconventional methods in the region around Kiel. Fracking might be one of these methods and pose a threat to the drinking water. The potential application to re-start petrol-exploitation in the region of Kiel has recently started a discussion about the potential threats to drinking water resources (Kieler Nachrichten, 2013). Currently, environmental NGOs are picking up the issue and putting it on the political agenda.

Key actors/partnerships

Stadtwerke Kiel: Stadtwerke Kiel AG is the main provider for drinking water, electricity, gas and heat in Kiel and the surrounding region. In 2004, 51% of the public services were sold to another public service company in Mannheim (MVV, 49.5% privatized). 49% of the shares remain with the City of Kiel. They are the contractor of the City of Kiel.

Public administration: the issue of drinking water is distributed to different departments, units and sub-units in the public administration of Kiel. The lower water authority supervises the implementation of national and state law on the local level. They have a focus on surface water bodies and drinking water protection zones. The Unit for health monitors the water quality of the drinking water. The unit for shareholding and management monitors the balances of the companies of which the City of Kiel holds shares.

Attac group Kielwasser: this is a working-group of the local Attac-chapter in Kiel. The group was formed in 2003 when Stadtwerke was about to be privatized. Since then they worked for the

re-communalization of Stadtwerke: they are writing petitions to the City Council and individual politicians on a regular basis and inform the public via movie screenings and panel discussions. In early December they held an event on fracking in the region of Kiel.

RWE Dea: RWE Dea is a transnational company which exploits petrol and natural gas resources worldwide. In 2013, they applied to the Federal State of Schleswig Holstein to be allowed to reactivate the exploitation of petrol resources around Kiel. The volume should only be 660,000 t of petrol. This instantly raised protest from the civil society.

Key actions/measures/initiatives

The discussion on the European level about concessions for water grids gave rise to a broad civil movement against the privatization of drinking water all over the country. However, in Kiel, only the anti-capitalist NGO Attac has focused on drinking water due to the partly privatization of Stadtwerke.

Energy

Availability, affordability and consumption levels

In general, every household in Kiel is connected to the energy grids. The energy sector in Kiel follows the rules of the liberalized energy market. Customers can choose freely which provider will supply them with energy. They can further decide on specific tariffs and for electricity what kind of energy mix they want to pay for. Prices depend on the supplier and the energy sources and on the geographical location. In Schleswig Holstein prices are lower than in the other Western German states. In 2012, 5,000 kWh cost 1,305 Euros in Schleswig-Holstein; since 2012 prices made a leap of 11% (Check24 2012). Due to this development, a rising number of households cannot afford to pay their electricity bills five months in a row and are therefore left without electricity. In Kiel this happened to 986 households in 2012 (SHZ, 2012).

Stadtwerke Kiel is the main energy provider in Kiel. They are the partly privatized public utility. In 2012, they provided Kiel's citizens with almost 1,196,000 MWh of electricity, 1,464,000 MWh in gas and 1,100,000 MWh of district heat (Kiel, 2013). It is publicly unknown how many costumers made use of the liberated market and chose a different provider. For the whole of Germany, the number of households choosing a tariff with 100% renewable energies had risen to 5.5 million households which sum up to 11.8% of all users (Bundesnetzagentur, 2013).

Key issues

Kiel's energy is mostly provided by four central thermal power plants and 35 decentralized CHP-plants. The largest, a coal power plant (295 MW thermal, 354 MW electric), was built in 1970 and should be replaced soon. It is owned by Stadtwerke and E.On and runs on imported coal. The second largest power plant (131 MW thermal, 28 MW electric) runs on gas and petrol and was built in 1901. The heat is distributed by a district heating grid which is fuelled with 130 °C hot water. The use of lower temperatures promises to result in high energy efficiency potentials in Kiel.

Kiel has limited potential for the generation of renewable energies on its territory which are already in use. At the river Schwentine there is a minor hydropower plant with 1.2 MW which was renovated in 2004 and is owned by the City of Kiel. The City of Kiel offers their building roofs to initiatives who want to install solar panels. So far 520 kWp were installed this way. Recently, the local government indicated an area of 44 hectares in their urban development plan which is suitable for the installation of wind turbines. 6-8 turbines should be built under financial participation of citizens. One of the CHP-plants in Kiel is a waste incineration plant (28 MW thermal, 5.8 MW electric) and usually counted as RES.

The partial privatization of Stadtwerke (51% were sold to MWW) left the city with limited influence on the company's decisions. Only 2 of 15 members of the supervisory board are members of the City of Kiel.

Key actors/partnerships

Stadtwerke Kiel AG: see above.

E.On Kraftwerke: formed in 2000 through a fusion of two German energy companies, E.On is the largest energy enterprise Germany. It is a shareholder of the existing coal fired power plant (built in 1970). In 2007, E.On and Stadtwerke Kiel published plans to replace the old power plant with a new coal-fired power plant of 1050 MW in order to make Kiel an energy-exporting region. These plans were stopped by Kiel's decision to build a gas-powered plant.

BürgerInneninitiative "Umweltfreundliche Energieversorgung für die Region Kiel": the civil society initiative was formed in 2007 when the plans to build a new coal-fired power plant were published by E.On and Stadtwerke. With means of signature collections, protests and expertise, the association managed to convince the public of the disadvantages of these plans. Their PR probably triggered the change of government in the local elections in 2008.

Public Administration Kiel: Department II on Urban Development and Environment hosts the Unit for Environmental Protection and the coordination office for energy which supervises the energy management of the municipality's buildings.

CAU: Christian-Albrecht University in Kiel has around 24,000 students and 2000 researchers which have a visible impact on the urban setting, e.g. the modal split students using bikes is much higher than average in Kiel. In 2012, CAU announced the target to operate carbon-neutral in 2030 and dedicated 4 positions to the sustainability management of the CAU. They are planning to set up a cooperative to finance RES on Campus. The public administration cooperates with CAU in terms of sustainable energy management and receives valuable inputs (Klik, 2013).

Chamber for Industry and Commerce: CIC is understood as an important multiplier for opinions and ideas. They do not only collect the voices of local producing companies but direct the opinions. They organize a fair with a focus on RES and energy efficiency technologies once a year. However, their main focus is on low energy prices. They are strongly in favour of fracking and making use of the petrol resources in the vicinity of Kiel.

Key actions/measures/initiatives

In 2007 the plans of Stadtwerke and EOn to replace the old coal-fired power plant with a new one with a higher capacity met with a broad protest movement of civil society actors in Kiel. As a result the Conservatives lost in the local elections in 2008 and the Social Democrats and the Greens took over. Shortly before the election, the Climate Action Plan had been decided upon. After the elections and the change of government, they finally decided in 2009 to build a CCGT CHP plant instead. The planning process is still going on today (Keine Kohle in Kiel, 2013).

Green spaces

Availability, affordability and consumption levels

Due to its high population density, 50% of the surfaces of the Kiel's territory are sealed. However, the urban planning preserves green areas by following the concept of the Three Green Belts. The first belt surrounds the Kieler Föhrde. Like pearls on a string, numerous parks are located along the fjord's Western, Southern and Eastern shores. The second green belt is a product of the urban planning due to industrialization in the early 20th century: a belt with the huge number of 10,000 allotment gardens and few public parks surrounds the urban centre. Several satellite towns dating back to the 1950s and 1960s reach through this belt into the city's outskirts. Beyond these living areas, a forest belt surrounds Kiel connecting and disconnecting it likewise from other cities in the surrounding. 9% of the current territory is covered with public forest. The green space is open to the public. None of the parks are fenced.

The public green space is mostly cared for by the Unit for Green Space and their contractors. The allotment gardens are rented out to the allotment associations which are obligated to follow the Federal Allotment Garden Law.

Key issues

An important issue for the green space is the population growth in Kiel. Until 2025, Kiel will need 9,000 new housing units in order to provide for the newly arriving citizens. It is also expected that Kiel will have to provide 2.8 hectares of industrial area each year until 2025. These needs contradict the concept of sustainable land management and will necessarily consume unsealed land in the next decade. It is to be expected that the second Green belt will suffer from this the most (INSEKK, 2013).

One recent and publicly discussed example for this development is the case of Möbel Kraft; a furniture store chain which wants to build a store close to the city centre in Kiel. They wished one specific location in the Green Belt and bought out the 100 allotment gardens which were situated there. This raised a lot of public conflict and protest. The Public administration offered two other locations which were refused. The process resulted in a Transparent File being published online in order to provide the public with the insights they called for.

Key actors/partnerships

Public administration: the urban land use planning is the ultimate guidance to how land is used in Kiel. It is the most important legislative right of the local level. The Unit for Urban Planning as well as the Unit for Green Space is located in the Second Department.

Association of allotment gardeners Kiel: allotment gardens are a typical phenomenon of industrialization in Germany during the beginning of the last century. Industrial workers should be able to provide for themselves. Kiel inherited 10,000 allotment gardens from its industrializing phase. This is a uniquely high number in Germany (Berlin has the largest absolute number with 25,000, for 3 million citizens!). Each allotment is run by a non-profit association. 25 allotment associations form the regional roof association of allotment gardeners Kiel.

Community gardens in Kiel: there are few initiatives for community gardens in Kiel. The transition town movement has started one small community-run plot

Farmers: there is no farm land on the territory of Kiel. However, few forests are owned by private owners and are still economically used. For 20% of its public forest, the administration is planning a near to nature management. Forests play a minor role for green space in Kiel.

Retailing companies: their decision to build either on the green field or to choose a location in the city centre is highly important for Kiel's compliance with their sustainable land management concept. The municipality is highly dependent on the business taxes and the jobs which are created by retailing. Kiel has developed a Retailing Concept 'the City of the short distances'. The concept's success is highly dependent on the willingness of the retailers to participate.

Key actions/measures/initiatives

The existing parks in the first and second green Belt are currently modernized. Some of them are the product of a citizen consultation process. An allotment garden concept will be developed which should assess the demand for allotment gardens and the number of abandoned lots. The landscape planners in Kiel would prefer to preserve the second green belt as a historical site of Kiel's industrial past.

Some important concepts were developed in the last 5 years with specific focus on green space: the integrated urban development concept defines five main areas for new building developments: South of Kiel, East of the Kiel Fjord; in the West and in the North (INSEKK, 2010). The guideline for open green space in Kiel and surrounding defined the three green belts and their conservation (Kiel, 2007). The allotment garden concept will be another step stone for the emphasis of green space in Kiel.

At the end of 2013, the political party Die Piraten proposed to check the potential for the development concept of an edible city comparable to the city of Andernach. The City Council approved of the suggestions (SHZ, 2013).

35.3 Governance and citizens' participation

Multilevel governance

The multilevel governance is not seen as a problem in the city of Kiel. The federal system in Germany defines the different areas of responsibility between the local level, the state and the federal level. It was pointed out, however, that more and more tasks are handed down to the local level, especially in terms of social welfare, while municipalities are not provided with sufficient financial resources to fulfil these tasks. Due to the limited territory of Kiel, the surrounding towns are seen as potential partners when it comes to energy provision or expanding the urgently needed residential areas and public transportation.

Federal state Schleswig-Holstein

The federal state was not specifically mentioned a lot, either as a hindrance or as an especially supporting actor. It was mostly mentioned as source of additional finances for the City of Kiel.

National

In the energy sector, local actors in Kiel feel left alone by the federal government. The former government (CDU and FDP) is blamed to have stopped the energy transition by not having had a coherent strategy. The cut-down of feed-in tariffs for RES and the slow-moving process of grid-expansion is seen as a fault on the federal level. Hopes that the future coalition between Conservatives and Social Democrats will change this are low.

This applies to the issue of climate mitigation as well. The federal government was seen as the one which damaged the effectiveness of the European emission trading scheme by refusing to agree to back-loading of superfluous certificates.

EU

EU-funding was mentioned as a helpful source. However the federal law of limiting the municipal debt prevents the city of Kiel to realize all the projects they would like to apply for because they cannot provide for sufficient self-financing which is a basic condition to apply for funds. EU-policies are mentioned to be more forward-thinking and outpacing than federal law. Besides this, the EU-level was not seen as having a strong impact on the local legislation and implementation.

Participation and bottom-up action

Participation

Institutionalized participation processes are offered by law when the urban land use plan is changed. Kiel citizens are very conscious about their life quality. Plans to expand residential areas or commercial areas into the public green space will be confronted with citizen action. Citizen groups are invited to participate and their concerns are taken seriously in order to prevent conflicts in advance. Examples for this are the transparent online-file in the case of home store Möbel Kraft and the decision-making process for the new power plant. These are processes for which the citizens have fought. This was mentioned by all interviewees in Kiel.

Public administrators showed signs of frustration because offers for public participation were not taken up by the public although they were offered. One interviewee criticized the short-sightedness of citizen protest and their 'NIMBY'-attitude.

The partly privatization of Stadtwerke did not result in making the company's manoeuvres more transparent to the public. The water grid's need for modernization and the management of the water is subject to civil society discussions. A citizen group asks for information regarding grid connection on private property and quality of the water grid.

Bottom-up action

The civil society association "Umweltfreundliche Energieversorgung für die Region Kiel" who was foremost responsible for preventing the repowering of the coal-fired plant is recognized by private and public actors for their expertise. Citizens seem to be well aware of their potential to form a critical mass. Urban planning processes which cross with their interests will provoke protests and the collection of signature.

For the future, the following issues will be important for participation and bottom-up actions:

- Transportation system: motorized individual transport vs. interconnected, varied system of different means of public transportation,
- sustainable land management: need for residential and industrial areas vs. preservation of green space,
- lack of sufficient free time to volunteer in citizen initiatives due to high work-load,
- social segregation of districts: gentrification vs. re-integration of the segregated.

