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"All change please!": Challenges and opportunities of the energy transition

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Arbeitsberichte der ARL 32

**‘ALL CHANGE PLEASE!’ –
CHALLENGES AND OPPORTUNITIES
OF THE ENERGY TRANSITION**

Andreas Stefansky, Angelina Göb (Eds.)

ARL

ACADEMY FOR
TERRITORIAL DEVELOPMENT
IN THE LEIBNIZ ASSOCIATION

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Andreas Stefansky, Angelina Göb (Eds.)

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Angelina Göb, Andreas Stefansky

INTRODUCTION

The annual meeting of the *Junges Forum* (forum for young professionals) of the Academy for Spatial Research and Planning (*Akademie für Raumforschung und Landesplanung*, ARL) took place in Leipzig on 6–8 October 2016; its theme was ‘*All change please!*’ – *challenges and opportunities of the energy transition*. This volume documents the key questions and issues that were presented and discussed at the event. In line with the main issues of *infrastructure, mobility and participation*, the participants discussed technical, legal and planning aspects relating to the management and organisation of the energy transition and their significance for spatial development. The objective of the event was to tie the transformation processes associated with the energy transition into the policy triangle of security of supply, economic efficiency and environmental impact in order to identify sustainable perspectives for the future of spatial planning.

The following questions served as starting points for the event:

- > How will the cities and countryside of the future look against the backdrop of the energy transition, and how can these spaces be (further) developed?
- > What infrastructures will be needed for the ‘transformation’ to smart and sustainable cities and for the interactions between cities and their surroundings? And how should/must their implementation take place and at what level?
- > How significant are shifting values in society, and what role do the stakeholders in civil society, politics and business play?
- > How can participation take place? When, why and under what circumstances do resistance or acceptance arise?

Building on those questions, the following focal points were established:

- > How ‘smart’ is the city of the future? (part 1)
- > Pole position for new forms of mobility (part 2)
- > ‘We say no!’ – public protest in the energy transition (part 3)

During the event, the themes were taken up by the guest speakers and the members of the *Junges Forum* and examined from various inter- and transdisciplinary perspectives. In this volume, the presentations by the keynote speakers are described in the following conference report. The presentations by the speakers who were unable to submit articles for this volume are also summarised below.

In his presentation, **Klaus-J. Beckmann** (Vice President of the ARL) examined the trend towards the smart city and elaborated on the structures, principles and prerequisites it requires. In particular, constituent elements include ubiquitous information networks, discrimination-free access to information and high-quality methods of transmitting information. The transition process to a smart city can mean that the cities themselves offer a higher quality of life, but at the same time there is a risk that technical aspects will dominate the process and the social and cultural effects of smart grids will be neglected.

Katharina Pelka (Urban Development and Statistics Office in Heidelberg) described how a smart city can take shape and which factors are crucial for that to occur, using Heidelberg as an example. Some measures have already been implemented in the city for smart mobility, for example, demand-driven control of light intensity using remote management, which can increase the feeling of safety in potential 'fear zones' and prevent light pollution. Civil participation in particular was found to be a crucial aspect for establishing a smart city.

Weert Canzler (Berlin Social Science Center [*Wissenschaftszentrum Berlin für Sozialforschung, WZB*]) presented possible approaches to a mobility transition. Among the things he views as important are 'de-privileging' private cars (though there is as yet no legal framework for doing so) and pushing for the removal of motorways so that zones for pedestrians and cyclists can be created. According to Canzler, however, the transport sector is the biggest concern for the energy transition since private vehicles are persistently anchored in people's emotions and settlement structures and the automotive industry's path dependence can only be restructured with great effort.

In his research project, **Martin Leutelt** (Leipzig University of Applied Sciences [*Hochschule für Technik, Wirtschaft und Kultur, HTWK*]) investigates smart charging infrastructure for electric vehicles in urban spaces as an element of the mobility transition. The '*Laternenparken*' (literally 'street-lamp parking') project uses existing infrastructure components and couples them with new charging technology. Its aim is to tackle the main problem of electromobility: the use of different charging connectors with various authorisation and billing methods.

Martin Arlt (Leipzig University of Applied Sciences) presented his research project on radio wave technology in road construction. The project investigates the extent to which asphalt can be recycled using dielectric heating. The use of this heating technology is intended to contribute to resource conservation in road construction in accordance with the 2025 climate action plan for carbon-neutral economic activity and based on the guideline values of Germany's Technical Instructions on Air Quality Control ('*TA Luft*').

Markus Leibenath (Leibniz Institute of Ecological Urban and Regional Development [*Leibniz-Institut für ökologische Raumentwicklung e.V., IÖR*]) presented theses regarding the relationships between wind power, public protest and regional planning based on a post-positivist, constructivist methodology using case studies via document analysis, interviews and observations.

Furthermore, this volume includes articles written by the other contributors, which are presented below.

With their project report, 'The social impact of the local energy transition – the case of the rural district of Ahrweiler in Germany', **Dominik Berndt** and **Julian Engelbert** (TU Dortmund University) illustrate the discrepancies between political guidelines and public acceptance. Aspects of the environmental and social impact of new wind turbines received particular attention in their investigation, as did the negotiation of solutions with the citizenry. Their article presents the 'EnAHRgie' research project in detail, describing the initial situation, the methodology, the results and their explanation.

In her article, **Juliane Große** (University of Copenhagen) addresses the question of whether people from compact and densely populated urban areas (have to or want to) compensate for these spatial characteristics in their leisure activities. While concentrated urban development facilitates efficient energy use, weekend trips tend to cancel out its energy-saving effects. In her article, 'Compensating for compactness? Consumption and leisure travel of city dwellers vs. small-town dwellers in Denmark', **Große** and her colleague **Christian Fertner** present the results of their quantitative survey of the travel behaviour of the residents of greater Copenhagen and attempt to explain them.

In his article, **Christian Lamker** (TU Dortmund University) sheds new light on the contentious issue of 'protest cultures' in connection with visible and invisible facilities of the energy transition or with facilities that are potentially dangerous from a major accident prevention perspective. The study on how planners deal with such facilities identifies reaction types and describes internal and external factors affecting planning activities. Using an exploratory comparison, Lamker shows that differently perceived 'dangers' should be considered from various perspectives in action approaches to cooperative processes – a task area for urban land-use planners that is both a challenge and an opportunity and has thus far gone largely unresearched. His article, 'Factors influencing day-to-day planning: protest – cooperation – indifference?' presents these and other results of the study.

Albert Roßmeier and **Florian Weber** (Weihenstephan-Triesdorf University of Applied Sciences) investigate the aims and motives of public protest in their project. In their article, 'Stormy times. Civic engagement in wind power development: between support and rejection', they examine the spatial manifestation of the energy supply in the landscape using discourse analysis. Their work focuses on describing the negotiation and argumentation processes relating to the expansion of the electrical grid and the development of wind power, and identifies and explains patterns that lead to the establishment of certain interpretations of the landscape by protest groups.

The organisational and editorial team of the *Junges Forum* trusts that this ARL working report provides interesting and enriching reading, which, in keeping with the theme of the 2016 annual meeting, aims to encourage a 'transition' leading to a rethinking of the contents and further discussions.

Angelina Göb, Andreas Stefansky

CONFERENCE REPORT

The annual meeting of the *Junges Forum* (forum for young professionals) of the Academy for Spatial Research and Planning (ARL) took place in Leipzig on 6–8 October 2016; its theme was 'All change please!' and it addressed the challenges and opportunities of the energy transition.

In addition to shaping and managing the energy transition, its importance for spatial development was discussed by researchers and practitioners, with the following themes being addressed:

- > How 'smart' is the city of the future? (part 1)
- > Pole position for new forms of mobility (part 2)
- > 'We say no!' – public protest in the energy transition (part 3)

An account of the presentations by the conference's keynote speakers, Prof. Dr. Klaus-J. Beckmann (Vice President of the ARL), Dr. Weert Canzler (Berlin Social Science Centre [*Wissenschaftszentrum Berlin für Sozialforschung, WZB*]) and Dr.- Ing. Markus Leibenath (Leibniz Institute of Ecological Urban and Regional Development [*Leibniz-Institut für ökologische Raumentwicklung e.V., IÖR*]), is given below. The papers by the speakers who did not submit separate articles for this volume but made significant contributions to the event are also summarised.

Part 1: How smart is the city of the future?

Urban areas are centres not only for the development of new technologies and innovations, but also for their use, dissemination and refinement. At the same time, within and between cities and regions there are also interrelations that are characterised by the increased mobility of people, data, goods and capital. These circumstances call for sustainable approaches to energy production along with supply and security issues. In this context, the implementation of new technologies in the form of smart grids can be an instrument for linking energy and economic aspects with the aims of environmental and climate protection, with positive influences on future urban development. Smart grids are thus important cornerstones for the city of the future and an important task for urban and regional planners.

Presentation: How 'smart' is the city of the future?

In his presentation, Prof. Dr. Klaus-J. Beckmann examined the trend towards the smart city, highlighting the required structures, principles and prerequisites.

Drivers of urban development

Digitalisation is a primary driver in the development of smart cities as it now has an impact on all social and economic activity. To meet the requirements of sustainable urban development, principles need to be established that address not only the issues of decentralisation, networking and adaptability but also of civil participation and new information and communication technologies (ICT).

On the term ‘smart city’

The development of a smart city means the development of an intelligent and interlinked city that is viable and resilient (and thus post-fossil) and ‘has a pleasant atmosphere and design’, as Beckmann put it. Although there is no universally accepted definition of a smart city, the term is used below to refer to a city that uses innovative technologies (in particular ICT applications) to provide intelligent solutions for various aspects of urban development (infrastructure, buildings, mobility, services or safety/security). In addition to the technical aspects, smart cities also need solutions for social, participatory and procedural issues, methods and approaches that reach people in their daily routines, support them and enrich their lives, Beckmann emphasised.

Examples of smart cities

Various (funding) projects and partnerships to implement innovative planning, construction and operating principles show that smartness is ‘fashionable’; they include the European Innovation Partnership ‘Intelligent Cities and Communities’ in 2014, Horizon 2020 and the National Platform for the City of the Future, which Beckmann presented. These programmes look into questions of urban mobility and transport, ICT and energy production and use. Examples of specific applications of the smart city concept can be found in Germany and abroad: the *Morgenstadt Initiative* (a Fraunhofer Society innovation network), Intelligent Cities (China), the Future Cities Laboratory (Singapore-ETH Centre), the *Stadtlabor* ([Urban Lab] HU Berlin) and the TU Berlin Urban Lab (a research platform at the Technische Universität Berlin).