The following groups are relevant for a transition to sustainability:

- Citizen initiatives based on students and active elderly
- Dedicated mayor

35.4 Conclusion

Short summary

Kiel is the capital of the Northernmost federal state in Germany, Schleswig Holstein. It has a strong maritime tradition, both in terms of industry and location. However, its economic performance is lagging behind in West German standards resulting in a high unemployment rate and public depths. Social segregation is posing a challenge in the present and will do so in the future. After the change of the local government in 2008, the city has emphasized a greening profile. Although the renewable energy potential is not very high, Kiel follows a mitigation strategy and wants to reduce its CO_2-emissions by 10% every 5 years. The replacement of an old coal-fired plant by a gas-fired one will help to reach this goal. In terms of mobility, Kiel has developed a strong profile as bike-friendly city despite the impacts of the urban design as car-friendly city. The plan to build a train-tram system to supplement the existing bus transport has still to be realized. In terms of public participation, the municipality of Kiel has learned a lot through two cases: one, the protest against the replacement of the old coal-fired plant with an even bigger one. Two the protest against the choice of location in the Green Belt for constructing the furniture store Möbel Kraft. Both cases have led to an increased exchange between public administration and civil society which might prevent such conflicts in the future. However, the next conflict is already set on the horizon: major energy companies have applied for the exploitation for the petrol and natural gas resources in the surrounding of Kiel. Again, the municipality will face the conflict between their citizens' will and their economic necessities.

Trends and challenges for the future

- Groundwater protection vs. oil and natural gas resources in the surrounding
- Lack of potential renewable energies on the territory
- Construction of gas powered plant
- Construction of tram-train system
- Maintenance of green belt vs. lack of living space
- Aesthetic improvements of the city centre

36. Germany – Potsdam

36.1 General city profile

Background information

Factual data

Potsdam is the capital of the Federal State of Brandenburg which is located in the North-East of Germany. It is in the direct vicinity of Berlin in South-Western direction. It is situated at the banks of river Havel which flows through the city from North-East to South-West. The surrounding landscape is dominated by lakes and forests. Potsdam spreads out over a territory of 187.27 km². Only 20% of this land is sealed surface. More than 50% of the territory is covered by forests and agricultural land. 11% is covered by surface water: over 20 water bodies are found on Potsdam territory, 15 lakes are interconnected by the rivers Potsdam Havel, Nuthe and Wublitz and the Sacrow-Paretzer-Canal and Teltow-canal (Potsdam, 2013).

Potsdam shows a temperate climate with continental tendencies. While the summer temperatures show an average of 17 °C, winters have temperatures around 0 °C on offer. On an average of 166 days, Potsdam has an average precipitation of 590 mm per year. In summers, droughts have started to occur more regularly (Potsdam, 2013).

Potsdam's population has constantly grown in the past 40 years and has now reached almost 160,000 citizens. In 2012, 7,275 foreigners (who's first nationality is not German) were registered in Potsdam, a share of 4.4%. Potsdam has a rather low population density of 850 citizens/km² (Potsdam, 2012; Potsdam, 2013).

For the first time ever, Potsdam was mentioned in 993 AD when King Otto III. gave the town as a present to his aunt, an abbess. It received town privileges in 1345 and became property of the House of Hohenzollern in 1415 which it stayed until WW I. Starting from the 17th century, Potsdam was architecturally redesigned as the residential city of Prussia. Under the duke Frederick William, King Frederick William I. and King Frederick, the Great, Potsdam experienced a boost of population and architecture. The castles and gardens of these times became UNESCO World Heritage Sites. During the battles and bombings of WW II, large areas of the city were destroyed and historical sites were damaged or erased. During the 40 years of division into East and West Germany, Potsdam lost its position as capital to Eastern Berlin. Only after the reunification it became capital of the federal state Brandenburg. The process of reconstructing historical buildings is still going on today (Potsdam, 2013).

Basic government/administrative structure

The City Council which is called "Stadtverordnetenversammlung" is the legislature in Potsdam. It has 56 seats and is elected every 5 years in the local elections of Brandenburg. Since the last elections in 2010, the seats are distributed as follows: the Left (Die Linke, 31%, 17 seats), Social democrats (SPD, 27.1%, 15 seats), Conservatives (CDU, 11.8%, 7 seats), Greens (Bündnis 90/ Die Grünen 8.3%, 5 seats), Die Andere (5%, 3 seats), Liberals (FDP, 4.6%, 3 seats) and few others. The Social Democrats, the Conservatives, the Greens and the Liberals have formed a coalition (Potsdam 2013a).

The public administration is headed by the Lord Mayor, social democrat Jann Jakobs. Since 2002 he has led the 2,177 employees of Potsdam's public administration in his second term. He was directly elected for 6 years in 2010 (Potsdam 2013a). The public administration is divided into five departments. The Lord Mayor leads department 5 for PR, economy and shareholding. Department 1 is on central governance and finances, Department 2 on education, culture and sports, Department 3 on social issues, youth, health and public order and Department 4 on urban development, civil engineering and environment. The five departments cover 18 units, so called Fachbereiche (Potsdam 2013b).

Economic conditions

In comparison to other cities, Potsdam is economically well off. It has a rather low unemployment rate of 7.7%. Its public debt of a bit over 73 million Euros and 460 Euros per capita are one of the lowest for a state capital in Germany. In 2010 Potsdam reached a GDP of 5.318 billion Euros which divide in 52,615 Euros per employee and year. The GDP showed a rather constant growth rate in the past ten years. The number of registered businesses has constantly grown in the past ten years and reached 12,700, with annual growth rates of 2.5% (Potsdam, 2013).

Potsdam has a long tradition of being a service centre with educational and research institutions. In 2012, 94.3% of all the employees were working in the third sector, reaching a new peak, 6.3% in the production sector and only 0.2% in agriculture and the like. That is why the fall of the Iron Curtain did not impact Potsdam the way it did with other cities in East Germany. Research and education is still the key economic sector in the city. Potsdam is home to three public universities and numerous private institutes. A rising number of students are living in Potsdam, in 2013 25,000. Several well-established research institutes have their seats in Potsdam, e.g. the Potsdam Institute for Climate Impact Research and several Max-Planck and Fraunhofer institutes (Potsdam, 2013).

Tourism is an ever-evolving business: the number of tourist and overnight stops in one of the 20 hotels has more than increased fivefold since 1990; Potsdam has almost 440,000 visitors per year and over 1 million overnight stops (Potsdam, 2013).

Special characteristics

Potsdam is often characterized as 'green and blue' due to its landscape dominated by forests and lakes. And indeed green parks, trees and green space are visible wherever you go and so are lakes and rivers crossed by bridges. In the direct neighbourhood to Berlin and connected to the Berlin suburban train (S-Bahn), Potsdam is often referred to as the rich and pretty sister of Berlin. A lot of people commute every day between Berlin and Potsdam in both directions because they live or work in the other city.

The historical and architectural heritage dominates the city centre and the public discussions. More than 1,800 buildings are protected. Since the 1990s, Potsdam has reconstructed and renovated several of the Prussian castles and gardens. Several wealthy citizens have supported these efforts financially, such as Hasso Plattner, SAP-founder and Günther Jauch, television entertainer and moderator. Both have already donated several millions to reconstruct historical buildings following the former original. Plattner is also engaged in the academic landscape of Potsdam by financing the Hasso-Plattner-Institute for software engineering with 200 million Euros.

Local lifestyle

Mobility

The number of cars is rising along with the growing population. In 2012, 66,400 cars were registered in Potsdam, 1000 more than in 2011. However, the number of annual new registrations has stagnated in 2010. Cars are not so popular with younger citizens in Potsdam. The average age of car owners has risen constantly in these last 10 years and the number of driving schools and teachers is decreasing in Potsdam. At the same time, however, public transport (bus, tram and one ferry) was not extended and is losing slightly in the modal split, 19.3%. Biking has constantly become more popular in Potsdam. In 2009, it reached over 20% in the modal split (Potsdam, 2012a). In last year's Fahrradklima-Test of the German Bike Association, Potsdam finished fourth for bike-friendly cities with less than 200,000 citizens which is an improvement of 9 positions since the last test in 2005 (ADFC, 2012).

Key challenges and trends

Economic issues and trends

As described above, Potsdam is rather well off compared to other (East-) German cities. Public debt is decreasing and the municipality has an eye on not contradicting this tendency and tries to keep costs for public expenditures low. This is happening, however, with a risk of short-sightedness. Long-term benefits could be ignored (e.g. for energy efficiency measures) and investment costs are rather discussed than running costs, as happened recently for a public swimming pool. Another example is the lack of finances for the implementation of the bike concept where indirect revenues (health, life quality etc.) are not taken into account. In contrast, tourism and the preservation of cultural heritage are paramount in Potsdam. Both proposals about raising a tourist tax or a hotel bed tax to finance the modernisation of the Sanssouci gardens were rejected by the City council (Rbb, 2013).

A lack of finance transparency and sponsoring in the public administration and public companies led to several scandals in the past. In 2010, Potsdam joined the initiative Transparency International Germany in order to prevent further scandals. Numerous efforts have been made and were rewarded with a positive feedback from the organisation in March 2013 (Pnn, 2013).

Social issues and trends

Potsdam is a growing city. Over 1000 new citizens move to the city each year. This results in a growing demand for housing, rising rents and prices for private property. Publicly owned housing is not increasing in number accordingly to the population growth. Weak-income groups are pushed to the side. At the same time, new concepts for living are developing out of necessity. In the interviews, the typical Potsdam citizen was described as rather conventional with the wish for a single-family house with a small plot of garden. However, more and more projects with alternative living forms are appearing: community-housing, multi-generations houses and multi-family homes. A larger number of inhabitants results in lower running costs per person (Potsdam, 2013).

Community-run projects like Projekthaus Babelsberg, West-Kurve and FreiLand emphasize the value of diverse communities and are also presenting a different understanding of private property. The same is true for the cooperatives which are forming to install solar panels on public roof tops. The idea is to create community-based projects and thus distribute market pressure on many shoulders. These projects are still

rather marginal, but very persistent underdogs. They are arising from the idea of do-it-yourself instead of waiting for the political actors to decide under budget-restrictions.

The district projects have also formed in order to guarantee social integration and to offer a meeting spot for youngsters. Some of these initiatives were created as a counter-measure to neo-Nazism. Brandenburg has a bad reputation in this respect. Especially in the rural hinterland, radical right wing ideology prevails. Also in the cities, this is tangible: crime statistics for Potsdam showed an increase of radical right-wing crime to 88 cases in 2012 and an increase of violent crimes with a political motivation (Polizei Brandenburg, 2013). The neighbourhood initiatives try to offer an open space for teenagers where they are out of the reach of right-wing ideologies.

Environmental issues and trends

The population growth mentioned above results in a growing demand for housing units and triggers urban sprawl. Not only does the city consume green space and unsealed land in the city fringes, but it also condenses built surface inside the urban areas which results in negative impacts on the urban micro-climate. This is becoming an issue along with growing impacts of global climate change. Brandenburg has started to experience intensive periods of droughts during summer and intensive precipitation events throughout the rest of the year.

Potsdam had a comparatively long tradition of Climate Mitigation Reporting. In 2008 the fourth report was presented including a climate action plan. The concept was finally developed by the Potsdam Institute for Climate Impact Research and published in 2010. It includes three concrete mitigation goals and 99 measures as a guiding framework. Potsdam wants to reduce its CO_2-emissions until 2020 by 20% on the basis of its emissions in 2005. Until 2030 the public administration wants to work carbon-neutral and until 2050 they want to reduce CO_2-emissions to 2.5 t/capita. In 2005 Potsdam had overall CO_2-emissions of 866,671 t, 5.91 t per capita, including transport (Potsdam, 2010).

Despite its Climate Mitigation Concept, Potsdam has a rather low rate of renewable energies on its territory so far. Few solar panels were installed so far. There is almost no potential for the use of wind power due to environmental and cultural considerations, i.e. nesting of pair of eagles and UNESCO world heritage with view axes which could be disturbed.

Transportation also poses environmental problems. The growing population is driving a growing number of cars. MIT is intensifying in the city centre. Congestions and breaches of PM-limits have led to a number of measures in recent years in order to reduce individual car traffic in Potsdam´s centre: urban speed limit of 30 km/h, traffic is kept waiting outside the city by traffic light system. Once the cars are allowed to enter, they experience phased traffic lights. Potsdam has also started to experiment with E-mobility by using two electric buses.

36.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

Potsdam is provided with drinking water by EWP, a mainly publicly owned company. 100% of all households are provided with drinking water. In 2012 these were 27,016 connections. The water grid has a total length of 905 km (Potsdam, 2013). The overall consumption in Potsdam was about 22,600 m³/day (SWP, 2013b) or 116 l/person. Water costs 2.25 Euros/m³ which is comparatively high in Germany. The price results from payback rates of a loan for the re-purchase of the water works from EuraWasser in the 1990s. The annual basic fee depends on the maximum use per hour (33.72 Euros for max 2.5 m³/hr; 114.60 Euros for max 6 m³/hr; 225.96 Euros for max 10 m³/hr, 900.36 Euros for max. 15 m³/hr and 2,249.16 Euros for above 30 m³/hr). People tend to complain about the water prices.

The drinking water is sourced from 5 water works and 80 wells in the surrounding of Potsdam.

Key issues

Besides the high prices, water is not a much discussed issue in Potsdam. Neither the administration nor the Public services have mentioned a threat to drinking water in Potsdam. However, the growing impacts of global climate change in terms of intensifying droughts are also impacting Potsdam. As the political interviewee pointed out, Potsdam has stopped using groundwater resources from directly underneath and they are using water from the direct surrounding of the city. In the 1990s the city had pumped up salt water in several wells. This complies with the fact that Brandenburg as a state has negative groundwater renewal rates.

Different measures are discussed in order to decelerate these developments, including the expansion of grey water circuits which are still not very common. Parts of the water grid need to be replaced, however, these major investments will probably have to wait until 2017 when the loan is paid off.

Key actors/partnerships

Despite the presence of all major environmental NGOs in Potsdam, there is no group which works for the protection of drinking water. The water sector is dominated by the public utility and in parts by the public administration as supervisor.

Stadtwerke Potsdam GmbH: public services Potsdam is owned by the City of Potsdam. The company owns five sub-companies, including public swimming pools, street lights, the public vehicle fleet, public transport. It also holds the majority of shares of EWP (energy and water Potsdam, 65%) and STEP (Public waste management, 51%) (SWP, 2013).

EWP: Energie Wasser Potsdam is partly owned by Stadtwerke Potsdam GmbH (65%) and by E.on Edis AG (35%). 7 of 12 members of the supervisory board are members of the City Council. EWP is the only drinking water supplier for Potsdam.

Public administration: besides the health unit which monitors the water quantity only the unit for shares in public companies works on drinking water in the public administration. The task has completely been externalized to EWP.

E.On Edis AG: it is an energy company which has specialized on energy services in the federal states of Brandenburg and Mecklenburg-Vorpommern. The company has 2000 employees. E.On holds 35% of the shares, while Edis AG keeps 65%.

Key actions/measures/initiatives

It is rather surprising that no civil society group is working on the issue of drinking water in Potsdam. "Drinking water is coming out of the tap" was generally told to me when inquiring after potential civil society actors. The recommunalization of the water provision after only 2 years of part-privatization left Potsdam with a pay-back period of 17 years and significantly high water prices.

Negative renewal rates for ground water have not yet led to a major water-saving campaign due to the aged grid.

Energy

Availability, affordability and consumption levels

EWP is the main energy provider in Potsdam. It provides 90% of the electricity demand in Potsdam, about 85,000 customers. 60% of Potsdam´s households are connected to the district heating grid, which is also run by EWP (EWP, 2013a). It has a total length of 159 km and is maintained and fuelled by EWP and its central power plant Potsdam Süd (274 MW thermal and 84 MW electric). This is a CHP-plant with CCGT and runs on natural gas. In 2012, EWP generated 588.3 GWh of district heat of which 78 GWh was lost due to leakage or self-consumption (Potsdam, 2013). 19,180 customers receive 784.4 GWh of natural gas.

The energy sector in Potsdam follows the rules of a liberalized energy market. Customers can usually choose freely which provider will supply them with energy. An exception poses the connection to the district heating system. Households connected to it are obliged to use district heat. For electricity, customers can decide on specific tariffs, e.g. with respect to the energy mix they want to pay for. Prices depend on the supplier and the energy sources and on the geographical location. In Brandenburg, electricity prices are the highest in Germany. In 2012, 5,000 kWh cost 1,376 Euros; for 2013 prices made a leap of 14%, reaching 1,536 Euros/5,000 kWh (Check24 2012). Depending on the tariff, gas costs are between 6.447 to 9.236 Eurocents/kWh gross. An additional basic cost of 2 to 10 Euros/month is added. The district heating costs depend on the nominal capacity of the meter and range from 66.64 Euros up to 279.65 Euros plus basic costs and running costs of 104 Euros (SWP, 2013a).

Potsdam has only few renewable energy sources in use. There are no plots suitable for wind turbines out of legal consideration. The electric capacity from solar power has increased exponentially from 2007 until 2010. In the summer of 2010, 1,304 kWp of solar panels were installed. There is still a lot of unused potential which can be found in a public cadastre on a municipal website. Another option would be biomass. There are no numbers available for the potential.

Key issues

Potsdam has only low potential for the generation of renewable energies and finances are uncertain at the moment. EWP has already invested in wind turbines and biomass digesters outside the territory. The recent cut-down on feed-in tariffs was a blow to the RES-industry. The current uncertainty poses problems

to the investors in RES. Companies are currently only installing renewable energies for self-consumption. Another trend is the citizens´ cooperatives. In Potsdam these are the “Solarverein” and the “Neue Energiegenossenschaft”. However, they are strongly dependent on the feed-in tariffs. There is still no regulation which enables municipalities to benefit from RES on their territory. One example was told about a Chinese investor with his seat in Cologne who installed a Chinese solar panel field with Hungarian workers in Potsdam.

The district heating system is still fuelled with 100 °C hot water. This does pose a problem for the feed in of solar-heated water. Housing appliances and heating system should be exchanged for low-temperature systems in order to make the most efficient use of primary energy.

The biggest share of public housing in Potsdam was renovated in the 1990s. Back then, however, this was only done under aesthetic considerations. Today this poses problems to anyone who would like to suggest another round of energetic refurbishment. The major reason is the pay-back periods of the loans from the aesthetic refurbishment.

Key actors/partnerships

Stadtwerke GmbH: see above. VIP, the public transport company has installed a major solar panel on its roofs

EWP GmbH: Energie Wasser Potsdam, see above

ProPotsdam: ProPotsdam is a holding with 11 sub-companies and is owned by the City of Potsdam. It owns 16,443 housing units and has 250 employees. 59% of all housing units have been modernized. ProPotsdam plans to have all housing units refurbished energetically until 2025. ProPotsdam was the key actor for the best-practice project “Gartenstadt Drewitz” where they refurbished a whole neighbourhood in cooperation with the citizens, the City of Potsdam and EWP.

Public administration: coordination office for climate issue is the key unit in the public administration for energy issues. The coordinator for climate issues, Mr Linke and his assistant, Mgrs. Lippert, are very well connected with all major actors in Potsdam’s energy sector. They were the coordinators for the Climate Action Plan in 2008 and are very dedicated to its implementation.

Energieforum: this is a group of approx. 50 citizens with a special interest in an environmentally friendly energy system in Potsdam. Most of them have a professional background in the field. They work as a RES-lobby in Potsdam. In frequent meetings they develop position-papers and letters to the local decision-makers.

Citizens´ cooperatives: there are currently three existing citizens´ cooperatives in Potsdam: Neue Energiegenossenschaft Potsdam and Solarverein Potsdam. Both have already installed the first solar panels on public buildings. Another citizens´ cooperative has been formed which focuses on the energy grid.

Potsdam institute for climate impact research: PIK is a high-profile research institute which was founded in 1992 and has 340 employees today. It participates in fundamental research and contributes to international research like the IPCC. In 2010, it developed the Climate Action Plan Potsdam in cooperation with various other institutes.

Key actions/measures/initiatives

Probably, the most important event in the energy sector of the last decades was the replacement of the old lignite power plant by a CCGT-plant with CHP. In 1993, the city council decided to build a new power plant based on natural gas instead of lignite. Prior to this decision, the city experienced a lot of pressure, both from the lignite miners in Brandenburg as well as from the state government against this decision. Potsdam was persistent. The air quality improved quickly and the CO_2-emission declined after the new power plant had started to work. Potsdam was one of the front runners in this respect in comparison to the rest of Germany where numerous coal and lignite power plants were built and are still running.

The Climate Action Plan for Potsdam was another important mile stone in the city´s energy chronicles. Until 2020, Potsdam will reduce its CO2-emissions by 20% in comparison to 2005. They also defined the goal to reduce the per capita emissions to 2.5 t/year until 2050 and to reach a carbon-neutral public administration by 2030.

A Green proposal to buy back the 35% share of EWP which are held by E.On Ebis was the trigger for another important development. EWP now offers a customer funds in order to finance RES-projects with an interest rate of 2.7% and a long term bonus up to 3.2%.

Green spaces

Availability, affordability and consumption levels

Potsdam is a green city. More than 60% of the territory is covered by green space. There is an abundance of parks (790 ha, increase in the last 3 years) and forests (4,718 ha, increase in the last 3 years) in every neighbourhood or close by. Access to green space is so far free of charge. However, there is a tendency for urban sprawl in Potsdam. Although the share of sealed surfaces (25%) is rather small in comparison to other cities, Potsdam had a net sealing rate of +21% between 1992 and 2010. A victim of the city growth is agricultural land. More and more farmers in the direct vicinity of Potsdam are giving up their farm land due to the high demand for construction land and beneficial offers to sell their land. Farm land has decreased by 100 ha in 4 years to 5,691 ha (Potsdam, 2013). Not only the citizens of Potsdam, but especially the tourists are taking advantage of the parks in Potsdam. 2.8 million tourists visit Potsdam every year, most of them with the goal to see the UNESCO World heritage.

Key issues

Most parks and gardens in Potsdam are historical monuments and are organized by the Public Foundation for Prussian Castles and Gardens (“The Foundation”). Their main focus is on the preservation of the historical value of the gardens and less on the value for life quality in Potsdam. They have the so called householder’s right and in the past decided rather arbitrarily about the rules in the park. Lawns are still not allowed to be stepped on, dogs have to be kept on the lead and bikers were not even allowed to push their bike through the park. The preservation of these historical values also comes at a high financial cost.

The gardens around the castle Sanssouci need to be refurnished; at least this is what the foundation claims. That is why the foundation wanted to introduce an entrance fee for the park. In order to keep the park a recreational area for Potsdam citizens in the city centre, the municipality Potsdam agreed to support the gardens with 1 million Euros/yr over the range of 5 years. The money should be raised

through either a tourist tax or a tax on hotel beds. A big scandal happened when the City Council refused its consent with either (Pnn, 2013a).

The high sealing rate of surfaces is an important issue in Potsdam, especially for agricultural land. Although the people do not suffer from a shortage of green space, the reduction of open surface has negative impacts for groundwater renewal rates and the urban micro-climate.

Agricultural land does also suffer from degradation due to corn cultivation for biofuels. Due to the subsidies for biofuels, a lot of farmers have started to plant corn in monoculture and without crop-rotation. This has a negative effect on soils.

Another issue for agricultural land is the increasing buying of land by big (international) investment companies. Without too much public attention, an international holding has bought major parts of the agricultural land from the City of Potsdam. This is a general trend in Eastern Germany: large scale farming and non-agricultural companies are buying land and thus raising the prices, therefore making it difficult for small-scale farmers to compete. This is even accelerated by the EU-subsidies because until recently they explicitly preferred huge-scale farming (FR, 2013).

The privatization of riverside paths and paths on lake shores has led to ongoing conflicts between citizens` initiatives. The situation aroused from the mistake of urban planning: riverside paths are now on private property. There is a huge conflict between the property owners and some other citizens` groups going on. The administration tries to redress its mistakes.

A last issue which did not enter public attention so much is the specific meaning of fens for climate mitigation. A Potsdam research institute which was involved in developing the Climate Action Plan found that re-moisturizing of drained fens could significantly contribute to climate protection. Healthy fens are high-potential sinks for GHGs.

Key actors/partnerships

Foundation Prussian castles and gardens: it is a publicly funded foundation with a focus on preservation of the historical Prussian heritage in the federal states of Berlin and Brandenburg. Founded in 1994, the foundation takes care of 450 historical buildings and 800 ha historical gardens. The foundation is financed by Berlin (21.35%), state of Brandenburg (36.6%) and the federal government (42.05%). It is in a constant conflict with Potsdam citizens and the public administration due to its decision-making with respect to the rules for the parks.

Public administration: the urban planning unit and the unit for green space are the units in the public administration which are most intensively coping with urban green space.

Farmers: in 2012, there were only 133 employees left in the primary sector with an annual decrease of over 10% (Potsdam, 2013). The remaining farm land is understood as potential conversion areas for residential areas.

Citizens´ initiative Babelsberger Park: this citizens' initiative was founded in 2007 when the Foundation threatened to actually enforce their house rules which include that people are not allowed to walk or sit on the lawns and that biking and using sledges in winter is forbidden.

Community gardens: there are several community projects in Potsdam which run community gardens, i.e. Projekthaus Babelsberg, WestKurve and intercultural garden Schlaatz and FreiGarten at FreiLand. They focus on community-building in neighbourhoods, social integration of immigrants and a more sustainable use of resources with do-it-yourself workshops.

Key actions/measures/initiatives

In 2003, Potsdam implemented a tree protection regulation. This regulation emphasizes that everyone who wants to cut down a tree with trunk circumference of 30 cm or above has to apply for an allowance from the public administration.

In 2007, the citizens´ initiative Babelsberger Park collected 10,000 signatures, initiated a bike protest and a summer festival in order to protest against the Foundation's park rules. The foundation has always emphasized its intention to protect the cultural heritage. The rules prevail but are not enforced as rigorously as before.

The Green volume is assessed on a regular basis. This assessment was one of the measures in the Climate Action Plan. It is central for the urban adaptation capacities to global climate change (Potsdam, 2010).

36.3 Governance and citizens' participation

Multilevel governance

The interviewees claimed a local lack of implementation and knowledge of EU-law, taking the example of the Energy Efficiency Regulation which has to be emphasized in local construction committees. The main reason for this was found in the situation that City Councillors are volunteers and are not paid for what they are doing. This lack of time was also made responsible for the fact that the local level does not make use of its planning independence as it actually could, for instance to outpace federal law for energy efficient buildings. A general problem was identified in the short-term thinking in politics on all levels.

Federal State of Brandenburg

The state of Brandenburg was usually mentioned in the context of funding for construction projects. One interviewee asked for sustainability criteria which should be conditional for this kind of financial support.

The state legislation interfered with local sustainability issues in the context of the Building Code which needs to be modernized and the waste treatment legislation. Potsdam currently transports its waste to a land-fill on the other side of Brandenburg which relates to the legislation of the Federal State of Brandenburg.

National

The federal level was usually seen as guiding the local energy sector. Especially the Energy Saving Ordinance was mentioned as a defining guideline for local action of thermal refurbishment in housing. The lack of a coherent strategy for the energy transition during the last legislature was mentioned several times as a hindrance for the expansion of renewable energy sources on the local level. A lack of political courage was mentioned as a reason why there is still no speed limit of 130 km/h on German highways despite the high potential for GHG-mitigation.

The impact of the German car lobby on the federal government and the wish to diminish this influence was voiced several times. Especially, the recent incident of a major donation of 690,000 Euros by BMW to the CDU was mentioned as a reason for a lack in political will on the federal level.

EU

The European legislation was often understood to be out of reach and badly designed. Common examples were the restrictions of CO_2-emissions for cars and the agriculture subsidies. One interviewee pledged strongly for abolishing the agricultural subsidies. A coherent energy strategy for the European level was sometimes mentioned as missing.