Characteristics and basic structures of a smart city

According to Beckmann, other characteristics and basic structures of a smart city include ubiquitous information networks, discrimination-free access to information (public Wi-Fi, apps, etc.), high-quality methods of transmitting information and, in connection with them, extensive automated data collection and availability (sensor systems) and the development of demand-driven operating modes. A smart city should in future have various networked technologies, such as decentralised/semicentralised infrastructures (for water, energy supply and transport), which also apply for the assumption of responsibility and in organisational structures, forms of participation and decision-making processes and can be subsumed under the term ‘smart governance’. Furthermore, smart applications for the economy, society, grids and mobility should be developed.

Implications for further development

Beckmann concludes from this that the transformation to smart cities is associated with the opportunities and risks described below. Opportunities lie in the actual transformation process of the cities, which can (and should) be exploited to improve the quality of life in cities by introducing innovative technologies and to provide solutions for energy and resource problems. To do this, solutions to the mobility problem and the related consequences of climate change will also need to be found. In this context, establishing innovative approaches means more than merely addressing the technical level; holistic approaches that include the social and organisational levels must be pursued in order to properly design processes and shape participation.

Risks are associated with development that is dominated by technology. Focusing solely on efficiency also harbours dangers, so aspects of consistency and sufficiency should also be given greater consideration by planners. Placing responsibility with 'sectoral' industries (e.g. energy suppliers, information technology, automotive engineering), or deficiencies in the 'smartening' process and incomplete integration processes, can have consequences for the implementation of the transformation that are difficult to reverse. Though data protection and data security have been largely automated and digitalised, deficiencies in connection with them, and the consequences of such deficiencies for urban structure, have thus far barely been addressed in discussions about the development of smart cities.

In his concluding remarks, Beckmann made an appeal not to plan past the people so that the compatibility and integration of technology and people can remain assured. According to Beckmann, open questions about the development of smart cities need to be addressed, namely where discussions about the ethical aspects get bogged down and who will or should take part in them. For the implementation of a smart city, (transparent) cooperation among policymakers, administrators, businesspeople, the citizenry and scientists – with the aid of innovative working, participation and decision-making processes – is important. In addition, continuous monitoring with impact analyses and audits/evaluations can help to identify and solve problems during the transformation. Cities will become ever more digital and ever smarter, but smartness arises only in the interactions among the corresponding services and the people shaping things – a reason, according to Beckmann, why new technologies also need to be 'urbanised'.

Case study: Heidelberg – on the path to becoming a smart city!?

On the topic of smart cities, *Katharina Pelka* (Urban Development and Statistics Office in Heidelberg [*Amt für Stadtentwicklung und Statistik Stadt Heidelberg*]) gave a presentation using Heidelberg as an example of what 'smart' can mean and how a smart city can emerge and succeed in implementation.

Approaches to implementing a smart city

For the rapidly growing city of Heidelberg, the starting point in its development as a smart city was its decision to actively encourage and shape its own development. This

was to be done using innovative (and, in particular, digital) technologies, so an interdepartmental project group was set up. The city formed a partnership – a ‘smart city alliance’ – with Palo Alto, California, to establish new approaches and development strategies. The purpose of the alliance was to exchange information about best practices and their implementation and to establish connections as a condition for a smarter and more efficient use of resources, and also to attempt to gain a holistic outlook on planning and networking in the environmental, economic and academic spheres.

Traffic action area – smart mobility

One of the measures already implemented in Heidelberg and presented by Pelka is an urban lighting scheme (*‘Beleuchtungskonzept Bahnstadt’*) in the traffic action area. It involves the demand-driven control of the intensity of LED lamps using remote management to control street lighting and adapt it to specific situations, increase the feeling of safety in potential ‘fear zones’ and prevent light pollution. In the future, the street lamps could be equipped with additional functionality. For example, the equipment already present on public streets can be fitted with traffic-control cameras, Wi-Fi access points or charging stations for electric vehicles. To establish a smart infrastructure, the city of Heidelberg is also using a parking management system with parking guidance and apps like ‘Touch and Travel’ (electronic payment system for the local Rhine-Neckar public transport system), ‘Match Rider’ (ride-sharing) and ‘VRNextbike’ (bicycle hire).

Civic participation action area

In addition to the implementation of ‘hard’ infrastructure, great importance is also attached to the civic participation action area in the development of smart cities. In a working group consisting of representatives of the public, the local council and the city administration, guidelines for ‘good participation’ are to be established and standardised under scientific supervision and external moderation. A key aspect of inviting and encouraging public participation is to establish commitments to timely notification about, and cooperation in, means of participating throughout the various phases of a project. The quality of the participation is to be assured and improved with feedback and evaluation processes.

Summary

Taken together, the examples cited from the city of Heidelberg show that much of what is currently discussed under the heading of the ‘smart city’ has already been implemented in the form of integrated, sustainable urban development and is firmly anchored in day-to-day planning. In general, innovative technologies should increasingly find their place in urban spaces and must be considered in future infrastructure development and transformation. In conclusion, however, Pelka noted that many questions remain open and are still in need of discussion, such as how to deal with the increasing dependence of infrastructure on technology, data security, and the inclusion and involvement of a wide range of population groups.

Part 2: Pole position for new forms of mobility

New mobility – what does it mean and how does it actually affect an area? How much do changing lifestyles and demographic changes affect mobility, and how is mobility affected by changing circumstances in general or by environmental and climate policy regulations imposed from above? New technologies and organisational strategies such as inter- and multimodality, sharing arrangements and information and communication technologies have implications for spatial structures and for location and behavioural patterns. In mobility strategies, interdependencies and feedback effects are increasingly implemented through demand-based and situationally adapted measures. Questions of financing for transport infrastructure and of guaranteeing minimum levels of transport capacity are also aspects that planners will have to contend with and implement in practice.

Presentation: Pole position for new forms of mobility

In his presentation, Dr. *Weert Canzler* (Berlin Social Science Centre [*Wissenschaftszentrum Berlin für Sozialforschung, WZB*]) discussed why a mobility transition is needed and presented the required solutions.

Traffic is the problem

In addition to the path dependency of economic development and the high costs, urban design structures also make an ad hoc transition impossible. In saturated markets, increases in technical efficiency that should actually save energy are thwarted by the rebound effect (e.g. by the increased engine output and higher sales volumes of SUVs), so that the goal of decarbonisation appears far off. To solve this problem, the car's role has to be redefined, according to Canzler. Priority should no longer be granted to cars over other means of transport (departure from the no longer modern but structurally persistent car-friendly city paradigm) but instead to pedestrians and cyclists, and also to public cars and ride sharing to complement public transport. To this end, intermodal mobility strategies can combine and integrate various transportation services under the motto: 'Keep it simple and easy.'

The car's new role: e-mobility and innovative mobility services

Canzler calls for the promotion of non-motorised traffic and the electrification of motorised traffic as post-fossil mobility now offers more both technically and in terms of product choice: in addition to conventional e-mobility (trains, trams, trolleybuses), battery/electric and fuel cell vehicles, e-bikes and e-scooters offer further alternatives. Thus e-mobility can (and should) be seen as a fundamental innovation in two ways: first, as an organisational innovation for mobility, i.e. with integrated e-mobility services, and second, as a cross-sectoral innovation, i.e. in the form of electric vehicles as part of smart grids and green hydrogen as an additional storage option for surplus electricity from renewables (V2G and P2X). In addition, as Canzler showed using statistical data, innovative mobility services are booming in the public transport sector (e.g. citybikes, Deutsche Bahn's Bahncard 100, Velib/

Autolib) or in the automotive sector (e.g. car2go/moovel, DriveNow). Moreover, new players are entering the market (Uber, Google, Tesla, Apple, etc.) and bicycle use is on the rise in cities. Because of these developments, innovations also become apparent in cityscapes, for example as multimodal arenas such as the Berlin Südkreuz railway station or the eMobility Cube at the train station in Wolfsburg.

Driving factors for networked intermodal mobility offerings

In Canzler's view, the driving factors for networked intermodal mobility offerings can be found at three levels: technical (through smartphone apps, automated driving, and traffic as part of a renewable energy system), political and economic (with regard to CO₂ emission limits and new business models in slot management), and behavioural (trends towards being permanently online and pragmatic multimodality).

The mobility transition is possible if...

Canzler concluded by saying that the mobility transition appears possible if attractive options are implemented and new infrastructures are developed or old ones are dismantled. New infrastructures include mobility stations and multimodal arenas close to residential areas and workplaces, and networked paths, express lanes and parking facilities for bicycles. There are also possibilities for optimising delivery services (pick-up points, delivery with cargo bikes and electric vehicles) and the integration of electric vehicle fleets in smart grids.

What is also needed are clear and bold decisions to 'de-privilege' private cars through strictly enforced parking policies with exceptions for car-sharing with electric cars, through car-sharing laws, and by removing roads or repurposing them as zones for pedestrians and cyclists. Further requirements include fixed schedules for zero-emission zones, admission bans for vehicles with combustion engines, and planning and control regulations (company cars, parking ordinances, etc.).

Open questions

Electromobility is not only an issue for metropolises and cities; it needs to be implemented in both cities and rural areas – i.e. a post-fossil mobility transition is required; technical, political and behavioural drivers apply everywhere. Problems that hinder a quick transition can mainly be found in public transport, which is often missing as a 'backbone' outside of cities and is at the same time both a cause and effect of dependence on cars in peripheral regions with settlement structures that are designed for cars. There are opportunities in the expansion of prosumer networks. However, numerous questions that Canzler raised at the end remain unanswered, among them how the path dependency of cars can be overcome and how the transition from the car-friendly city to city-friendly mobility, from car-dependence to car-independence, can succeed. In addition, it needs to be determined how the regulatory framework for networked, post-fossil mobility should look and how data protection and data security can be guaranteed.

Summary

In conclusion, Canzler summed up by noting that traffic is the biggest concern for both climate protection and the energy transition. Private cars are anchored in people's emotions and in settlement structures, and the automotive industry's path dependence can only be restructured with great effort; these two factors can only be countered with restrictions and laws. Still, networked, post-fossil mobility is taking shape with new opportunities resulting from the bicycle boom, intermodal offerings and electrification. In this process, digitalisation is the main driver; the smartphone is becoming the master key to mobility. Apps enable low transaction costs for the use of slots, easy car and ride sharing, and the integration of electric vehicles in smart grids. However, there is as yet no legal framework for 'de-privileging' private cars and deregulating public transport. In addition to how the transition will be organised, aspects of data security, data protection and the social safety net remain unresolved. The mobility transition is possible and necessary, as Canzler concluded, namely as part of a decentralised energy transition.