Participation and bottom-up action

Participation

Most of the interviewees described the majority of Potsdam's citizens to be rather uninterested in issues of the common good. The NIMBY-concept was often experienced when citizens see their comfort endangered e.g. by the construction of an animal shelter, entrance fees for the parks, biking in the parks and homes for asylum seekers. Even when offered participation, certain issues do not attract the citizens of Potsdam. One example was the Climate Action Plan. Once it was developed in 2010, the coordination office for climate issues offered 12 citizen consultation events in different districts. The participation rate was quite low; the organizers were left disillusioned and frustrated. This was an example of a top-down approach where the grassroots movement is obviously missing.

Another trend can be associated with the initiatives which are forming in order to change the appearance of Potsdam. Some are in favour of the preservation and reconstruction of the historical monuments (e.g. Mitte Schön!); others would rather increase the life quality in common areas or in their neighbourhood (e.g. Initiative Babelsberger Park, Projekthaus Babelsberg, Westkurve, and Freiland).

Besides the legally obligatory citizens´ consultation in urban planning processes, Potsdam introduced a so called participatory budgeting in 2006: citizens are asked once a year to suggest measures (via email or post) which should be realized by the public administration. In a second step they can vote on the different measures and the most popular will be discussed in the City Council. One positive example was the creation of the cultural centre FreiLand which was looking for a plot and found it thanks to the participatory budget on EWP property. In 2013, more than 6,000 citizens participated in the online discussion (Potsdam, 2013).

Bottom-up action

Citizens´ initiatives are accepted and well-known in Potsdam. Energieforum is understood as a group of energy experts who are mainly discussing issues but lack a pro-active and constructive approach. The initiative Babelsberger Park, however, was seen as a real force due to their strong citizen support (e.g. 10,000 signatures).

For the future, the following issues will be important for participation resp. Bottom-up actions:

- Design of energy efficient districts with a high life quality in cooperation with citizens
- Broad civil alliance against right-wing extremism
- Reduction of running costs for housing due to energy efficiency measures
- Willingness to invest in energy efficiency measures

The following groups are relevant for a transition to sustainability:

- Active citizens
- Public companies

36.4 Conclusion

Short summary

Potsdam is the capital of the Federal State of Brandenburg and in the direct vicinity of Berlin. It is often described as “green and blue” based on the fact that it is located in a landscape dominated by forests and lakes. Its economy is mainly dominated by the research sector. The public household has been rehabilitated and public debt has dropped to a low level. Investments in sustainability, however, need to have a short pay-back period in order to find support. Former non-transparent public funding has been resolved and culminated in the so-called Participatory Budget, an annual consultation process where citizens can voice their ideas for public investments. Although green space is abundant the city growth of 1000 new citizen per year has resulted in consumption of agricultural land. Potentials for renewable energies on the territory are not yet activated. The fact that Potsdam hosts a UNESCO World heritage poses a problem to both, energy efficiency measures and RES inside the city. Although the ground water renewal rates are negative, drinking water is not perceived as an important issue to worry about.

Trends and challenges for the future

- rise in population followed by increase in MIT and congestions and rising prices for renting and private property, maybe social segregation
- expansion of bike lanes and public transport, maybe closing the city centre for cars
- Monopolies in agriculture due to land-grabbing
- Biodiversity-loss due to monocultures in agriculture
- Adaptation to global climate change

37. Germany – Saarbrücken

37.1 General city profile

Background information

Factual data

Saarbrücken is the capital of Germany´s smallest federal state, the Saarland. It is located in the South-Western part of Germany on the river Saar, surrounded by forests. With only five kilometres beeline to France, it is part of the Euroregion Saar-Lor-Lux, including parts of France and Germany as well as the whole of Luxembourg.

Paris can be reached by train within two hours, Frankfurt am Main within 2 hours and a half.

Compared to the rest of Germany, Saarbrücken features a relatively moderate climate.

Since 1970 the population of Saarbrücken decreased from 213,622 to 179,052 persons in 2013 (Landeshauptstadt Saarbrücken, Amt für Entwicklungsplanung, Statistik und Wahlen 2013a, b). Only since two years there has been a slight population growth again, mainly due to rising immigration from Eastern Europe.

As almost all over Germany, the population is comparably old and ageing.

Thanks to past and on-going migration, Saarbrucken's population is culturally diverse. Altogether, there are people from 152 nationalities. The share of migrants is currently 25 per cent, with Italians being the first group, followed by the Turkish and the French. Foreigners are represented in the "Integrationsbeirat" (advisory committee of integration). This is an advisory body to the City Council with the right of proposal but no voting right. It is the only official representation for third-country nationals from outside the EU that normally do not have a German passport.

Basic government/administrative structure

The "Stadtrat" *(City Council)* determines the guidelines of local policy. There has been a coalition between the SPD *(Social Democratic Party)*, "Die Linke" *(The Left)* and the Greens since 2009 that holds an absolute majority. Saarbrücken belongs to the "Regionalverband Saarbrücken" *(regional authority)*, an association of ten municipalities in the greater region of Saarbrücken. As federal state capital, it is also seat of the "Landtag" *(state parliament)*.

Economic conditions

30 years ago, Saarbrücken was a city based mainly on mining and heavy industry (black coal, steel and their neighbouring industries). Most employees were working for one of the two big employers in these sectors. Since then the city has undertaken big efforts to cope with the decline of these industries and the resulting immense economic structural change. Nowadays, three quarters of the workforce is employed in the service sector (Oberbürgermeisterin der Landeshauptstadt Saarbrücken 2009). Nevertheless, the industry sector is quite strong, still based on steel but supplemented by metal construction, machine

engineering and the supply industry for vehicle construction. Via this diversification plus the rise of the service sector, new jobs could be created.

Yet, the unemployment rate with 12.1% in 2012 (Landeshauptstadt Saarbrücken, Amt für Entwicklungsplanung, Statistik und Wahlen 2013c) is still high compared to the national average of 6.5%, showing that the city has not completely recovered from the job losses resulting from the decline of the traditional industries.

Due to its position in the Euroregion, there are 20,000 daily work commuters from Lorraine to the Saarland, whereas only 8000 go from the Saarland to Luxembourg. The overall amount of German-French commuters is negligible, even if for single branches (e.g. care professions) it is quite important (EURES-Transfrontalier SaarLorLux Rheinland-Pfalz 2013).

Saarbrücken hosts several universities, offering also specific French-German courses of studies, as well as the “Deutsch-Französische Hochschule”, a network of French and German universities fostering the relations and exchange between French and German Universities.

The city has turned into an innovation technology site attracting businesses in the field of computer science, information technology, artificial intelligence, new media, medicine- and process technique. This is also due to a close cooperation between the universities and the private sector that expresses itself in the foundation of a science park on the campus.

Special characteristics

The motorway, carrying inter alia the French-German transit, divides the city centre into two parts. It decreases living quality in the inner city by constituting a constant noise exposure and by causing air pollution problems, specifically in summer.

Plans for tunnelling the motorway are very expensive and have shortly been abandoned, due to lacking financial means.

The tunnelling was part of the project “Stadtmitte am Fluß” *(city centre on the river)*. The aim of this large scale project is to create a new green centre in the city, to improve the quality of life in the inner city, to develop living and working spaces and to connect the city districts that are still separated by the city motorway. It is co-financed by the City, the federal state, the federal government and the European Union. Total costs amount to at least 370 million Euro, later estimations were higher.

The tunnelling of the motorway would have been the most expensive part of the project. A restructuring of the “Berliner Promenade”, a promenade along the Saar in the centre has been finished, and the project now continues in a downgraded size.

Local lifestyle

Mobility

Compared to other German cities of a comparable size, there are few cycle tracks, and cycling is not a very common means of transportation.

Local public transport (bus, tramway and urban railway) allows for relatively quick transport within the city boundaries and to the surrounding municipalities which is important for the high number of commuters living in smaller municipalities outside of Saarbrücken and travelling to work into the city.

The Saarland as area state has nation-wide the highest degree of mobility, thus the highest number of cars per one thousand inhabitants. The current regional plan (residential estate development plan) foresees an axes-centre model, meaning that new residential areas in municipalities are designated only close to the railway, connecting the municipalities to Saarbrücken, so that dependency on the car is reduced.

In a survey of 2009, in which 26 German cities participated, Saarbrücken ranged at the forth last place as far as citizens satisfaction with the local public transport is concerned. A bit more than 20% of the citizens were very satisfied with it and approx. 50% were rather satisfied (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2010).

Key challenges and trends

Economic issues and trends

Considering the fact that France is Germany´s trading partner number one, Saarbrücken has promoted trans-frontier cooperation (e.g. strengthen the site potential for French companies that want to enter the German market). The French chamber of industry and commerce has its German´s representation in Saarbrücken.

In the trans-frontier trade and service park “Eurozone Saarbrücken-Forbach” , French and German partners have united to promote the business location Saarland / Lorraine in the European single market. It provides space for international service providers, such as enterprises in the field of new communication technologies, consultancy, language service providers, education and continuing education institutions.

Social issues and trends

Public and private poverty is comparably high in Saarbrücken. The city´s fiscal situation is very tight. At the beginning of 2013 per capita debts ranged at 1,591 Euro (due to investment loans of 281,537,000 Euro). Yet this figure must be complemented with an extremely high ways and means advance of ca. 825,000 Euro (4661 Euro per capita) to picture the overall debt rate of the city. The financial dilemma of the city could be solved by a federal law on a reallocation of the personal income tax, which is currently still linked to the residential location. If it was additionally linked to the working location, the municipalities in the fringe areas would be less interested in designating residential areas. People would move back to the inner city again, reducing vacancy rates there and generating more municipal taxes which could be used for the common good.

In a survey comparing 26 German cities, Saarbrücken ranges third as far as the population´s estimation of the relevance of poverty is concerned: to the statement “Poverty is a problem in Saarbrücken” a bit less than 30% fully agree and a bit more than 40% rather agree (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2010).

Following the national trend, there is a widening gap between the rich and the poor.

Finding affordable housing space is not such a pressing problem as in other German cities. In a survey amongst 26 German cities, Saarbrücken ranges sixth when it comes to the question “It is easy to find a good flat for a reasonable price”. More than ten% agree very much to this statement, and approx. 50% rather agreed with it (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2010). Yet, due to a relatively high and rising share of low-income households combined with increasing energy prices which are developing into a second rent, housing and energy costs are a factor to be considered. This is also due to the fact that the costs of the German “Energiewende” (energy transition) are mainly allocated to the citizens, not to industry.

Saarbrücken has a long tradition in community work in the districts (more than 30 years). The “Stadtteilbüro Alt-Saarbrücken” (community work office), for example, is supported by the „Paritätische Gesellschaft für Gemeinwesenarbeit mbH“ and subsidised amongst others by the city of Saarbrücken. Its working group “Sauberes Altsaarbrücken” that initiated more than ten years ago a “Baumscheiben-Patenprogramm”, in which residents plant the soil around the trees in front of their houses and for some time there has been a green swap meet where for example seeds and garden tools can be swapped.

EU citizens can freely choose their residency all over the EU. After the accession of Bulgaria and Romania to the EU in 2007, poverty migration from these two countries has started. A share of the city´s budget has been used for providing housing and social benefits to EU citizens that come to live in the city, yet do not have a job (either due to the already high local unemployment rate or due to the fact that they are Bulgarian or Romanian citizens who will only be allowed to work on the German labour market from 2014 onwards, due to national regulations). Efforts are necessary for their integration such as providing education opportunities and creating new job perspectives.

There has been no specific major conflict to date yet between different migrant groups or between migrant groups and the local population.

Environmental issues and trends

Due to the structural change, environmental conditions have improved within the last 30 years. Yet, the city´s motorway still limits living quality in the centre.

On-going climate change will lead to hotter dryer summers and warmer, more humid winters. Heat island effects could then provoke health problems in summer, and more heavy rain events and floods must be expected (Landeshauptstadt Saarbrücken 2012). Thus, climate adaptation measures (e.g. providing free spaces where cold air aisles can form) and flood risk management will be necessary to keep the inner city liveable.

The “Haus der Umwelt” *(the house of the environment)* hosts associations and initiatives that are active in the field of the environment, development policy and human rights. It belongs to the BUND (Friends of the Earth Germany) which bought it from the city.

37.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The water works "Wasserwerke Bliestal", a subsidiary of the public utility company "Saarbrücker Stadtwerke" provides water in very good quality for all households in Saarbrücken. Drinking water exclusively comes from the nearby biosphere reserve "Bliesthal" where the use of fertilizers is forbidden. Surface waters are not used for drinking water supply.

The population never had to suffer shortage or severe pollution of drinking water. The demand can be easily satisfied in terms of quality and quantity. Water prices are affordable and losses in the network are marginal.

Consumption levels have decreased due to the decrease of the industrial sector, on-going population loss and efficient water saving measures.

Key issues

Today, water is not a hot topic in Saarbrücken. Up to date, no conflicts have been experienced in the city regarding water, and there are no civil society actors especially active in the field of water issues.

The sinking consumption levels coupled with a tense budgetary situation are a challenge for the drinking water system until 2030. It will be a challenge to guarantee net maintenance to prevent leaking and the intrusion of pollutants from agriculture and industry without rising current water prices. Thus, it will not be difficult to deliver enough drinking water, yet it will be difficult to deliver good drinking water at a stable price.
Transnational cooperation in environmental issues needs to be improved as a recent case of a French chemical company close to the border affecting drinking water quality shows.

Key actors/partnerships

There is no local self-organized or cooperative management of the resource water. The most important actor in relation to water issues in the city is the city´s public utility company as local water provider. It takes a leading role since knowledge is bundled there and rises in the water price are decided by the executive directors of the public utility company and the water works.

Wasserwerke Bliestal

The subsidiary of the Saarbrücker Stadtwerke provides drinking water. It is in 100% ownership of the city of Saarbrücken and neighbouring local municipalities. Thus, provision is public, guaranteed by the local government, even if the public utility company functions like a private enterprise.

Key actions/measures/initiatives

Since water prices are moderate and the quality of drinking water is very good, there are no civil society actions that focus specifically on water.

Energy

Availability, affordability and consumption levels

The share of locally produced renewable energy for electricity production in the total local energy mix is still below five per cent.

The preconditions for solar energy use are good. There are solar panels on private houses in the city, and the city provides communal roofs for the use of solar panels for third parties at a low price.

The current land development plan, which is still valid until the beginning of 2014, does not allow for the development of wind energy. The new one is currently negotiated by the regional authority and six concentration zones for wind power stations will be designated.

Key issues

Saarbrücken is one of the first cities nation-wide, having introduced already years ago long-distance heating, producing heat 100% locally from industrial waste coupled with block heating works. Methane gas (form the former mining sites, exiting from time to time in the city boundaries) is sucked off, pumped down, extracted and then processed into heat in a block heating works.

Key actors/partnerships

There is one public provider (Energie Saar Lor Lux) as well as private regional, national and international providers, due to the EU-wide liberalisation of the energy market. Energy cooperatives within the city boundaries do not exist yet, but can be found nearby in other parts of the Saarland.

Energie Saar Lor Lux

The regional energy company was founded it 2001 and produces electricity and long-distance heating. It belongs to the GDF Suez group (49 per cent) and to the "Saarbrücker Versorgungs- und Verkehrsgesellschaft" (of which the "Stadtwerke Saarbrücken AG" are part) (51 per cent). It bought the only generating power station which is conventionally run on coal (meanwhile it was switched to gas, but rising gas prices let the operator switch to coal again). Renewable electricity is supplied to customers who ask for it, yet it is mainly bought and not produced locally.

Gesellschaft für Innovation und Unternehmensförderung (GIU) mbH

The company for innovation and business promotion is an example for an innovative actor in the field of energy from the private sector. It is a pioneer in technological development in e-mobility. For example, it has installed solar electricity charging stations on different places in the city. It also develops real estate, for example in the rather poor district Burbach.

Key actions/measures/initiatives

Three years ago the public utility company built four decentralised block heating works running on methane, for which so-called bearer bonds for citizens were released. It also shares a wind farm enterprise and works with subcontractors that are active in the photovoltaic sector. With the designation of new locations for wind power stations, the city could pursue the same strategy. Thus, citizens could take

cooperative shares in wind power stations that are built by the public utility company, and shares could be issued in cooperation with the local savings bank.

Green spaces

Availability, affordability and consumption levels

Local government reorganization in 1972 increased the city´s boundaries by 217% and consequently, considering the whole city area, Saarbrücken is a green city with more than 50% of green spaces, since the outer districts are rurally coined. The city is surrounded by the city´s forest serving as nearby recreational area, covering 47% of the city area.

Yet, if taking solely the inner city, in a nation-wide comparison it has the lowest rate of green spaces, which negatively influences on the micro climate. Construction is very dense. There is only one park which is not frequented so much since it is not considered to be a safe place. The “Berliner Promenade”, the promenade along the Saar, recently finished as part of the project “Stadtmitte am Fluß”, has not increased the amount of green spaces either since almost exclusively concrete was used in its construction.

Most of the green spaces are owned by the city and are freely accessible for the citizens free of charge.

The French-German garden, lying at the outskirts of the city, has become an international tourist attraction.

The existing green spaces are often overcrowded. This is reflected in a survey in which the city ranges second last in citizens´ satisfaction with green spaces such as public parks and gardens. Only circa 20% are very satisfied and a bit more than 40% are rather satisfied with the green spaces in the city (Stadt Freiburg im Breisgau, Amt für Bürgerservice und Informationsverarbeitung 2010).

Key issues

The rate of detached houses within the city boundaries is comparably high, meaning that there is also a high amount of private gardens except in the inner city.

Conflicts of interest can be seen from time to time in relation to the privatization of public green spaces which have taken place in recent years for the construction of new commercial and other private developments. A current example are the city´s plans to start construction on the “Franzenbrunnen”. This is the last coherent nearby recreational area in the district “Alt-Saarbrücken”, the district suffering most from the city motorway. The city´s plans have been countered by the “Bürgerinitiative Franzensbrunnen e.V.”.

In order to avoid urban sprawl, inner city development has been given the priority over outer city development, though the designation of housing estates in the urban fringe areas could still be a lot more restrictive. Yet, due to the city´s desolate budget situation, instead of primarily reducing the vacancy rate within city boundaries, new spaces for housing and commerce are set out on green spaces.

From an environmental point of view, for each newly sealed space, compensation spaces would have to be created, meaning somewhere else a space of the same size would have to be unsealed and vacated for green public spaces.

The quality of green spaces has also deteriorated since, due to the globalization of the real estate economy starting circa ten years ago, there are less and less municipal and more and more non local private real estate owners. Those fund-owners are less interested in the maintenance of the green spaces surrounding their property.

Key actors/partnerships

The leading role in the field of green spaces still lies with the city administration, although a local urban gardening initiative emerged in 2012 which changed the function of a public green space and another one belonging to the church.

Department of green spaces

Via this department citizens have the possibility to participate in a "Patenprogramm Baumscheiben", meaning to plant the soil around trees in their district for which the department of green spaces delivers the soil. The head of the department has already practiced participatory measures ten years ago (e.g. the planning of a playground together with children). The city has tolerated the activities of the urban gardening group in the "Stauden" and is interested in a co-operation.

"Saarbrücken – Die essbare Stadt"

In spring 2013 a group started urban gardening on a small patch in the "Stauden", next to the river Saar, without asking the permission of the city. A fruit and vegetable garden was started. They then expanded to a property of the Catholic Church, also in the inner city, where they got the priest´s permission to plant the garden. In the winter time the group meets once a month to listen to lectures. There are currently 15 to 20 people involved on a regular weekly basis that meet (apart from the winter time) to work in the garden. In October 2013 the first harvest festival was celebrated. The group is about to organize itself in an association. So far there are no contacts to local authorities. Local media repeatedly reported about the initiative.

Key actions/measures/initiatives

The association "Menschen für Malstadt" promotes citizens´ initiatives in the district Malstadt in cooperation with the district´s community work office. One project done in cooperation with the department of green spaces was a commonly organised measure to improve the existing open green spaces in the district without changing their function.

37.3 Governance and citizens' participation

Multilevel governance

German local authorities have a comparably high degree of local autonomy due to the "kommunales Selbstverwaltungsrecht" (municipal right to self-administration).

Province (Saarland)

Having the municipal and federal state institutions in the same city allows for fast contacts between the two governmental levels.

Applications for EU or national funding programmes coming from the city administration as funding receiver must also be processed by the federal state authorities, which (according to actor 2) slows down the funding procedure.

National

Two recent policy measures on the national level have impacted heavily on the state of city´s budgets:

a) The "Schuldenbremse" (debt brake) is a constitutional national rule in force since 2011 with the aim of reducing the public debt by making binding requirements to the federal government and the federal states to reduce the budget deficit.

b) Due to the national law to guarantee every child from the age of one a place in the kindergarten from the beginning of August 2013 onwards, a big part of municipal resources have been used for the construction of kindergartens and for the employment of new staff.

National / EU

As mentioned above, poverty migration from East-EU member states constitutes a challenge for municipalities. Solutions can only be found across all governmental levels from local to EU, also including the country of origins, and financial means must be made available to support the cities in coping with this challenge.

Participation and bottom-up action

Participation

The agenda 21 process which has started after the Rio-conference in 1992 has meanwhile fallen asleep.

Due to the German "Energiewende" *(energy transition)* which can be considered as a decentralised revolution of energy supply, citizens have the chance to participate in energy production. In Saarbrücken bearer bonds in block heating works were released, yet other forms of participation in the production of local renewable energy do not exist yet within the city boundaries.

The "Stadtteilentwicklungskonzept" *(district´s development concept)* for the district "Altsaarbrücken" emerged from a participatory procedure which included city district conferences and workshops.

Bottom-up action

The following two civil society initiatives cannot be classified into a specific sector but contribute to a sustainable development of the city of Saarbrücken, specifically with regard to continuing demographic change.

Netzwerk Gute Nachbarschaft Am Homburg (NGN) The network of good neighbourhood has been created by citizens for citizens in the district Am Homburg in cooperation with the "Seniorenbeirat" *(seniors' advisory board)* of the city of Saarbrücken. It is financially supported by the city. Its aims are to wake up the neighbour spirit, to get to know each other via joint activities and to help if a neighbour needs it, this also with the aim of avoiding unwanted loneliness. Sport and cultural events are jointly planned. The initiative started at the beginning of 2012. All elderly in the district were informed in written form about the project and all interested were invited to a first meeting. Meanwhile, there are approx. 50 citizens involved. There is no official association. The vision is that if the network has functioned with the elderly, it can be tried out cross-generationally. After almost two years the initiative can be considered to be successful. More and more people participate, there are plans for the future. The network was the second one in Saarbrücken of its kind and has meanwhile been followed by six others.

EUROP'age Saar-Lor-Lux e.V. The association brings together elderly people in the European Greater Region Saar-Lor-Lux. A particular focus is on the inter-generational understanding and the promotion of language skills. Excursions to France and Luxembourg are organized. The association has been founded more than 25 years ago. It organizes lectures and panel discussions about socio-political topics, cross-border working groups to controversial topics, excursions with cultural or historical focus, bilingual discussion groups (in cooperation with the adult education centre).

Local policy or programme

Zentrum für Bildung und Beruf (ZBB) gGmbH

The centre for education and profession is an enterprise of the city of Saarbrücken. 200 permanent employees work in several subunits with different foci:

- The „Kompetenzagentur Saarbrücken" supports disadvantaged youths to enter the labour market after school.
- The "MOBIL Saarbrücken" is a socio-pedagogical concept offering personalized individual case help for youths and young adults below 25 that have finished school but do not have accomplished an apprenticeship.
- The "Werkstatt Blieskastel" combines employment and qualification for unemployed youth that are difficult to place in the labour market.
- The "Vermittlungszentrum Perspektive 50Plus" project´s aim is to integrate the elderly into the labour market.
- "MIGRA" is a qualification, employment and consulting project for migrants. These measures reach 5000 persons per year.

37.4 Conclusion

Short summary

The former main industrial site for mining and heavy industry, very closely located to the French region Lorraine, has undergone an important structural change within the last 30 years, improving environmental conditions but causing also high unemployment rates. It has a quite diverse population with a quarter of them being migrants.

As far as the management of water and energy is concerned, institutional diversity is still very low since there is no locally self-organized or cooperative management of these resources within city boundaries. In the case of green spaces, a few self-organized initiatives can be singled out, yet whether they allow for a better internalization of related social and ecological externalities in order to achieve higher levels of equity, sustainability, and efficiency remains to be seen.

Renewable energy production has started but is still to be developed. No tensions or conflicts have emerged so far.

The city´s high autonomy in the management of the resources water and green spaces and its relative autonomy in the field of energy is restricted by its difficult budget situation. Since so far there are no self-organized groups and organizations cooperatively managing resources in the field of water and energy, it cannot be judged whether the city prevents them to develop or collaborates and fosters them. Emerging initiatives in the field of green spaces were not prevented and in some cases even fostered.

Trends and challenges for the future

- Stagnating respectively decreasing public budgets
- Further positioning and promotion as European city in the heart of Europe fostering a regional trans-frontier European identity (strengthening the site potential for French companies, providing more French learning options from kindergarten to lifelong learning)
- Finding a solution to reduce noise exposure and air pollution in the city centre, provoked by the motorway
- Development of the city´s cycle tracks network
- Developing the pioneer position in the field of long-distance heating and block heating works
- Energy refurbishment (by contracting) with social compatibility, construction of energy plus houses
- Renaturation of the rivers (area) and developing of green areas in the centre
- In order to limit urban sprawl, reducing first the vacancy rate in the city before building on remaining green spaces in the city and before setting out new free spaces in the outskirts of the city
- Increasing social split → assure affordable housing and energy prices
- Increasingly old population → develop an age-appropriate city with care-options but also the possibilities of participation for active elderly people
- Rising the city´s attractiveness for young people in order to counter outmigration of young people
- On-going immigration especially from Eastern EU member states → integration into the educational system and on the labour market

38. Switzerland – Lugano

38.1 General city profile

Background information

Factual data

Lugano is the most important city of Ticino Canton. Due to the difference in height of its different parts and its circular development, the city has a “bucket” shape. In fact, the city’s main ancient core lies on the benches of the Lugano Lake, which is located at 272 m above sea level, while several more recent rings formed around this core climb the San Salvatore and Brè Mountains, reaching up to 2,116 m above sea level on the Val Colla.

The city is crossed by the Cassarate river, a low capacity river that flows into the Lugano Lake near Lugano city centre. The lake is co-managed along with two Italian cities, even if 63% of the total surface is Swiss. The lake and the river make up only a portion of the city´s water source to which several ground water and spring water sources are added. The richness and the constant view influence the water usage possibilities as well as its perception in the city.

The lake is also important for Lugano’s climate characteristics; it helps to mediate the continental climate that characterizes the area, offering relatively mild and dry winters, and warm and wet summers. The area, between rain and snow, is rich in precipitation and the city receives 1, 545 mm of precipitation a year.

The city’s population has increased dramatically in the last decade, growing from 25,000 inhabitants in 1990 to 65,015 in 2013 (Città di Lugano, 2013 e). This impressive rise was not caused by natural growth, but by Lugano’s union with several surrounding municipalities in 2004, 2008 and 2013, which also significantly increased the city extension that today reaches 75.81 km^2 (Città di Lugano, 2013 e).

This agglomeration process has been positive for the city, resulting in the acquisition of what are now its external rings on the mountains, which enriched the city with natural resources and new green areas. For instance, thanks to the fusions, now woods cover 16.4 km^2 of Lugano territory (Città di Lugano, 2013 a). However, the agglomeration process also poses serious challenges for a rational governance of the city. Indeed, it resulted in Lugano having disparate borders, with a part of the city separated from the rest by the lake and having its territory divided by the existence of another independent municipality enclosed by Lugano. In addition, the city that came to be, called New Lugano, still presents an extremely fragmented territory made up of neighbourhoods that were formerly independent towns: very different when compared between them and the original Lugano core in terms of characteristics and needs.