Research project: Smart charging infrastructure in urban spaces

In his research project, *Martin Leutelt* (Leipzig University of Applied Sciences [*Hochschule für Technik, Wirtschaft und Kultur, HTWK*]) investigates the contribution that smart charging infrastructure for electric vehicles in urban spaces makes to the mobility transition. He presented spatial and technical solutions for providing electromobility infrastructure.

The main problem

The main problem for electromobility currently relates to vehicle charging, and more specifically, the use of various charging connectors with different authorisation and billing methods. According to Leutelt, this situation can only improve with standardisation and decreasing competition among manufacturers with respect to processes.

The *Laternenparken* project

This is what the '*Laternenparken*' (literally 'street-lamp parking') project in Leipzig's Mozartstraße addresses. It couples existing infrastructure components with new charging technology. Using the electrical infrastructure in the city's existing equipment in multiple ways reduces costs significantly (no need to deploy charging stations, no additional structures in the streetscape) as the lamps no longer serve only the purpose of illumination but can also be used to provide electricity for charging. Further (cost) benefits result from the number of potentially available charging points distributed across the entire city and also from their increased visibility and availability to users, which is important given that electromobility cannot gain in quality and acceptance without a guarantee of sufficient, smart charging infrastructure. It can be expected that only open standards (one charging connector for all makers of electric cars) will solve the problem of technical implementation: the use of modular charging systems embedded in open-source

processes. This can reduce dependence on manufacturers. Though it will result in more effort in the formulation of project interfaces, it will be a positive development for users.

Research project: Radio wave technology in road construction to support the energy transition

Martin Arlt (Leipzig University of Applied Sciences) presented his research project on radio wave technology in road construction to support the energy transition.

The foundation of mobility

Roads are the foundation for the mobility of both people and goods. They are made using asphalt, which is produced from a mixture of stone and bitumen. The latter is 100% recyclable. In the interest of conserving resources, road construction should also follow the rule of preservation before reconstruction. This can only be done by recycling asphalt. To achieve this goal, recycling can be performed using eco-friendly and economical heating technology in accordance with the 2025 climate action plan for carbon-neutral economic activity and based on the guideline values of Germany's Technical Instructions on Air Quality Control (*Technische Anleitung zur Reinhaltung der Luft – TA Luft*). These guidelines include strict rules for the operation of asphalt mixing equipment, which is generally operated using fossil fuels.

The research project

This is where this innovative research project on the use of radio wave technology comes into play, using dielectric heating to make asphalt recyclable. The aim of the research project is to determine the effects of heating on the characteristics of building materials and, in a second step, to develop a recycling prototype based on the radio wave technology. The technology involved corresponds to that used in commercial microwave ovens. Radio waves are useful due to their ability to quickly and uniformly deliver heat with high efficiency during the recycling process. By refraining from the use of fossil fuels to produce asphalt, the presented method can produce 'green asphalt' with a recycling rate of 100% using renewable energy. Arndt sees it as a promising field for getting the energy and mobility transitions 'on the right path', though the research is still in its infancy.

Part 3: 'We say no!' – public protest in the energy transition

The energy transition is not only a major technical challenge but a social one as well. It was not, is not and will not be realisable without criticism, protests and resistance. Protests organised by the public are mostly directed at project developers, municipal administrations and local policymakers. With local objections to the installation of new infrastructure such as wind turbines or overhead power lines on the rise and gaining considerable attention in the media, there are discussions about options and

strategies for increasing the local acceptance of the energy transition, and new and/or different planning processes are being tested.

Presentation: ‘We say no!’ – public protest in the energy transition

In his presentation, Dr.-Ing. Markus Leibenath (Leibniz Institute of Ecological Urban and Regional Development [*Leibniz-Institut für ökologische Raumentwicklung e.V., IÖR*]) described the relationships between wind power, public protest and regional planning using seven theses based on a political science and discourse theory perspective; the theses are described below.

Wind power, public protest and regional planning: the seven theses

Thesis 1 states that the public does not only say ‘no’ but also says ‘yes’. This statement can be confirmed by referring to the data from the 2012 survey on wind power use by the German Wind Energy Association (*Bundesverband WindEnergie*), which among other things queried the acceptance of wind turbines in rural areas in all of Germany’s federal states. Thesis 2 considers critics of wind power and posits that people say ‘no’ in different ways. The starting point for this argument is studies by Leibenath from 2014 and 2016¹, which used interviews conducted in the towns of Ingersheim and Elbtal-Osterzgebirge to examine how people say no. For example, those surveyed in Ingersheim spoke of wind power in terms of ‘environmental and economic nonsense, a decline in property values, and association with health problems in part due to infrasound emissions’. Other arguments invoke the appearance of the landscape, with claims of irreversible landscape blight caused by wind turbines.

With thesis 3, Leibenath showed that spaces and landscapes are ‘created’ in debates about wind power. He explained this with a comparison (from one of his studies) of the supporting and opposing discourses in Wolfhagen, in which the two sides reinforced their arguments through the selective use of photographs.

From the chronology of events in Wolfhagen and a description of changes in stakeholder constellations, thesis 4 concludes that public protest and collective identities are mutually dependent.

Thesis 5 examines the statement that wind power changes the character and the public perception of regional planning. Leibenath stated this based on the spatial management of land use for wind power. Since wind turbines have been counted since 1997 among the privileged projects for outer zones and are permitted as long as they do not conflict with public interests (section 35(1) of the Federal Building

1 Leibenath, M.; Otto, A. (2014): Competing Wind Energy Discourses, Contested Landscapes. *Landscape Online*, 38, 1-18. <https://www.landscape-online.org/index.php/lo/article/view/LO.201438/38> (18 May 2021)

Leibenath, M.; Wirth, P.; Lintz, G. (2016): Just a talking shop? – Informal participatory spatial planning for implementing state wind energy targets in Germany. *Utilities Policy*. Online first published on 29 February 2016.

Code), municipalities and regional planning associations can determine where they will be built and in which areas wind turbines will not be permitted. Because of this focus, regional planning is increasingly being equated with wind power planning in public perception and representation, with the shift in emphasis in connection with the issue of wind power becoming increasingly regulatory, technical and political.

In thesis 6, Leibenath states that the designation of areas suitable for the development of wind power can bring planners and protesters into role conflicts. By analysing five project reports, he developed discursively produced subject positions. To illustrate this, he contrasted the 'cooperative and communicative planner' with the 'legally and technically versed planner'. Role conflicts among protesters stem from a rejectionist attitude towards cooperation and communication, especially if their protest was (publicly) belittled previously.

In thesis 7, Leibenath clarified the relevance of affected parties in the designation of areas suitable for the development of wind power. For example, taking local acceptance into account is to be classified as a planning error because the 'results of simple majority decisions by local councillors or a referendum are not relevant for the weighing of interests in regional planning' (OVG [Higher Administrative Court] *Schleswig-Holstein* 2015, 1 KN 6/13). In addition, various types of logic underlie the handling of acceptance. Planners are outwardly apolitical but are obliged to act in line with legal and technical routines and weigh interests objectively, while protesters act through 'repoliticisation', mass petitions and actions that get media attention.

In conclusion and referring to the seven theses, Leibenath emphasised that his results were established on the basis of a post-positivist and constructivist methodology using case studies via document analysis, interviews and observations in order to illustrate with specific examples the challenges (or opportunities) and consequences of the energy transition.

Excursion: From theory to practice – lignite open-pit mine reuse

In keeping with the event's title 'All change please!', the presentations were followed by a look back and a look ahead. In the excursion, which was led by Prof. Dr. Andreas Berkner, head of the regional planning association for Leipzig and West Saxony, the participants examined the (spatial) effects of open-pit lignite mining on people, the environment and regional economic development and the pros and cons in comparison with renewable energy. After learning about the history of the Schleenhain lignitemining area, the group learned about the current outlook for the mine. They then visited the post-mining landscapes of Lake Zwenkau and Lake Markkleeberg, which are now important not only for leisure and recreation but also for flood protection, landscape regeneration and nature conservation.

Dominik Berndt, Julian Engelbert

THE SOCIAL IMPACT OF A LOCAL ENERGY TRANSITION – THE CASE OF THE DISTRICT OF AHRWEILER IN GERMANY

Contents

- 1 Starting situation
- 2 Subject of the study project
- 3 Environmental and social impact as the focus of research
- 4 Social impacts in the context of public protests
- 5 Conclusions
References

Abstract

On 10 June 2011, the district council of Ahrweiler in the north of the federal state of Rhineland-Palatinate in Germany took the decision to meet 100% of the district's electricity needs through renewable energy by 2030. Yet the share of renewable energy in the district's overall electricity consumption has barely grown since then. This major discrepancy between political will and reality gave rise to a local research project entitled '*EnAHRgie – Nachhaltige Gestaltung der Landnutzung und Energieversorgung auf kommunaler Ebene. Umsetzung für die Modellregion Kreis Ahrweiler*' ('EnAHRgie – the sustainable organisation of land use and energy supply at the municipal level: implementation in the model district of Ahrweiler'), funded by the *BMBF* (Federal Ministry of Education and Research). At TU Dortmund University, the Department of Planning and Environmental Law of the Faculty of Spatial Planning is responsible for questions relating to planning law and public administration in the context of the project. With these issues in mind, an analysis of the status quo was completed in September 2016 and showed that, from a planning point of view, the prevailing circumstances for a local energy transition in the district of Ahrweiler have been extremely unfavourable right from the start. This applies in particular to the use of wind power, which conflicts with issues surrounding the conservation of sites, species, cultural landscapes and historic buildings and monuments. The EnAHRgie project is thus likely to face a major challenge in terms of developing a sustainable energy strategy for the area under study.

Keywords

Local energy transition – renewable energy – wind turbine – environmental and social impact – citizen action group

1 Starting situation

In 2011, in connection with Germany's decision to accelerate the nationwide energy transition after Fukushima, the federal state of Rhineland-Palatinate set itself the goal

of sourcing its electricity entirely from renewable energy by 2030 (*MWKEL* [Ministry for Economy, Climate Protection, Energy and State Spatial Planning in Rhineland-Palatinate] 2015). On 10 June 2011, the district council of Ahrweiler, in the north of the state, followed suit and also decided to cover 100% of its electricity needs through renewable energy by 2030 (Schäfer 2015: 3). But the share of renewable energy in the district's overall electricity consumption has barely grown since then: in 2013 it was 10%, and in 2014 it was 12% (Schäfer 2015: 5). Thus it seems that stakeholders in the district have not yet found an approach that is going to enable this goal to be achieved by 2030. This major discrepancy between the political will – which is exactly what the district council's decision represents – and reality gave rise to a local research project entitled '*EnAHRgie – Nachhaltige Gestaltung der Landnutzung und Energieversorgung auf kommunaler Ebene. Umsetzung für die Modellregion Kreis Ahrweiler*' ('EnAHRgie – the sustainable organisation of land use and energy supply at the municipal level: implementation in the model district of Ahrweiler'), funded by the *BMBF* (Federal Ministry of Education and Research). Under the stewardship of the Ahrweiler-based European Academy of Technology and Innovation Assessment, 13 partners are collaborating on this interdisciplinary project (duration: 2015-2019) in order to work out a local energy transition strategy for the district and develop it into a transferrable solution for helping other districts.¹ At TU Dortmund University, the Department of Planning and Environmental Law of the Faculty of Spatial Planning is responsible for questions relating to planning law and public administration in the context of the project. With these issues in mind, an analysis of the status quo was completed in September 2016 and showed that, from a planning point of view, the prevailing circumstances for a local energy transition in the district of Ahrweiler have been extremely unfavourable right from the start (Engelbert/Strothe 2016: 35). This applies in particular to the construction of wind turbines.

The district of Ahrweiler stretches from the sparsely populated ridge of the Hocheifel (High Eifel) region in the west to the Rhine River as its eastern limit. Vast swathes of the Eifel landscape are designated as special protected areas for birds, and provide a habitat for red kites and black storks, although this does not mean that the Rhineland-Palatinate state spatial planning authorities automatically rule out the use of wind energy there (*MWKEL* 2014: Objective 163 d). There are often areas outside these protected sites that are suspected of being relevant from the point of view of species conservation (Engelbert/Strothe 2016: 33). The conservation of cultural landscapes and historic buildings and monuments is another factor that clashes with the use of wind power, and these aspects are covered – or are to be covered in future – by spatial planning objectives. In addition, some hilltop areas in the west of the district are subject to a development freeze in accordance with legislation on highways: planning approval is currently underway for a motorway link here between Kelberg and Nettersheim via the BAB 1 (Federal Motorway 1).

A new regional spatial structure plan for the Middle Rhine and Westerwald area, which includes the district of Ahrweiler, was completed in December 2016. Because of all the conflicting factors and uncertainties described above, the current draft plan

1 For further information on the project partners and content, please see www.enahrgie.de.

does not provide for any priority areas for wind power in the district (*Planungsgemeinschaft Mittelrhein-Westerwald* [Middle Rhein-Westerwald Planning Consortium] 2016: 80).² As a result, the municipal authorities for urban land-use planning have full planning control when it comes to the use of wind energy. But even at that level, there are no partial preparatory land-use plans for specific areas within the district for wind power, and therefore no designated concentration zones. There is only one local authority that still uses a relevant planning process (Engelbert/Strothe 2016: 35). Given these multiple and partially overlapping conflicts, it appears that planning on the basis of concentration zones – which involves highly complex methods to boot – can no longer be considered to provide any legal certainty.

Because of this absence of planning control, project developers in the wind power sector have no choice but to look for suitable land themselves, get directly involved in the local project planning process and apply to the district authorities for an individual permit in line with the relevant immission control legislation. Any questions and conflicts that were not settled at the planning levels must subsequently be settled during the course of these processes. However, the first port of call for project developers, particularly when it comes to clarifying the question of land availability, is often the local mayor, who works on a voluntary basis within the Rhineland-Palatinate district administration and is suddenly faced with complex projects and huge sums of investment.

Owing to the complexity of the situation at the outset, even when compared with other districts, the EnAHRgie project is likely to face a major challenge in terms of developing a sustainable energy strategy for the area under study. Thanks to the practically-oriented project work of the spatial planning course at TU Dortmund University, students are also given an opportunity to tackle this type of challenge. Under the auspices of the Department of Planning and Environmental Law in the 2015/16 academic year, a project was implemented by advanced students (in their fifth or sixth semester) to examine these issues. The project was entitled '*100% erneuerbar bis 2030 – eine lokale Energiewende für den Landkreis Ahrweiler*' ('100% renewable by 2030 – a local energy transition for the district of Ahrweiler'), and came up with some valuable suggestions on how to deal with all the implications of the social impact in connection with the local energy transition. Social impact proves to be a particularly sensitive issue when the energy landscape is being restructured under difficult planning conditions marked by an enormous degree of uncertainty, as is the case here. The research and findings of this project are the main focus of this article.

2 At the time of writing, the definitive plan adopted by the planning consortium's regional representation had been submitted for approval to the Ministry of the Interior of the federal state of Rhineland-Palatinate. The definitive version was thus neither legally binding nor publicly disclosed at this point. For this reason, the version referred to below is the latest available draft from June 2016.

2 Subject of the study project

The thrust of the study project stems from the unfavourable circumstances for a local energy transition in the district of Ahrweiler as described above. The research was also significantly influenced by the fact that despite all the endeavours made so far, there is still a marked difference between aspirations and reality when it comes to implementing the local energy transition. In essence, the research was premised on the hypothesis that although this goal is achievable in theory, the strategies currently being pursued do not appear very promising. The district was always considered as a whole in order to be able to provide significant findings for the entire area covered by the goal of the local energy transition. The project was guided by the following research question:

what technically and legally feasible options does the Ahrweiler district have for generating electricity from renewable energy, while paying particular attention to the environmental and social impact, and contributing to the goal of achieving '100% renewable by 2030'? (Berndt/Braun/Brede et al. 2016: 9).

Following a process of discussion and careful consideration within the project group, the environmental and social impact emerged as the main focus of research. From a spatial planning perspective, these two focal points appear to play an important role as areas of intervention because they allow all participants and all those affected by a local energy transition to be included in the debate. In the preliminary stages of the research project, these two factors were presumed to represent the greatest potential for conflict, which was an additional reason for analysing them more closely. In order to carry out a detailed examination of the difficulties of implementing a local energy transition in the Ahrweiler district, additional issues of relevance to the environmental and social impact were also analysed. Increasingly, the political and administrative dimension emerged as a key problem area, and so this was examined separately and dealt with in an excursus.

The focus of this article, however, is limited to aspects related to the environmental and social impact. Following a brief overview of the project, a case study of a citizen action group against wind power in the Ahrweiler district will illustrate how the public perceives the prospect of a local energy transition. The various arguments raised in this connection are to be viewed critically.

3 Environmental and social impact as the focus of research

The first phase of the project aimed to pinpoint the various options for generating electricity from renewable energy and to examine their technical and legal feasibility. Photovoltaic systems, run-of-river and pumped-storage hydropower plants, biomass plants, combustion engines and wind turbines were identified as technically and legally feasible options, because the respective site requirements are fulfilled and there are no *a priori* legal impediments to their construction in the area under study (Berndt/Braun/Brede et al. 2016: 55).

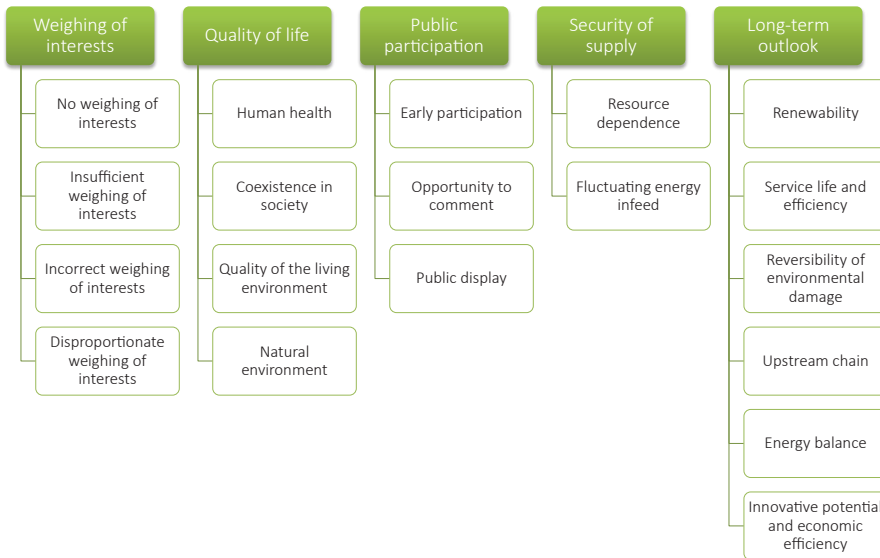


Figure 1: Social impact parameters /Source: the authors

Following on from the findings of this initial screening phase, the above-mentioned types of installation were examined from the point of view of their environmental and social impact. The core element of primary data collection on the environmental and social impact was a series of guided interviews with experts. The information from these interviews with a total of 14 experts underpinned or supplemented the research findings from the study group's own secondary analyses of the social and environmental impact. In order to answer the research question, six core areas were identified and equally represented by the experts: politics, tourism, energy, agriculture and wine production, the environment and citizens. Various people were interviewed, including members of a citizen action group against wind energy from the district of Ahrweiler (Berndt/Braun/Brede et al. 2016: 13 et seq.).

For issues relating to the environmental impact, Article 20a of the Basic Law (*Grundgesetz, GG*) as well as the Environmental Impact Assessment Act (EIA Act) (*Gesetz über die Umweltverträglichkeitsprüfung, UVPG*) were consulted. The protected assets referred to under section 2(1) nos. 1-3 of the EIA Act served as parameters for defining 'environmental impact' within the scope of the project. The assumption, therefore, was that installations for producing electricity from renewable energy have or may have a negative impact on animals, plants, the soil, biodiversity, water, the climate, air, the landscape, human health as well as cultural and other assets. The negative effects on these protected assets were examined and differentiated according to their severity on the basis of a rating scale.

A similar process was envisaged to elucidate the social impact. Here, the study group had to come up with its own parameters because there was no equivalent to the set of parameters in the list of protected assets under the EIA Act. The parameters were

defined as follows: the weighing of interests, quality of life, public participation, security of supply and long-term outlook. These were deemed to be the most suitable headings for the terms of reference of this research project (Fig. 1). In addition, the individual parameters were further defined according to subconcepts established for the purposes of the project. The negative effects of the energy installations on the selected parameters were then examined, this time from the point of view of their social impact, and differentiated according to their severity on the basis of a rating scale.

4 Social impacts in the context of public protests

As described above, interviews with experts were of key importance to the research in relation to the environmental and social impact. The expertise of the interviewees and the broad range of issues covered provided a detailed picture of the situation in the district. In particular, the interview with representatives of a citizen action group against wind energy gave an insight into the views of the public concerning the local energy transition and its environmental and social impact.