Therefore, according to different interviewees, the formulation of a unitary development plan - that could take these differences into consideration while proposing a holistic idea of development for the city - would be fundamental in starting a true socio-ecological transition in Lugano.

Basic government/administrative structure

The council is organised in eight competence areas (administration, security and sport, sociality, tourism, culture and education, economy, urban services and territorial development) which are internally divided into different departments. After having enjoyed an abundant budget for many years, the council is experiencing economic constraints due to the reduction in collectable taxes from the financial sector after the global crisis. At the same time, the council deficit, today 43 million, is foreseen to reach 114 million by 2016 (De Maria, 2013).

Economic conditions

Lugano's economy is based almost exclusively on the service sector, which employs 90% of the city population and includes 4,419 of the 4,904 total companies registered in the city (Ufficio Statistica Cantonale, 2013). There are two main pillars of this sector. The first - tourism - has become an essential economic resource for the city since the XIV century. Today, tourism employs 48, 3% of the Lugano workforce. As such, the city is still the destination of many tourists thanks to its natural landscapes, the mitigated climate and the ease with which it can be reached. The second - finance - has become the real motor of Lugano's economy, thanks to 72 banks, more than 1000 companies in the fiduciary, real estate and financial field and 172 insurance companies (Città di Lugano, 2013 d).

Understandably, the industrial and the primary sectors, which provide work respectively for only 9.7% and 0.3% of the population, are residual for the economic dynamics in the city (Ufficio Statistica Cantonale, 2013) .

Special characteristics

According to several interviewees, one of Lugano's special characteristics is its proximity to Italy and to a huge European metropolis such as Milan in particular. Indeed, Lugano is located less than 70 km from the rapidly growing metropolis and it represents the connecting point between Zürich and Milan. As consequence, the two cities tend to interact and become always more interdependent between themselves, as shown by the increase in bilateral agreements signed (Comune di Milano, 2011).

This geographic but also cultural proximity compounded with the region's economic prosperity, results in almost 50,000 Italians crossing the borders near Lugano every day, many of them directed to the same Lugano where they work (Ufficio Statistica Cantonale, 2013). The phenomenon is so relevant that this kind of commuters are called with the specific name of "cross-borders".

Local lifestyle

Mobility

Urban mobility has been one of the elements that have hindered Lugano's transition towards sustainability. The high number of cars - almost 600 cars for every 100 inhabitants in 2009 (Ufficio federale di Statistica, 2009) - demonstrates the extent of the dependency on private transport modes while slow mobility modes, such as cycling and walking, are relegated to recreational activities.

The council tries to invert this trend with an innovative urban mobility plan that bans transit traffic from the city centre and encourages cycling with the empowerment of bike schemes. Although the plan still allows vehicles intending to visit the city centre to enter and park in dedicated areas, it has been strongly

criticized by shopkeepers and parts of the citizens, making clear the need for the council's efforts to be accompanied by a mentality change in the population in order to achieve a transition in the mobility sector.

It is worth mentioning that Lugano's mobility problem also results from the huge amount of "cross-borders" commuting everyday between Italy and the city.

Key challenges and trends

Economic issues and trends

Although unemployment is quite low - only 1,408 inhabitants are officially out of work (Ufficio Statistica Cantonale, 2013) - the two pillars that sustain Lugano's economy belong to the sectors that have generally been hit hard by the global economic crisis. Tourism already registered a decrease of 4.1% in the number of nights spent in localities on the Lugano Lake (Ufficio federale di statistica ,2010 through Osservatorio del Turismo, 2011) and many hotels closed down in Lugano during the last year (Ticino Libero, 2013; Ticino News, 2011). Also the financial sector is now less prosperous: while it generated 55 million francs in taxes for the council in 2005, now the council manages to collect only 15 million, with the direct consequence that the City can fund fewer projects and initiatives (Rezzonico, 2013).

It follows that an important challenge for Lugano's future is to differentiate more its economy. First steps have been taken in this direction by the council through the creation of a new cultural pole, of which it is hoped that it will bring new economic synergies (Città di Lugano, 2013 c).

Social issues and trends

It is possible to observe several demographic trends in the city that will have an important impact in the future. First of all, the aging population process is growing ever more significantly, and the relationship between active and inactive population is always more unbalanced, with the old age index at 125.50 in 2005 (Osservatorio dello sviluppo territoriale, 2007).

Also relevant is the immigration process, which partially mitigates the aging population. Already 39.18% of the population is foreign (not Swiss) and the number of Italians is particularly high (Città di Lugano, 2013b). In addition to the 22.92% (Città di Lugano, 2013b) of the total population that is Italian it is necessary to add the many Italians that, although working in Lugano, live on the other side of the border. This "cross-borders" phenomenon causes competition on the labour market and therefore tensions among the population. The reason is to be found in the fact that the "cross-borders" can accept lower wages, which a Lugano inhabitant could not accept due to higher living costs.

Environmental issues and trends

The consumption of territory is the most visible trend that affects the environment and the one recognized in many interviews as the most important challenge for Lugano to overcome. Indeed, the trend of constructing on external green areas impacts on the sustainability and quality of life in the city.

The suburbanisation process leading to this situation is caused by several factors: speculation on the built environment, over-expensive housing prices in the central areas and the looking for higher quality areas provided with green spaces by home seekers (Rossi, 2007).

Naturally, these suburbanisation trends have negative consequences on urban mobility and consequently on air quality, with an pm level higher than in the rest of the country (Repubblica e Ticino Canton – Ufficio del Medico Cantonale, 2012). However, thanks to an improvement in public transport, the pm level has decreased in the last few years reaching 21 µg/ m^3 in 2010 (Repubblica e Ticino Canton – Ufficio del Medico Cantonale, 2012).

38.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The area around Lugano is not only rich in water, but also rich in drinkable water. The ground water is the most important source of supply and it mainly makes up all the drinkable water provided to the city. Part of the demand is also satisfied by the purified water of the Lugano Lake. In addition, untreated water is extracted from the lake and then reserved for industrial uses.

It was possible to gather from some interviews that this abundance of water encourages strong consumption. In 2005, an average of 448 litres per inhabitant was used every day (WWF Svizzera Italiana, 2007). However, it is important to note that this value could be distorted by the high number of people who work and use resources in Lugano but are not counted among the inhabitants.

The network water loss was less than the 10% of the total quantity inserted (WWF Svizzera Italiana, 2007).

Water is relatively affordable in Lugano, also thanks to the fact that the prices are supervised by the City Council. The standard water price is 1.10 fr for m^3 to which is added a 1 cent solidarity tax for each m^3 consumed which goes to fund water-related projects in developing countries (Aziende Industriali Ticinese, 2013).

Key issues

Despite the natural abundance of water, its naturally high quality and the efforts to maintain it outlining a more than satisfying situation regarding water, it is still possible to identify some minor issues.

One of the few difficulties experienced in this area concerns the economic efforts to connect the new agglomerations to the city´s water network. Indeed, some of the new territories recently connected to Lugano are not served by the AIL.

Another issue regards water contamination. Although the city´s tap water is of a high level, as shown by the several analyses it is put through, some contamination can happen, for example with chemicals such as MTBE and ETBE in quantities that do not affect its drinkable characteristics, but can change the taste and the smell (Ticino news, 2012).

As reported by some interviewees, one problem might be the increase of drinkable water originating from the lake. In fact, even if properly treated, it is of inferior quality compared to the ground water.

Key actors/partnerships

There are two main actors regarding water in Lugano: the city council and the Aziende Industriali Luganesi (AIL), the city´s multi-utility. The two actors work in a strong partnership, with the city council defining the political goals and general direction concerning the city´s water resources, and the AIL technically implementing them and practically managing the whole water cycle.

The AIL was founded in 1972 with the fusion of two different council utility companies. In 2000, it was transformed into an anonymous society, still 100% owned by the council. According to an interviewee, the operation was carried out in order to make the company more efficient and less tied to the city´s bureaucratic processes.

Key actions/measures/initiatives

The initiatives taken in this field originate from the intention to address two different issues concerning water, namely pollution and consumption and are carried out by different actors. The city council focuses its attention on the quality of the water. It is its intention to work with AIL to better purify the water, studying new ways to eliminate the micro-pollutants. This would strengthen efforts to provide high quality water, as testified by the existing treatment with UV rays. On the other hand, WWF Italian Switzerland launched S.O.S water, a campaign that aims to raise awareness in the population and in the city council regarding water consumption. The initiative shows inhabitants how to avoid water waste in their house while urging councils to fight against network water leakages and to switch from supply management to demand management regarding water resources.

Energy

Availability, affordability and consumption levels

It is difficult to find energy related data referring specifically to Lugano. The only data available online concerning energy consumption is related to Ticino Canton and shows that 66% of energy needs in the region are covered by oil and natural gas, while the rest is delivered by nuclear power and only a small percentage by renewables. Taking into consideration the production of electricity only, the quota of energy produced by renewable sources rises to 32%, thanks to hydroelectric power (DT & DFE, 2010).

The abundance of local production keeps the prices low in Lugano: prices vary from a minimum of 16 fr for 1,600 kWh to a maximum of 130 fr for 13,000 kWh. Customers can opt for more sustainable energy sources, paying between 15 to 40 fr more on their annual bill (Tiacqua, 2013).

Key issues

Despite its advantageous geography and weather, the production and the use of renewable energy is low.

The difficulties for Lugano to start an energy transition are testified by the fact that it did not manage to receive the label “Energy City”, despite of the council having already decided in 2004 to participate. “Energy City” is a label appointed to cities that are instrumental in achieving the Swiss Confederation energy goals for 2050, such as energy consumption reduction, reduction of fossil-based energy, abandonment of nuclear power in favour of sustainable energy. Lugano's delay in joining the program is a sign of the city's difficulties in reaching these goals.

Another issue might be the local multi-utility initiative “Sun for everyone” (Aziende Industriali Ticinese, 2013) which promotes renewable energy production but keeps it centralized and discourages citizens' initiatives (see below).

Key actors/partnerships

There are several actors that influence the energy field in the city.

From the political point of view, the hierarchy of the different levels of governance is respected. According to several interviews, the federal government provides a strong framework for the local level in Lugano through its laws regarding energy sources, for example deciding to abandon nuclear power by 2034, and its laws regarding energy efficiency in the building stock. The Ticino Canton level, that is the regional level, while acknowledging the laws formulated by the Federal government, provides a Regional Energy Plan where it proposes concrete visions and targets for councils to respect. Lugano city then plays an important role in applying these visions and respecting these targets through the development of a City Energy Plan that will take into consideration its local situation.

From the technical side, the political goals are applied by two companies owned by the local governments.

The Azienda Eletrica Ticinese (AET) was created by the Ticino Canton in 1958 and today is the main energy producer in the region. AET then sells the energy produced to the Azienda Industriale Luganese (see above) that provides and sells the energy to final consumers in Lugano.

Some of the plants which provide energy to Lugano that are run by the AET, such as the Valasca hydro plant, are owned mainly by Lugano Council and in small part by the Ticino Canton.

Key actions/measures/initiatives

Lugano is rapidly becoming aware of its potential in terms of local renewable energy production and of the importance of topics such as energy efficiency. Therefore, there are several initiatives aimed at pushing the city in these directions.

One of these initiatives is the Lugano Energy, a round table composed by experts of the field, AIL experts and councils members, all working together to modernize Lugano´s energy system.

Another one is the city´s Energy Plan on which the council is working and which will be instrumental in proposing concrete initiatives for the city in order to achieve the 2050 Confederation energy goal.

The council´s economic support for households that engage in an examination regarding energy efficiency in their houses is already in place.

Also, the AIL undertakes important projects. For example, it fosters the use of renewable energy sources, providing its clients with a tariff which includes exclusively the provision of hydroelectric energy. The company not only supports the use of renewable energy, but also fosters its production through a project of solar panel funding, called “Sun for everyone”. The project gathers together consumers that want to invest economically in solar power and then it provides them with a discounted energy bill (Aziende Industriali Luganesi, 2013).

Fondo Clima is another interesting initiative that involves a mix of partners from the business sector, such as IKEA and from environmentalist NGOS, such as WWF Svizzera Italiana. All the partners work together to promote climate protection through awareness raising on energy consumption and pushing for energy saving products.

Green spaces

Availability, affordability and consumption levels

Green spaces amount to 51% of Lugano's total territory (Città di Lugano, 2013a). There are three main types of public green offered by the city: woods, “institutional” parks and district gardens.

The district gardens are located in each neighbourhood and are generally equipped with benches and playgrounds. However, the amount of green areas that they offer is limited.

In the city centre there are two parks that could be defined as “representative” because of their role in representing the city and in attracting tourists. For this reason, they offer an extremely well looked after greenery and strictly regulated activities.

Woods make up the majority of urban green space and are located on the border of the city.

Key issues

Due to these characteristics and dispositions, green areas are not completely accessible to the population and do not respond completely to their needs.

In fact, the city lacks parks, and the abundant woods, which are distant from some part of the city, are not equipped to respond to all needs, for example to families’ activities.

In addition, part of the population, especially those residing in the areas most recently connected to Lugano, fear the strong trend of building-up on external green areas. In response, citizens’ associations defending the territory have mushroomed in all of Lugano's external neighbourhoods in the last decade opposing specific edification projects in green areas.

Key actors/partnerships

The actors that influence green spaces in Lugano originate from different sectors.

From the local government side, the Department of Planning, Mobility and Environment takes care of the planning and placement of different types of green spaces in the city, implementing political decisions. The Department of Urban Services, on the other hand, actually manages green public spaces.

As admitted by the local government, the citizens’ associations are particularly important in shaping and maintaining the green spaces in Lugano.

In addition, actors involved in the green spaces business, such as private landscape architects and facility services companies, seem to be relevant in promoting a sustainable approach to green management.

Key actions/measures/initiatives

The council also addresses the need of different kinds of green areas through the renewal project of Cornaredo, a former peripheral neighbourhood of the city, having become more central. The renewal project also conceives of a large field dedicated to public events that should satisfy the need of freer socialisation and activities in green spaces.