The motivation and purpose of the action group stem from four factors or themes: lack of knowledge, lack of involvement, information policy and the concept of fellow sufferers. The first three aspects are closely interlinked and partially overlap. Lack of knowledge stems from both a lack of involvement in the planning process and an inadequate information policy on the part of municipal policymakers, for example because of non-public council meetings on the subject of wind turbines (project interview 2016). The resulting lack of knowledge gives rise to speculative assumptions about certain planning projects, which in turn are further fuelled by subjective fears and perceptions. In light of this situation, a crucial question is the extent to which affected citizens can or want to utilise the opportunities that are actually available to them for participating in these processes. Provision is made for public participation at various stages in the planning process for wind turbines. In the area under study, however, there are no land designations established under the spatial or urban land-use planning processes. This means that public participation is limited to the assessment of a project from a spatial planning perspective and the approval process for compliance with immission regulations (section 17 VII of the Rhineland-Palatinate State Spatial Planning Act [*Landesplanungsgesetz Rheinlandpfalz, LPG RLP*] and section 10 III of the Federal Immission Control Act [*Bundesimmissionsschutzgesetz, BImSchG*]). Owing to the unfavourable starting circumstances in the district of Ahrweiler, these processes are often not even initiated or simply grind to a halt before any public participation can begin, which means that public debate often remains at a generic level. The information channels available at this stage are not enough to remediate this lack of knowledge. In any case, given the complex planning-related conflicts involved, it is questionable whether this is ever possible – after all, even project developers and authorities are initially lacking in knowledge, and the process is also about improving their understanding. Even so, in such situations it would still be possible to communicate openly about this lack of knowledge.

Accordingly, when members of the action group in question are asked to explain why it was set up, the main reason given is this information deficit. The preconceived ideas that the public has as a result of the media and other channels of information are another contributing factor, which presumably plays a role but is hard to quantify. Taken together, these aspects lead to the establishment of action groups like the one described here, whose purpose is to form their own opinion on the issue in question and then make their views known. Resistance to the local energy transition is linked to two factors, which are the ones that stoke conflict in most cases: the technology of wind turbines and the behaviour of policymakers.

An argument commonly used to justify the rejection of wind turbines is the volatility of electricity production which, according to the action group, calls into question the whole point of such installations (project interview 2016). This line of reasoning is linked with the perception that wind conditions in the area are inadequate. This is seen as another reason why there is no justification for the use of wind turbines (project interview 2016). And yet a look at the wind atlas for Rhineland-Palatinate is enough to confirm that wind conditions certainly are sufficient (*MWKEL* 2013: 38 et seq.). The state of Rhineland-Palatinate provides this information online free of charge but it appears that either the general public is not aware of it, or they do not trust it.

Wind turbines are also criticised because of the effects their presence and operation have on people, animals and woodland. People are concerned that the use of wind turbines has negative repercussions for human health and bird and wildlife populations, and leads to land take and soil erosion, especially on woodland (project interview 2016). Wind turbines are associated with a risk to human health because of the infrasound and low-frequency sound they emit, and because of their size and the minimum distance between them, which is seen as inadequate (project interview 2016). It is not yet possible to draw any scientifically reliable conclusions on the phenomenon of infrasound (*MWKEL* 2013: 21). As for low-frequency sound, the decisive reference is the Technical Guidance for the Protection Against Noise (*TA Lärm*, Part 6, Immission Values). Low-frequency sound can be reduced by choosing a favourable location and through careful selection of suitable wind turbines (Kalt-schmitt/Streicher/Wiese 2014: 535). Negative effects on flora and fauna are a logical consequence of wind turbines, given the dimensions of these installations and the fact that they can only be located in outlying areas. The extent of these effects depends on the conditions of the individual site and cannot be quantified as a whole. Adverse effects on some of the local flora and fauna cannot be ruled out.

In addition, much resentment arises from an intangible, subjectively perceived intrusion on the existing cultural landscape as well as from tangible concerns about any indirectly related reduction in property values. Because of their size, wind turbines in particular have a visual impact on historical buildings such as castles used as tourist attractions, and this is another aspect that is criticised by the protest movement. People fear a negative impact on soft tourism, which is an important part of the economy for the district of Ahrweiler (Ahrweiler District 2012). A dynamic perception of cultural landscape, which acknowledges constant change through human intervention, is rejected (project interview 2016). Rather, the assumption is that any

change to the status quo through the addition of a wind turbine is tantamount to a partial destruction of the cultural landscape.

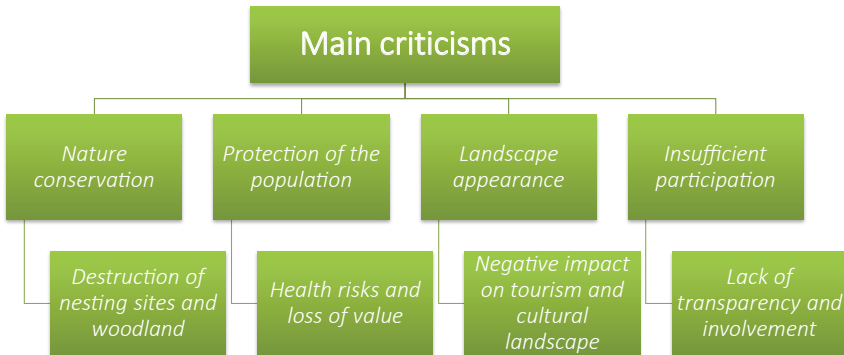


Figure 2: Main criticisms from the action group / Source: the authors

The behaviour of policymakers is also viewed critically by the action group. They suspect them of financial greed, for example, or for making false promises, having a lack of environmental awareness and inadequately allocating responsibilities between the individual authorities. According to the action group, issues such as the environmental and social impact are always of secondary importance to policymakers (project interview 2016). The financial aspect is always decisive when it comes to the construction of wind turbines, since rental payments generate revenue for the land owner. A contentious issue, which arises directly from this aspect, concerns the use of these proceeds when they belong to the local authorities. Here, the authorities are condemned for their false promises and their policy of weighing interests to the detriment of the environment and society as whole (project interview 2016). Another criticism concerns the way in which local authorities are organised in Rhineland-Palatinate. It is often the local unsalaried mayors that have to deal with these projects, and the action group believes they are not up to the task (project interview 2016).

The criticisms raised by the action group concerning the planning and construction of wind turbines can be summed up under four categories: nature conservation, protection of the population, appearance of the landscape and lack of participation (Fig. 2). The first three aspects refer primarily to wind turbines, while the last point concerns municipal policymaking.

5 Conclusions

The political goal of achieving a local energy transition by 2030 in line with the district council's decision has been up against some unfavourable planning-related circumstances in the district of Ahrweiler from the outset. In large parts of the district's territory, there are considerable constraints on the use of wind power in particular, owing to issues concerning protected areas and wildlife conservation, as

well as the conservation of the landscape and historic buildings and monuments. It is often very difficult to manage these matters from a spatial planning perspective, since the process of acquiring the necessary planning knowledge is not only highly complex but also very costly. To date, neither spatial planning nor municipal urban land-use planning has been able to provide any guidance in the form of land designations. As a result, conflicts can only be resolved at the immediate project planning stage and during the approval process.

In view of the above, the study project focused primarily on the environmental and social impact of the local energy transition. These two research areas were identified as a significant source of conflict in successfully achieving the 100% target. For this reason, a problem-oriented approach was adopted to analyse the environmental and social impact of electricity generation facilities powered by renewable energy. It was particularly the social impact of these facilities that was defined by the project on the basis of its own parameters, owing to a lack of indicators or examples in the literature or in practice. As a result of the research carried out on the two focal points, the project – which included interviews with experts – was able to provide a detailed insight into the problematic issues in the area under study. In order to acquire a comprehensive and meaningful picture, the interviews included representatives from politics, tourism, energy, agriculture and wine production as well as the environment, and the same themes were also discussed with local residents. In this context, members of an action group against wind energy were also interviewed, and they made their views very clear.

When evaluating the statements made by the action group, it is important to bear in mind that the conclusions drawn from them are limited to the individual situation in the area under study, which is the district of Ahrweiler. The findings cannot simply be transferred to other areas and situations, not least because the interviews were not based on a representative sample for reasons of limited resources. Even so, the research project yields interesting insights into a region that has set itself the task of achieving a local energy transition and may therefore be considered a model region.

The criticism voiced by the action group regarding the implementation of the local energy transition applies primarily to wind turbine technology and the working methods of policymakers and the local administration. Based on statements made by the action group and the interviews relating to the other areas, it has emerged that the biggest potential for conflict lies in the following four categories: nature conservation, the protection of the population, the appearance of the landscape and a lack of participation (Fig. 2). These factors are connected with both the environmental and social impact of wind energy projects, which confirms the hypothesis set out at the start of the research project. It is particularly the aspect of nature conservation that highlights this close connection: environmentally compatible planning also contributes significantly to a positive social impact and vice versa.

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References

- Berndt, D.; Braun, P.; Brede, L. et al. (2016): 100% erneuerbar bis 2030 – Probleme der lokalen Energiewende im Landkreis Ahrweiler unter besonderer Berücksichtigung der Umwelt- und Sozialverträglichkeit. Final Report of Study Project F07 in the Academic Year 2015/16, Faculty of Spatial Planning, Dortmund.
- Engelbert, J.; Strothe, L. (2016): Legal framework. In: EA European Academy of Technology and Innovation Assessment GmbH (Ed.) (2016): EnAHRgie – Nachhaltige Landnutzung und Energieversorgung: Modellregion Kreis Ahrweiler. Status-quo-Analyse der lokalen Energiewende im Landkreis Ahrweiler, S. 32-35.
- Kaltschmitt, M.; Streicher, W.; Wiese, A. (2014): Erneuerbare Energien – Systemtechnik, Wirtschaftlichkeit, Umwelt-aspekte. Berlin/Heidelberg.
- Kreis Ahrweiler (Ed.) (2012): Der Kreis Ahrweiler. <http://www.kreis-ahrweiler.de> (18 November 2015).
- MWKEL – Ministry for Economy, Climate Protection, Energy and State Spatial Planning Rhineland-Palatinate (Ed.) (2013): Windatlas Rheinland Pfalz. Energie, die einleuchtet. Mainz.
- MWKEL – Ministry for Economy, Climate Protection, Energy and State Spatial Planning Rhineland-Palatinate (Ed.) (2014): Teilfortschreibung LEP IV – Erneuerbare Energien. Mainz.
- MWKEL – Ministry for Economy, Climate Protection, Energy and State Spatial Planning Rhineland-Palatinate (Ed.) (2015): Erneuerbare Energien in Rheinland-Pfalz. <http://www.mwkel.rlp.de/Energie/Erneuerbare-Energien/> (15 November 2015).
- Planungsgemeinschaft Mittelrhein-Westerwald (Ed.) (2016): Regionaler Raumordnungsplan Mittelrhein-Westerwald. Entwurfsfassung zum 3., eingeschränkten Anhörungs- und Beteiligungsverfahren. Koblenz.
- Schäfer, M. (2015): Die Energiewende im Kreis Ahrweiler. 4th Status Report November 2015. Ahrweiler.

Juliane Große, Christian Fertner

COMPENSATING FOR COMPACTNESS? CONSUMPTION AND LEISURE TRAVEL OF CITY DWELLERS VS. SMALL TOWN DWELLERS IN DENMARK*

Content

- 1 Introduction
 - 2 Methods and study design
 - 3 Compensatory activities in Denmark and Greater Copenhagen
 - 3.1 Trends and counter-trends in Danish cities
 - 3.2 Compensatory leisure travel of city dwellers vs. small town dwellers in Greater Copenhagen
 - 4 Discussion and Outlook
- References

Abstract

The following article summarises the first results of a two-part study on consumption patterns in Denmark and leisure travel in Greater Copenhagen in particular. The study aims to map direct (e. g. free time travel) and indirect (e. g. goods and services) energy use related to different types of spatial structure (“urban” vs. “rural” settlement structure) and investigates possible explanations for differences in the use of energy.

The study is on the one hand based on nationwide Danish household consumption data of Statistics Denmark and on the other hand on the results of an online questionnaire survey, which was conducted specifically for this study in May and June 2016 in an inner district of Copenhagen and a small town in the commuter belt of Copenhagen.

The results indicate some sort of compensatory activities among city dwellers and suggest thereby, particularly in an urban context, including leisure travel and indirect energy use more in energy efficiency considerations.

Keywords

Urban structure – rebound effect – free time – travel behavior – sustainability – urban planning

* This paper has previously been published in the following publication: Stefansky, Andreas; Göb, Angelina (Hrsg.) (2018): „Bitte wenden Sie!“ – Herausforderungen und Chancen der Energiewende. Hannover, 29-38. = Arbeitsberichte der ARL 22.

1 Introduction

The Climate and Energy Package 2020 marks the cornerstone and target course of the European Union's (EU) climate change policy. The implemented so-called 20-20-20 targets include 20 % reduction of the greenhouse gas levels, 20 % increase of the share of renewables and 20 % reduction of energy consumption – until 2020. As shown in Figure 1, we are on the right track regarding the first two targets, however, regarding reduction of energy consumption we are behind schedule.

Cities play a major role in energy consumption. They are core consumers on the one hand, but provide high potential for improving energy efficiency on the other hand. Transforming energy use in cities is therefore a major challenge of urban development. Urban planning has an important task in framing the geographical location of urban functions and the density of the urban fabric in an urban structure appropriate for energy efficient connections between residents, workplaces, centres and leisure.

Compact urban structure facilitates efficient energy use as for instance less daily commuting (Fertner/Große 2016; Große et al. 2016). However, people living in urban areas might consume more energy for other activities, such as non-work related travel (e. g. more extensive leisure mobility at weekends or on holidays), or as so-called embodied or indirect energy in the form of material, food or services (Chitnis et al. 2014). This is conceptualised as so-called “compensation hypothesis” (Holden/Norland 2005; Næss 2016, 2006; Vilhelmson 1990), which suggests that “compensatory activities” might (partly) offset the achieved efficiency gains of sustainable urban structure (Holden/Norland 2005; Ottelin et al. 2014).

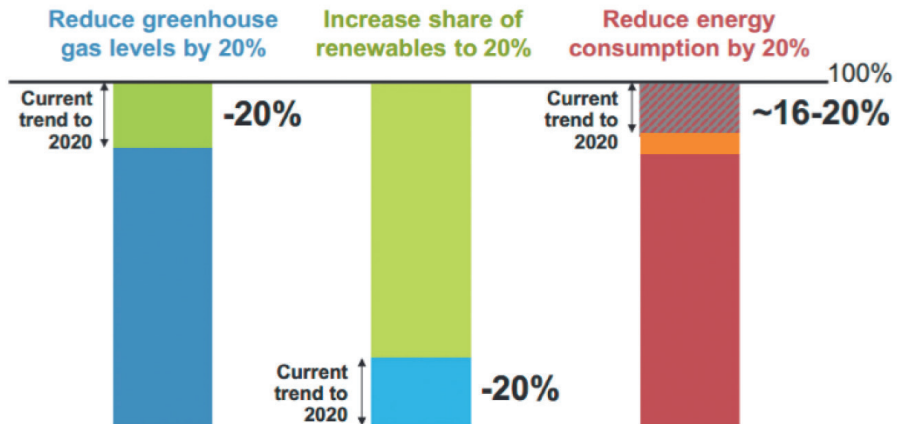


Figure 1: European Climate and Energy Package 2020, targets and state / Data sources: Gray-Donald/Kennedy (2014)

Existing studies, e. g. from Finland, associate urban living with more Greenhouse Gas (GHG) intensive lifestyles (Heinonen et al. 2013a, 2013b) and suggest that indirect emissions require higher attention in urban mitigation efforts (Ala-Mantila et al.

2014). Similar results have been observed in Sweden: In the bigger cities, like Stockholm, the ecological footprint of transport activities is only half of that in many other places. However, for other activities, such as recreation and culture, the average Stockholmer has a much bigger ecological footprint than the average Swede (Axelsson 2012). A further study from Finland shows that people living in dense urban settings without garden access tend to have a high use of summer houses (Strandell/Hall 2015). Thus, improvements in a city's energy efficiency imply the risk of rebound effects.

2 Methods and study design

We conducted a two-part study that investigates potential compensatory activities in terms of direct and indirect energy consumption, i. e. we include consumption of goods and services – where the energy might be consumed indirectly as embodied energy – as well as travel behaviour.

The first part of the study is based on nationwide Danish household consumption data¹ and takes stock of the current development in terms of energy use in Danish municipalities related to the spatial structure of the municipalities (level of “urbanity”). We look at the development over time (2007, 2010, 2014) of the internal shares of different kinds of energy use (e. g. transport for commuting, air travel) and discuss potential compensatory activities.

In the second part of the study we investigate more specifically the leisure travel behaviour (weekend and holiday trips, air travel) of people living in Østerbro, a dense urban district in Copenhagen (“urban case”) with that of people living in Borup, a small town in the commuter belt of Copenhagen (“peri-urban case”). The inquiry is done by means of a questionnaire survey, which was conducted in May and June 2016 among the residents of the two case areas. The questionnaire investigates people's habits and routines in terms of daily travel, their motives and preferences for spending free time in daily life, at weekends and on holidays, and finally characteristics of and personal satisfaction with the respondents' living environment.

The overall aim of the two-part study is to investigate ‘hidden’ or less obvious energy consumption in order to achieve a more comprehensive picture of the total energy consumption, specifically in urban areas, which are supposed to facilitate efficient use of energy.

1 Statistics Denmark (2016): Forbrugsundersøgelsen [Household consumption survey]. Accessed through DST project 705889.

3 Compensatory activities in Denmark and Greater Copenhagen

3.1 Trends and counter-trends in Danish cities

Denmark has the ambition of being CO₂-neutral by 2050, only powered by renewable resources. Already by 2035 all energy consumption for electricity and heating is planned to be CO₂-neutral. The goals are highly challenging (Meibom et al. 2013). Copenhagen is actively branding itself being a green capital and is internationally well-known for its ambitions, e. g. to be the first carbon neutral capital in the world by 2025 (City of Copenhagen 2012).

Since the 1990s Denmark is reducing its carbon emissions (see Figure 2, left), while the gross domestic product (GDP) increases simultaneously, which indicates a real decoupling of the Danish economy from CO₂-emissions. However, at the same time Danes drive more and use more space (see Figure 2, right). While the population increased with about 4% since 2007, floor space increased by 6% and the number of cars registered in Denmark increased by even 16%. These numbers reveal some trends that compromise efforts towards increasing energy efficiency.

Transport energy use is typically mainly associated with car use, which is very much considered as a problem caused by residents of peri-urban or rural areas. However, a closer look into Danish consumption data reveals a “counter” consumption of, e. g., airplane tickets by metropolitan dwellers (see Figure 3, left). Also, expenditures in services such as restaurants and hotels are comparably higher in metropolitan compared to rural areas (Figure 3, right).

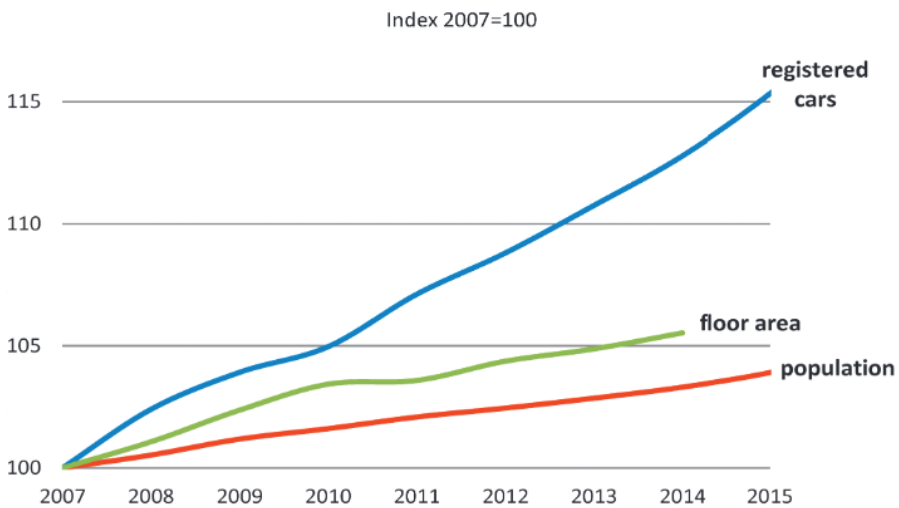
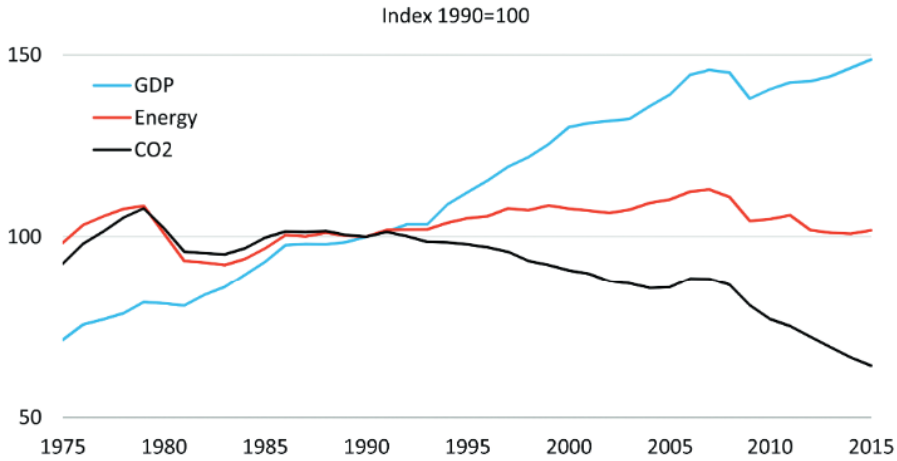


Figure 2: GDP, energy use and CO₂-emissions (corrected) in Denmark since 1975 (up) and development of population, floor area and cars in Denmark, 2007–2015 (down) / Data sources: Statistic Denmark and Danish Energy Agency

These general trends in Denmark indicate the importance to pay higher attention to counter-trends of energy consumption in cities. We took this as starting point for comparing the free time travel behaviour of city dwellers with that of small town dwellers, as the former – according to Figure 3 – appear to travel, for instance, more frequently and/or to more distant places by plane.