Similarly, the re-naturalization of the Cassarate banks should increase and differentiate the green areas in the city.

The participatory planning process launched by the council to solve the conflicts over a green field dedicated by the urban development plan to edification on the Monte Brè is another crucial initiative. The association Uniti per Brè is involved in the process and opposes the construction of a mansion in the field. Further parties are the owner of the field and the council, and the process is supervised by a third neutral actor.

The council, pressured by the requests of citizens' associations, is also thinking about applying this process to other disputes over green areas.

38.3 Governance and citizens' participation

Multilevel governance

All the different levels of government play an important role concerning sustainability topics in Lugano. The autonomy of the local level seems to be highly respected, also thanks to the federalist organisation of the state. However, the intensity of interaction and the results of the cooperation between the different levels change according to the field examined.

For example, in the energy sector it appears that the Confederation plays a more remarkable role than the local level, setting definite frameworks that must be respected by the local level. The role played by the national level in this field is also more powerful than in others. In contrast, it emerged in several interviews that in matters concerning green spaces both the Cantone and the Confederation, despite setting targets for Lugano, leave to the city more room to operate.

Lugano's local government seems very satisfied with its relationship with both of the two higher government levels thanks to the balance between autonomy and guidance that characterize this relationship. The funds that the two higher levels offer regarding sustainability matters are particularly appreciated, even if a better dissemination of funding opportunities would sometimes be recommended. The opinion of the people interviewed from associations and businesses is slightly different. These actors tend to think that the high autonomy granted to the local level hinders the achievement of sustainability goals in Lugano. They claim that the Confederation has a better prospective and higher goals regarding sustainability.

In addition, all the interviewees expressed the need of a stronger collaboration between different municipalities as a key aspect to reach locally sustainability goals. Many identified in the two higher government levels the actors that should impose and coordinate this collaboration.

With Switzerland not being member of the European Union, this level of governance is largely perceived as irrelevant in matters concerning sustainability at the local level, even though the importance of cooperation with neighbouring countries that the EU could facilitate in fields such as mobility is considered important.

Participation and bottom-up action

Participation

According to all the interviewees, citizens' participation is still very low in all the three fields examined.

The reasons for this result are explained in a slightly different way according to the field considered and to the background of the person making the consideration. However, there is a general agreement that until recently the local government was mainly unconcerned, to citizens' participation possibilities and needs.

The local government in Lugano seems to be changing its attitude towards opening up decision-making processes to the population, in part due to a recent political change in the City Council (elections took place in April 2013). For instance, from some interviews it emerged that the Council might open the elaboration of a City Energy Plan to the citizens as well. In addition, citizens associations active in the preservation of green areas have been particularly instrumental to launch the first participatory planning experience in the city which will soon start.

Bottom-up initiatives

There are virtually no bottom-up initiatives in the city. This might be explained by the highly centralised but well-working services provided by the government and by its bodies, coupled to the possibility for the citizens to influence government's decisions through referendums.

In addition, initiatives such as those undertaken by AIL (see above), if on one hand they promote renewable energy on the other they inhibit the formation of energy cooperatives.

38.4 Conclusion

Short summary

Lugano is the main city of the Ticino Canton. Its original core developed on the benches of the Lugano Lake, surrounded by mountains. Due to its recent fusion with surrounding villages, the city has a dispersed and fragmented territory with a strong difference in altitude. This fusion process has been very important for the city's approach to sustainability: on the one hand it brought a large stock of natural resources, on the other hand it implies serious governance problems.

At the same time, the sudden growth and changes that the fusion implied led to the city meditating more on its future and motivated it to undertake more initiatives regarding urban sustainability. In fact, although it has started just recently, the city plans to undertake several positive programs, particularly in the energy and green spaces sectors. Also noteworthy is the new urban mobility plan which tries to solve traffic problems by proposing sustainable solutions. However, the plan is encountering resistance on the part of the population.

Population resistance and conflicts regarding projects, such as those which have arisen in relation to developments in the external area, would be decreased by a higher citizens' participation in decision making processes, now definitely low.

Trends and challenges for the future

- Elaboration of a unitary urban development plan
- Implementation of the Cornaredo urban renewal plan
- Re-naturalisation of the Cassarate banks
- Economic diversification in order to decrease financial vulnerability
- A decreasing council´s budget and increasing debts
- Implementation of the new urban mobility plan
- Increase in residents' participation in decision making
- Reduction of territory consumption, also through reducing speculation
- Decrease in suburbanisation trends, also through improving housing policies
- Diversification and protection of green areas
- Development of a City Energy Plan
- Efforts towards not simply becoming a gateway between Milan and Zürich but to play an important role in this economic relationship

39. Switzerland – St. Gallen

39.1 General city profile

Background information

Factual data

St. Gallen is the capital of the canton of St. Gallen in Switzerland and was founded in the 7th century. The monastery and its library have the status of an UNESCO world heritage site. It is situated in the North-Eastern part of Switzerland in a valley about 700 meters above sea level. It is one of the highest cities in Switzerland and often receives a lot of snow in winter. The average daily temperature lies about 8.3 °C, the average precipitation rate is 1,315 mm (with an average of 144 days of rain or snow per year and 1,535 sun hours in the last 30 years).

The city is pleasantly situated between Lake Constance and the mountains of the Appenzell Alps in a valley between two hill chains. It offers good transport connections to the rest of the country and to neighbouring Germany and Austria. It is closely tied to the national Swiss Federal Railways and the hub for many private railways, a tramline and disposes of a dense local bus transportation system.

St. Gallen stretches on an area (2006) of 39.3 km^2; 31.1% is used for agricultural purposes, 28.9% is forested, 38.4% is settled (buildings or roads) and the remainder (1.7%) is non-productive (rivers or lakes). It is a large urban agglomeration (with around 160,000 inhabitants), representing the centre of Eastern Switzerland. The city itself has a population (2013) of 78,645, about 27.5% (2007) foreign nationals (7,111 ex-Yugoslavia, 3,691 Italy, 2,363 Germany, etc.). Therefore, 83% are German speaking, 44% are Roman Catholic and 28.9% Protestant. The population has remained more or less stable within the last two decades, with an increase of foreigners. Relevant data from the census 2000: 59,093 persons worked in St. Gallen (37,326 of them lived in St. Gallen the same year). The majority lives in rented apartments (27,619), only 4,700 apartments are in own property.

Basic government/administrative structure

At the City Parliament (63 seats) there are actually (elections spring 2013) 11 parties; with the majority fraction (20) of the Social democratic party (16) together with the Young socialist (2) and Women group (2), followed by the Christ democratic people party (12) together with the Evangelic people party (2) and the Citizen democratic party (1); the Liberal democratic party / fraction (10); the Swiss people party / fraction (9); the green fraction of the Green party (4), the Green liberals (4) and the Young greens (2).

The City Council (Executive) is structured in five departments: internal affairs and finance, education and sport, social affairs and security, technical enterprises (utility providers), construction and planning.

Fredy Brunner, the head of the department of technical enterprises, has the following responsibilities: waste disposal service, office for environment and energy (Harry Künzle), SGSW - Sankt Galler Stadtwerke (local utility provider), VBSG Verkehrsbetriebe St. Gallen (local public traffic company) and is involved in various holdings in other utility providers i.e. bio gas producer Biorender AG (details see key actor energy Fredy Brunner). Every four years the local government publishes an environmental report

(last 2012). The objective of the energy concept 2050 is to reduce 50% of the over-all energy consumption and to reduce the share of fossil fuels from 90 to 25%.

Economic conditions

The town mainly depends on the service sector for its economic base; in the past it was a centre of the textile industry (embroidery). It is known for its top ranked business school, University of St. Gallen (HSG) and the University for Applied Science (Fachhochschule), both with sustainability institutes (Institute for economy and ecology and the Centre for ethics and sustainability). The unemployment rate has increased from 2.69% (2007) to 4.5% (2009). The GDP for the region (canton) is 28,722 CHF (22,978 €), the income per person was 44,866 CHF (35,893 €) in 2005.

The Urban Audit 2011 shows a growth of employment above average (11% from 2001 – 2008). The strongest growth is achieved in the information and communication technologies (ICT). There is a very high level of education and a low tax burden (14%). Within the last years, many residential houses have been built, contributing to a relaxation of the housing market.

Local lifestyle

The city is structured in three parts (circles): West (with the districts Winkeln, Bruggen, Lachen), centre (Rosenberg, Riethüsli, St. Georgen, Downtown, Northeast, Southeast) and East (Rotmonten, Langgass-Heiligkreuz, St. Fiden, Notkersegg and Neudorf). Local lifestyle is characterized by the transition from a society with agricultural roots and traditions, being nature-bound and eco-sensible towards an industrial society with a consume-orientation and a high level of prosperity (see interview actor 1 line 9 f.). Concerning financial affairs, the population is very disciplined and economical. The average total energy consumption per person is about 6000 Watt and 6 tons CO_2 a year (see interview actor 2).

Key challenges and trends

Economic issues and trends

Due to the economy crisis, the local government is strongly focused on the balance of the bill and tries to secure the financing on the long term. To solve the challenges of sustainability, all objectives must ultimately be based on a reduction of consumption, for example to replace the nuclear power share in supply by new renewable energy sources. A second big challenge is to change mobility habits of the citizens by promoting public transport. It is also essential to recognize and communicate the economic benefits of a green economy.

39.2 Sector specific synthesis

Water

Availability, affordability and consumption levels

The delivery amount of the local public supplier was 6,085.417 m^3 for 9,300 meter in the year 2012. The average consumption of drinking water is 162 l per person and day. The water grid in St. Gallen is approx. 320 km long and has to handle an altitude difference of 1300 m. The supply of water is delivered from the Lake Constance (Bodensee), for emergency cases there is a groundwater pump station in Breitfeld. The price is 2.66 CHF (2.16 €) – 4.80 CHF (3.90 €) / m^3. There are no problems with the quality or availability.

Key issues

To guarantee the level of quality and availability in the future.

Key actors/partnerships

- SGSW St. Galler Stadtwerke (utility provider of St. Gallen): dependent public company managed by the department technical enterprises of the local government. About 300 employees manage the distribution of electricity, natural gas (also in the region), long-distance heat, the fibre-optic grid and the geothermal power plant. The water is delivered by the RWSG.
- RWSG Regionale Wasserversorgung St.Gallen AG (regional water supplier St. Gallen): founded 1993 as a stock corporation with 12 regional partners. They run the water plant in Frasnacht at the Lake Constance, the high pressure pump station in Riet and deliver the water to 150,000 people in the region.
- "Wasser-Symposium" (Water symposium) is a private Swiss educational and cultural institution, which was founded 2000 by Philipp Hostettler in St. Gallen. Together with Manuela Kihm and Sonja Breuss he organized the first «Wasser-Symposium» on March 18, 2001 in Luzern with 500 participants.

Key actions/measures/initiatives

The water is taken in the water plant Frasnacht from the Lake Constance in a depth of 60 m and is rehashed by ozone and chlorine-dioxide and delivered via pump stations to the SGSW in the bottom of the valley. In 2012, the average daily production was lower than 20,000 m^3/d for the first time and therefore the usage rate was under 30%. A lower production could cause quality problems. The suppliers and the cantonal food office conduct the quality monitoring.

There are some conflicts between nature conservation (associations) and needs of renewable energy production at the river "Sitter". There are dams built in the last century for the use of waterwheels. These dams are rotten, which causes landslides, because the riverbed lowers. Councillor Fredy Brunner wants to renovate these dams and use them for energy production.

Energy

Availability, affordability and consumption levels

According to the analysis of the energy concept for the year 2010 St. Gallen consumed 3280 GWh/a primary energy, 2220 GWh/a secondary energy, 2070 GWh/a final energy and 1490 GWh/a effective energy. It is composed of more than 60% fossil, 30% nuclear and less than 10% renewable energy. Delivered amounts in 2012:

Electricity:	523,019 MWh	54,340 meter
Natural gas:	701,547 MWh	7,360 meter
Long distance heat:	70,346 MWh	260 meter

With the new ecological tariff reform, customers can choose between 4 different products (share of customers):

Eco Plus:	13.6 Rp (11.0 ct.)/kWh	60% water, 30% wind, 10% solar	(3%)
Eco:	11.6 Rp (9.4 ct.)/kWh	70% water, 22% waste incl., 6% wind, 2% solar	(15%)
Basic:	9.6 Rp (7.8 ct.)/kWh	60% water, 30% nuclear, 10% waste incl.	(72%)
Nuclear-Mix:	8.6 Rp (7.0 ct.)/kWh	70% nuclear, 28% unknown, 2% fossil	(10%)

The average total energy consumption per person is about 6000 watt and 6 tons CO_2 a year.

Key issues

The main key issue in the energy concept is the reduction of energy consumption, the abandoning of nuclear power and its substitution with renewable energies, and to keep up energy security. The challenge is to give the economy and industrial companies (i.e. aluminium foundry) an attractive framework, to guarantee jobs and their income taxes. Therefore, the issue of sufficiency will certainly become a more important issue in the future, because the surplus load often compensates more efficiency. As an illustration, one can refer to the continuously rising needs of people for mobility and housing.

A key role in this concept is the geothermal energy plant (plebiscite 28.11.2010) among a lot of various other measures. In the course of the drilling for the geothermal project, there was a small gas explosion that caused a slight earthquake. Today, a risk assessment is conducted as a basis for the next decisions.