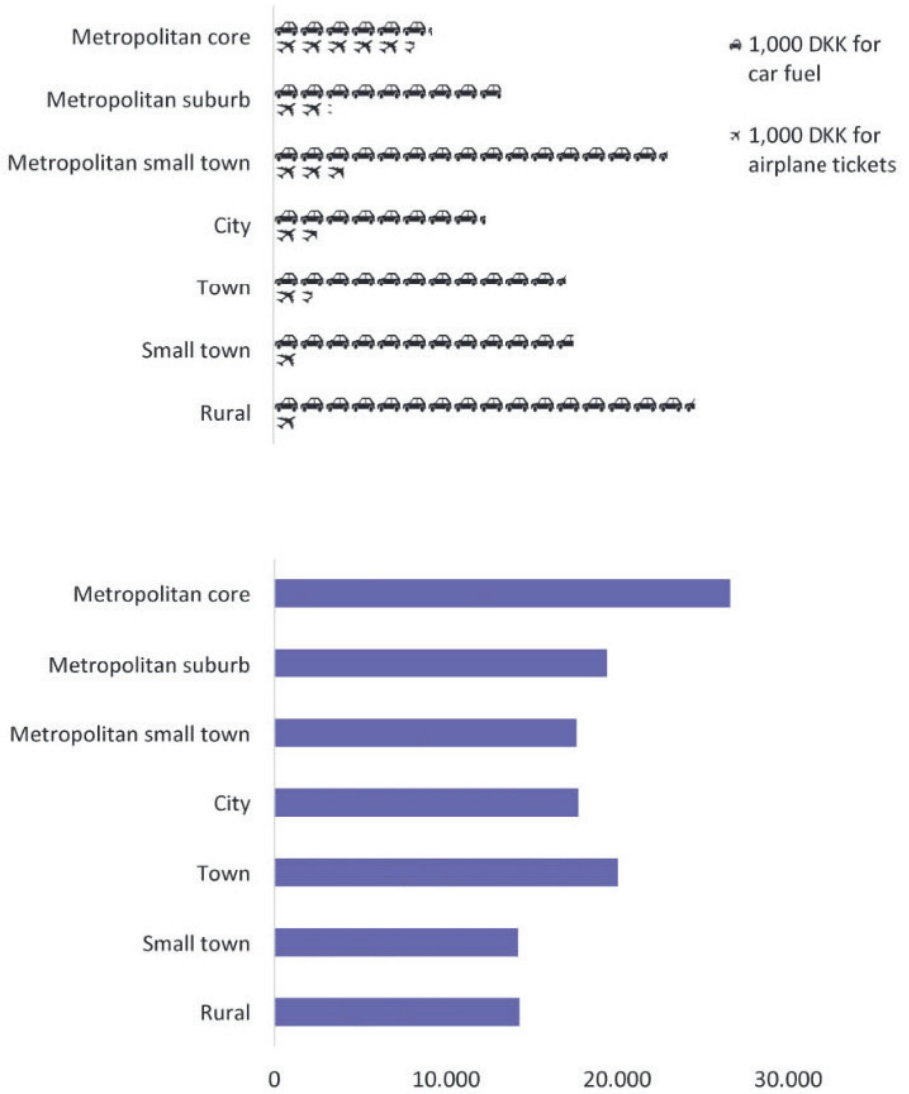


Figure 3: Expenditures for car fuel and flights (up) and restaurants, hotels etc. (down) in Denmark per household and city type, 2014 / Data source: Statistic Denmark, Consumption survey 2014, N=2,191 households all over Denmark

3.2 Compensatory leisure travel of city dwellers vs. small town dwellers in Greater Copenhagen

The second part of the study investigated more specifically differences in leisure travel behaviour between city dwellers and small town dwellers. By means of an online questionnaire survey we investigated weekend, holiday and plane trips among a sample of 262 residents of an inner district of Copenhagen (Østerbro) and a second sample of 177 residents of a small town in the commuter belt of Copenhagen (Borup).

The results of the survey indicate that city dwellers go more frequently on weekend, holiday and plane trips and also choose more distant destinations (weekend trips outside of Denmark/Skåne, holiday trips outside of Scandinavia and outside Europe) than small town dwellers (see Figure 4, Figure 5 and Figure 6).

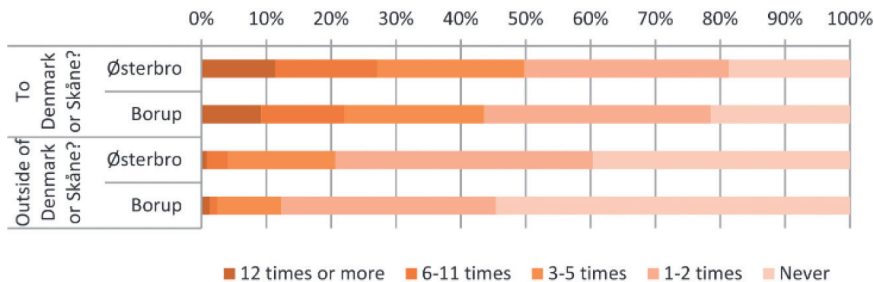


Figure 4: Number of weekend trips in last 12 months / Data sources: Große et al. in review

The results suggest some sort of compensatory leisure travel when it comes to weekend trips, as the share of people who have access to a summer cottage is with almost 50% remarkably higher among the city dwellers than with about 20% among the small town dweller. Typically, a summer cottage is used for weekend leisure; as also confirmed by the study results, people who have access to a summer cottage, go more often on weekend trips.

However, in terms of holiday trips and private plane trips, it is to question, whether those are rather an expression of a certain lifestyle or personal preferences (being a *holidayer*, Dijst et al. (2005)) than compensation for urban living.

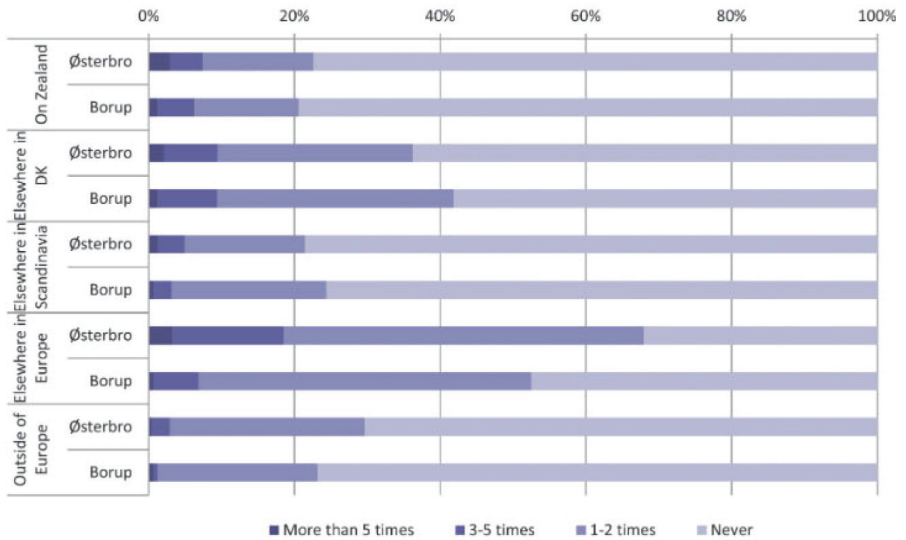


Figure 5: Number of holiday trips in last 12 months / Data source: Große et al. in review

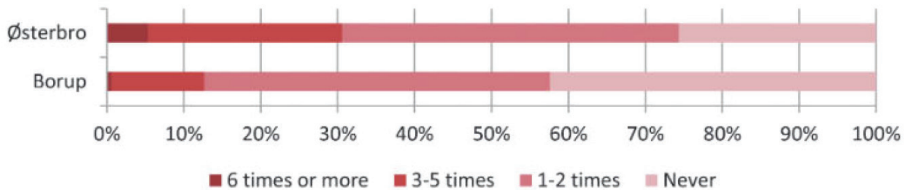


Figure 6: Number of private plane trips in last 12 months / Data source: Große et al. in review

4 Discussion and Outlook²

The first results of the two-part study on consumption in Denmark and leisure travel behaviour in Greater Copenhagen suggest that we have to consider a mixture of lifestyle, personal preferences, compensation and also socio-economic parameters when looking for explanatory factors for the observed differences in direct and indirect energy consumption between city and small town dwellers.

2 The detailed results of this study on consumption behaviour in Denmark and compensatory leisure travel in Greater Copenhagen are in preparation for publication in peer-reviewed journals (Fertner/ Große in preparation; Große et al. in review). For requests or further interest in our study please contact one of the authors, Juliane Große (jg@ign.ku.dk) or Christian Fertner (chfe@ign.ku.dk), University of Copenhagen.

The detailed study (Fertner/Große in preparation; Große et al. in review) provides an in-depth investigation of the underlying factors and possible explanations for the observed differences in consumption related to spatial structure.

In the light of a more comprehensive picture on energy consumption in urban areas we also have to discuss which role urban planning can play in terms of options to address the observed “hidden” or indirect energy consumption. Especially because some explanatory factors, such as lifestyle or personal preferences, are rather outside the sphere of urban planning and raise general concern how they might be adjustable.

Although our study deals with a very specific topic in the context of compensatory activities, we are convinced that it provides a very valuable contribution to gain more comprehensive knowledge on energy consumption and related differences in specific spatial settings. This allows also to tail cities’ planning actions more specifically for future challenges.