Key actors/partnerships

- Fredy Brunner: councillor since 2005, member of the liberal-democratic party. He is (vice) president of various boards: SN Energie AG (energy supplier), elog Energielogistik AG (energy logistic), Erdgas Ostschweiz AG (natural gas supplier), power plants Zervreila AG and Burentobel AG, RWSG Regionale Wasserversorgung St. Gallen AG (Regional Water Supply Company), SN Übertragungsnetze AG (long distance grid company), mobility companies etc. He is Board Member of the European Climate Alliance and the energy institute canton St. Gallen.
- Harry Künzle: director of the office for environment and energy having the following tasks: energy concept 2050 and concept "clevermobil", energy fund increase to CHF 3.0 Million (plebiscite), member of the commission "Klima Städte Schweiz" (Climate cities Switzerland) and “European Climate Alliance".
- Stadtwerke (local utility provider): projects: realization of the geothermal plant (plebiscite 28.11.2010), the thermal power plant Birnbäumen, the waste water power plant, the PV plants at IKEA and stadium Gründenmoos participation in the bio gas plant Biorender AG and refurbishment of the waste power plant. Realization of the fibre-optic grid (plebiscite 08.02.2009)
- Novaenergie: founded 1996. Offers energy and ecology counselling for public and private organisations (among others for St. Gallen).
- Genossenschaft Solar St. Gallen (solar cooperative): was founded in 2012 and realized 5 projects with a capital of about 650,000 CHF (527,000 €) (Nov. 2013).

- IBG B. Graf AG Engineering: realizing the refurbishment of the waste incineration plant with cogeneration, process control technology for the geothermal project, long distance heating. They are also active in the field of intelligent networks, smart grids, smart meters, etc.
- Energieagentur St. Gallen GmbH (energy agency): the competence centre for efficient and renewable energies is financed by the cantonal government, the municipalities, the St.Gallisch-Appenzellischen Kraftwerken AG and the SN Energie AG. (power plant companies). They offer counselling, information about subsidiaries, certification and so on.
- energienetz GSG (network of business energy consumers): founded 2011 with now more than 20 business members. The coordination team has members of the energy cities Gossau, St. Gallen and Gaiserwald, association of commerce and industry Gossau (HIG), association of industry St. Gallen Winkeln (IVW) / cantonal energy office St. Gallen.
- EMPA Eidgenössische Materialprüfungs- und Forschungsanstalt (Swiss Federal Laboratories for Materials Science and technology development): is a domain of the ETH (University for Applied Sciences) and among others involved in the hydrogen mobility project.
- HSG (University for Applied Sciences) with the Institute for economy und ecology, a Good Energies professorship for management of renewable energies and an Oikos office (international student association for sustainability).
- and more

Key actions/measures/initiatives

The central part was the energy concept; the first version was made in 2006 with focus on heat. The revised version (EnK3 2050) of 2010 also includes electricity and mobility. It also offers a very profound analysis of the energy flow of the present (2010) and the future (2050). The objectives are to lower the effective energy demand from 1490 to 1060 GWh, to reduce the demand of primary energy by 50%, to reduce the share of fossil fuels from 90 to lower than 25% and to cut the conversion losses to 500 GWh/year. Additionally, the main objective is phrased as “What we have to do is to secure that in the year of 2050, the people of St. Gallen still have a warm parlour (room) and they can afford it”. Therefore, about 150 measures have been decided by the city parliament. One of them was the ecological tariff reform for electricity (and 2014 for gas with a bio share) which helps to increase the energy fund. This fund is fed by extra charge of 0.45 Rp. (0.35 ct.) / kWh grid fee and an average extra charge of 1 Rp (0.8 ct.) / KWh at the tariff. All together this brings over 4 Million CHF (3.24 Million €). The transformation from the old tariff system to the new one was done by the public electricity provider referring to the customer choice with a later opting-out possibility. The central investment is a geothermal plant for long distance heating, but there are also a lot of smaller investments in solar, wind, water, waste heat use, power heat coupling, bio gas and fuel cell together with public providers, industry, service providers and cooperatives. This enables the realisation of many projects although one or the other one is not feasible. Therefore, all renewable resources come from the region and do not reduce the operation possibilities of other municipalities. To have more flexibility and to store a surplus from renewable energy, the local government, together with EMPA, is engaged in the project “power to gas” which converts electricity to gas (hydrogen or methane) and stores it in the natural gas grid. Apart from the investments in new energy production, there is a large offer of information, counselling and financial support for private energy production (i.e. solar cadastre) and efficient energy use. Here, the objectives are to renovate (partly) 80% of the buildings and to connect 90% of the buildings to long-distance heating. In autumn 2012, a smart grid / metering project was also started. The cooperation network «energienetz GSG» helps companies to increase efficiency, to reduce CO_2 by building energy networks (heating and cooling) and to share know-how. It is also a platform

opening up a better insight so that companies, public providers and local government can share their problems and look out for solutions together. To cope with the big challenge of energy consumption in mobility, the government established a traffic regulation concept. The objectives are to stabilize the motorized individual traffic on the level of 2010, to run it at 90% with electricity (60% plug-in hybrid with gas, 30% pure electricity, 10% fossil for freight traffic) and to double the modal split for public transport (reintroduction of tram, cooperation with surrounding municipalities), bikers and pedestrians to catch the 25% increase of mobility in total. Besides the concept "clevermobil", there is a second project to improve the mobility situation. "St. Gallen 2013" is a project, which aims to improve local rail services through infrastructure upgrades and new rolling-stock. In 1987, the city motorway was opened, which conveys the traffic through two tunnels almost directly below the city centre, and the city has its own small airport nearby.

Green spaces

Availability, affordability and consumption levels

60% of the 40 km^2 are forest and agriculture land. Within the settlement area, 58% are sealed, in the last 10 years 36,000 m^2 were sealed. The "Drei Weieren" (a recreation area with 3 lakes within the city limits) and the Wild Animal Park are very popular. The park is easily accessible, well maintained and always well attended.

Key issues

The general principles of spatial planning emphasize the prevention of new and the mitigation of existing environmental conflicts. The issue of green spaces with their different functions and their biological diversity is a fixed topic in the city concept and in the environmental reports. Most of the redesigns of public places are done with a high degree of participation. Despite of the geological situation, it is a big challenge to foresee in which direction and in which form the city should develop for a time horizon of 50 years. Because of climate change, the share of green area will become just more and more important.

Key actors/partnerships

- Office of spatial planning (with an extra professional agency for nature and environment) and office for green spaces (64 employees)
- "Ortsbürgergemeinde": was founded 1789 as a successor organisation of the traditional citizens´ council complementing the political municipality. In the beginning they managed water supply, churches, schools, museums, libraries and all social security. Nowadays, it is a group of traditional non-profit companies and institutions with the following tasks: health and care, forest and agriculture ("green ring"), land for housing and innovative farmer families, restaurants, municipal archive, museum and a bank (with funds for social, educational, environmental and cooperative tasks). They govern a capital of 98 Million CHF (80 Million €), invest 2.5 Million CHF (2 Million €) and earn 0.75 Mill CHF (0.6 Million €) for 20,000 members (6400 living in St. Gallen) and 480 employees. They run a short-distance heating plant.
- Zentralverband der Familiengärtner-Vereine St. Gallen (umbrella organisation of the family garden associations): Lobbies the interest of 17 different areas / associations for family gardening in the city of St. Gallen to the landlords.

Key actions/measures/initiatives

The garden office manages 600 objects with a total area of 150 ha. Since 2009, there is a detailed maintaining plan for all green spaces. The advantage of plantings with shrubs is not only their diversity, but also the lower effort of maintenance. Also farmers have to contribute to the biological diversity of the city by saving 7% minimum of their land as ecological compensation areas.

39.3 Governance and citizens' participation

Multilevel governance

"We do not want to be independent, that is not the goal, but to get the clearest possible 'guard rails' would be important. We are in a competition with other cities with location advantages, location disadvantages etc.; taxes. We want to have the same long 'skewers' (equality of arms) as other cities. Within this framework we want to be allowed to move freely. This situation of competition induces that we want to be active ourselves".

International

The conferences and various initiatives, such as the Climate Alliance or Aalborg commitments, were certainly important for St. Gallen, as the cities try to act together and say "we are all suffering fellows, dependent to a national and a regional level, but actually we would want to create a change."

"The EU itself could manage the EU certificates, they should not all be pushed into an international CO_2 exchange market. Local exchanges could be allowed. The cities could pay in the pot (exchange), but manage the CO_2 market by themselves. This could lead to incentives, which strengthen the city's commitment to being a competitor in energy policy and make a location more advantageous. For example, there is a problem for a transition phase, when the local supplier has to operate the cogeneration coupling with natural gas, which produces CO_2 emissions. It has to pay CO_2 taxation and cannot compensate it with the heat pump system in the hills, which is valued as national energy / CO_2 – reducing measure. But both systems work together in a heat and energy network. The national government takes the benefits but does not give back the benefits and makes this concept uneconomical for the local supplier".

National

The sustainability report for the city of St. Gallen, which was written in the 1990s with the necessary framework on cantonal and national level, caused a great response and even induced the federal government to set up an office. Objectives on national level are the exit of nuclear power, the retrofitting of buildings and spatial planning (commute traffic, motorways, etc.). Economy wanted the federal government to decide in which places large hydroelectric power plants, wind parks and other things should be realized. The whole sector of a transition from nuclear to renewable energy is supposed to come from a central point telling you where you can build, otherwise the transition is not possible.

In the regional "energienetz GSG" platform for energy efficiency all actors (regional companies, local, regional and national authorities) try to solve the problems together independently from local, regional or national competences in a case-oriented, participative and trustful way. Various Cantons, including St.

Gallen, proof that they could take influence on the habit of car buying by a bonus- malus-system on basis of the national energy label.

Participation and bottom-up action

Participation of citizens in the local decision-making

Traditionally, Switzerland is known for a broad system and culture of participation. There are 4 dates a year, were 5 – 10 decisions are put to vote: If an investment costs more than 1.5 million CHF (1.2 Million €), the City Council is involved and if it costs more than 15 million CHF (12 Mill €), it has to come to a plebiscite. But even if there is ultimately a political agreement, it stills needs a process of magisterially permission, in which the interests of those who are directly affected are heard. Secondly there is the citizen's initiative that needs 1,000 signatures. The participation regulations grant opportunity to every citizen to directly consult the City Parliament. Thirdly, the "ombudsman" of St. Gallen collects statements of those citizens who cannot agree with the decisions of the local government. Additionally the City Council has to periodically report about the achievement of goals and further measures.

For example: in November 2010 the city council published a spatial plan (orientated on the national and regional legal principles of 2006) for a broad participation process. In February 2011, a phase of revision was initiated and on January 1st 2012 the city council presented the spatial plan to the city parliament.

After a negative plebiscite, the project for a new design of the market yard has to be made by a new proposal (parking space) and be put to vote within one year time.

Examples of plebiscites:

- 2006: renovation of the waste - heat and power plant (87% yes)
- 11/2008: increase of the energy fund from 0.5 to min. 2 Mio CHF/year (80.6% yes),
- 03/2010: initiative of Swiss cities for a sustainable mobility (stabilisation of MIT on the level of 2010) with an annual evaluation (59% yes)
- 09/2010: small water power plant Morgenthal
- 11/2010: geothermal and long-distance heat project total 159 Million CHF / 129 Million € (82.4% yes)
- 11/2010: exit of nuclear power until 2050 (63% yes)

General overview on bottom-up actions

In the mid-1990s, citizens and some institutions, especially religious groups, initiated the process. All in all, there has been a semi-political development from different groups of actors of the civil society. But these civil society groups are not active anymore. One interviewee mentioned that participation components for sustainable development had gotten out of sight because the level is so high already anyways.

39.4 Conclusion

Short summary

St. Gallen is a middle-seized city, a regional capital situated in a surrounding with various natural resources. On the one hand, it has a long and strong tradition with peasant and participative roots to sustainability issues. On the other hand, it has transformed into a high-tech and knowledge-based economy with international orientation. It has a very diverse population with an active integration policy and a strong system of social welfare with different active labour market programs.

The local government elaborated a very profound and detailed sustainability policy. The major goal of St. Gallen is to strengthen the respectful relations of diversity, cohesion and security within social life (including an action plan, a monitoring of social developments, measures to increase the subjective sense of security and a use management of public space). One of the central measures are the energy concept “Enk3 2050” and the mobility concept “clevermobil”, initiated and “powered” by the city councillor Fredy Brunner and the head of the office for environment and energy Harry Künzle. They successfully managed to communicate the chances and benefits for the economy and get their actors on board together with scientific and regional institutions. All utility suppliers (electricity, heat, water, etc.) are owned by the local government and new infrastructure (fibre-optic grid) is realized by them. Furthermore, they invest in a lot of different energy producers.

Trends and challenges for the future

Challenges for the future are mainly to substitute the share of nuclear power by new renewable energy sources (actor 1 answer to question 6) and to change mobility habits of the citizens towards a more extensive use of the public transport system (actor 2 answer to question 5). Regarding the social aspect of sustainability, the major challenge is to strengthen the intergenerational fairness and the solidarity value (actor 2 answer to question 1).

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Conseils de Quartiers: http://monquartier.vousaussi.org/

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SPPPI: http://www.alsace.developpement-durable.gouv.fr/secretariat-permanent-pour-la-r127.html

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Green spaces
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Project Information

Welfare, Wealth and Work for Europe

A European research consortium is working on the analytical foundations for a socio-ecological transition

Abstract

Europe needs change. The financial crisis has exposed long-neglected deficiencies in the present growth path, most visibly in the areas of unemployment and public debt. At the same time, Europe has to cope with new challenges, ranging from globalisation and demographic shifts to new technologies and ecological challenges. Under the title of Welfare, Wealth and Work for Europe – WWWforEurope – a European research consortium is laying the analytical foundation for a new development strategy that will enable a socio-ecological transition to high levels of employment, social inclusion, gender equity and environmental sustainability. The four-year research project within the 7th Framework Programme funded by the European Commission was launched in April 2012. The consortium brings together researchers from 34 scientific institutions in 12 European countries and is coordinated by the Austrian Institute of Economic Research (WIFO). The project coordinator is Karl Aiginger, director of WIFO.

For details on WWWforEurope see: www.foreurope.eu

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	ICLEI - Local Governments for Sustainability	ICLEI	Germany
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	University of Pannonia	UP	Hungary
	Utrecht University	UU	Netherlands
	Vienna University of Economics and Business	WU	Austria
	Centre for European Economic Research	ZEW	Germany
	Coventry University	COVUNI	United Kingdom
	Ivory Tower	IVO	Sweden
	Aston University	ASTON	United Kingdom