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References

- Ala-Mantila, S.; Heinonen, J.; Junnila, S. (2014): Relationship between urbanization, direct and indirect greenhouse gas emissions, and expenditures: A multivariate analysis. In: *Ecological Economics*, 104, 129–139. doi:10.1016/j.ecolecon.2014.04.019.
- Axelsson, K. (2012): Global miljöpåverkan och lokala fotavtryck: analys av fyra svenska kommuners totala konsumtion [Global environmental impact and local footprint - analysis of the total consumption in four Swedish municipalities]. Stockholm Environment Institute.
- Chitnis, M.; Sorrell, S.; Druckman, A.; Firth, S. K.; Jackson, T. (2014): Who rebounds most? Estimating direct and indirect rebound effects for different UK socioeconomic groups. In: *Ecological Economics*, 106, 12–32. doi:10.1016/j.ecolecon.2014.07.003.
- City of Copenhagen (2012): CPH 2025 Climate Plan. A green, smart and carbon neutral city. The Technical and Environmental Administration.
- Dijst, M.; Lanzendorf, M.; Barendregt, A.; Smit, L. (2005): Second homes in Germany and the Netherlands: ownership and travel impact explained. In: *Tijdschrift voor Economische en Sociale Geografie*, 96 (2), 139–152.

- Fertner, C.; Große, J. (2016): Compact and Resource Efficient Cities? Synergies and Trade-offs in European Cities. In: *European Spatial Research and Policy*, 23 (1), 65–79. doi:10.1515/esrp-2016-0004.
- Fertner, C.; Große, J. (in preparation): Consumption patterns and settlement structure – Trends in Danish urban and rural areas 2007–2014 [manuscript].
- Gray-Donald, J.; Kennedy, B. (2014): UNEP FI Property Working Group.
- Große, J.; Fertner, C.; Carstensen, T. A. (in review): Compensating for compactness? The role of urban structure in weekend and holiday trips in Greater Copenhagen [manuscript]. In: (in review at) *Case Studies on Transport Policy*.
- Große, J.; Fertner, C.; Groth, N. B. (2016): Urban Structure, Energy and Planning: Findings from Three Cities in Sweden, Finland and Estonia. In: *Urban Planning*, 1 (1), 24–40. doi:10.17645/up.v1i1.506.
- Heinonen, J.; Jalas, M.; Juntunen, J. K.; Ala-Mantila, S.; Junnila, S. (2013a): Situated lifestyles: I. How lifestyles change along with the level of urbanization and what the greenhouse gas implications are – a study of Finland. In: *Environmental Research Letters*, 8 (2), 25003. doi:10.1088/1748-9326/8/2/025003.
- Heinonen, J.; Jalas, M.; Juntunen, J. K.; Ala-Mantila, S.; Junnila, S. (2013b): Situated lifestyles: II. The impacts of urban density, housing type and motorization on the greenhouse gas emissions of the middle-income consumers in Finland. In: *Environmental Research Letters*, 8 (3), 35050. doi:10.1088/1748-9326/8/3/035050.
- Holden, E.; Norland, I. T. (2005): Three Challenges for the Compact City as a Sustainable Urban Form: Household Consumption of Energy and Transport in Eight Residential Areas in the Greater Oslo Region. In: *Urban Studies*, 42 (12), 2145–2166. doi:10.1080/00420980500332064.
- Meibom, P.; Hilger, K. B.; Madsen, H.; Vinther, D. (2013): Energy Comes Together in Denmark: The Key to a Future Fossil-Free Danish Power System. In: *Power and Energy Magazine, IEEE*, 11 (5), 46–55. doi:10.1109/MPE.2013.2268751.
- Næss, P. (2016): Urban Planning: Residential Location and Compensatory Behaviour in Three Scandinavian Cities. In: Santarius, Tilman / Walnum, Hans Jakob / Aall, Carlo (eds.): *Rethinking Climate and Energy Policies. New Perspectives on the Rebound Phenomenon*. Springer International Publishing, 181–207.
- Næss, P. (2006): Are Short Daily Trips Compensated by Higher Leisure Mobility? In: *Environment and Planning B: Planning and Design*, 33 (2), 197–220. doi:10.1068/b31151.
- Ottelin, J.; Heinonen, J.; Junnila, S. (2014): Greenhouse gas emissions from flying can offset the gain from reduced driving in dense urban areas. In: *Journal of Transport Geography*, 41, 1–9. doi:10.1016/j.jtrangeo.2014.08.004.
- Strandell, A.; Hall, C. M. (2015): Impact of the residential environment on second home use in Finland – Testing the compensation hypothesis. In: *Landscape and Urban Planning*, 133 (0), 12–23.
- Vilhelmson, B. (1990): Vår dagliga rörlighet: om resandets utveckling, fördelning och gränser [Our daily mobility: on the development, distribution, and limits of traveling]. TFB report 1990: 16. Stockholm: Transportforskningsberedningen [Swedish Transportation Research Board].

Christian Lamker

FACTORS INFLUENCING DAY-TO-DAY PLANNING: PROTEST – COOPERATION – INDIFFERENCE?¹

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 - 2 Citizens in planning processes
 - 3 The energy transition versus major accident prevention – protest versus indifference
 - 4 On the path to day-to-day (urban land-use) planning
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Abstract

Current planning debates are characterised by the tension between political and societal goals on the one hand and questions of local implementation on the other. The general public and individual citizens are core elements of any planning process, with their level of involvement in day-to-day planning ranging from protests to cooperation to indifference. There are gaps in our knowledge about which factors affect planning stipulations in everyday practice. Using empirical data gathered in basic research on German municipalities of all sizes, this article develops an exploratory comparison of the planning challenges posed by the energy transition and the integration of major accident prevention in urban land-use planning. It identifies differences, the significance of internal and external influencing factors, and starting points to pave the way to better cooperation in daily planning activities.

Keywords

Urban land-use planning – civic participation – energy transition – planning practice – major accident prevention

1 The empirical part of this article is based on the results of a research project on the implementation of industrial immission control regulations in urban planning (*Implementation von Rechtsvorschriften zum gewerblichen Immissionsschutz in der Stadtplanung, IRIS*), which was funded by the German Research Foundation (*Deutsche Forschungsgemeinschaft, DFG*). The project is headed by Sabine Baumgart (Urban and Regional Planning department of the Faculty of Spatial Planning at TU Dortmund University) with support from Andrea Rüdiger, Christian Lamker, Raphael Sieber and, in the first phase, Heike Köckler and Johanna Schoppengerd. The author thanks the entire project team.

1 Introduction

The implementation of the German energy transition, like that of many large-scale infrastructure projects, is often accompanied by highly controversial public debates and protests, and a feeling that hierarchical planning is being imposed from above. Though the energy transition enjoys a large degree of public acceptance, it is only through local planning that it becomes visible and graspable to citizens, who then reject specific projects in their neighbourhoods. In other words, the citizens appear to stand in the way of a successful energy transition. This necessitates detailed strategies to engage the public at an early stage, enable joint decision-making and support implementation – through to sharing the economic benefits in new forms of collective organisation (Beckmann et al. 2013; Schüle et al. 2013: 16 et seq.).

At all spatial levels, the greatest public influence is often discussed in connection with legal uncertainty and protests (Beckmann et al. 2013: 6 et seq.; Schüle et al. 2013: 16 et seq.; Prieb/Schmitz 2015). Previous indifference or abstract acceptance stemming from a feeling of not being directly affected becomes open protest. From this situation, it is difficult to reestablish common ground for discussions. But to date there are still gaps in our knowledge about how citizens influence planning decisions in everyday life and how their influence in combination with other factors – e.g. legal requirements, technical capabilities and guidelines, or the availability of and the means to process information – affects decisions. Examples that have been examined include plans that were accompanied by public protests or referendums on the one hand and, on the other, best practices that test and successfully apply new forms of (early-stage) cooperation. A foundation more strongly anchored in the day-to-day business of planning can help in dealing more effectively with new challenges that affect every citizen on a daily basis.

2 Citizens in planning processes

Citizen involvement in planning is a long-established topic in both planning studies and planning practice. Argumentation, evaluation and coordination are core elements of today's planning activities (Hellmich/Lamker/Lange 2017: 12). Going beyond the initial efforts of the *communicative turn* in the 1990s, the research landscape has become more diversified internationally and, increasingly, in German-speaking countries as well. In place of a standardised idea of what citizens and participation mean in planning processes, a broad range is becoming apparent.

Diller (2015) investigated the interfaces of participatory processes, the ideal policy cycle and ways to exert influence over time, concluding that participation itself had mainly been optimised thus far but that the interfaces to the political process had been inadequately considered in practice and in research (Diller 2015: 13). From an extensive series of interviews in the first quarter of 2016, Ginski et al. (2016) provide insights into multilateral communication in planning processes. They point out that communication processes can be designed to influence the motives and expectations of those participating (Ginski et al. 2016: 18). This leads to the question of whether the relationship between citizens and planners needs to be reconsidered if uninflu-

enced discussion in which only the best argument wins cannot take place in spite of elaborate and very carefully designed processes.

Beyond the criticism of idealistic communicative approaches, questions of power and conflict have been addressed increasingly since the 2000s, especially from an analytical perspective. Innes and Booher (2010: 104 et seq.) emphasise that *'conflict, tension and agonism are essential in collaborative processes as they form the core of collaborative rationality'*. Reuter (2000: 13 et seq.) highlights the reciprocal relationship between power and discourse and emphasises the unending regress of procedural rules. Planning discourses are intended to prevent the abuse of power, but they themselves represent power constellations, and power limits the discourses that are possible. The focus then shifts to the political role of planners, at a remove from ideal solutions or a consensus-based ideal process (Reuter 2000: 14 et seq.). In this regard, Legacy (2016: 13) points out that participatory processes have a dialectical and constitutive relationship with the subjectivity of political engagement. She attributes a crisis of participatory planning to a narrow view of the planning system and the participatory instruments provided within it; these instruments are intended to depoliticise the general public, which in turn may resort to protest (Legacy 2016: 14).

Conflict theory approaches address the emergence of hegemonic discourses and power configurations from a post-structuralist perspective. Gualini (2015) compiled corresponding approaches, connecting them with deliberative approaches to working with planning conflicts. The integration of impulses from discourse theory in planning theory is the subject of ongoing discussion (Günzel 2016). On the other side, planning processes have again been increasingly viewed from the perspective of democratic theory in recent years through a reappraisal of the opportunities for and limits of participation in our democratic system (Tenz 2011; Inch 2015). In a rare exception, Inch (2015: 421) emphasises that rules for democratic decision-making in planning processes also impose a range of requirements on the citizens involved and that there is more discussion about the positive aspects than about the 'hidden costs'. Finally, the Anglo-American debate contributes post-political and post-democratic considerations that are considerably more critical of planning and also call into question fundamental assumptions in communicative and political planning processes (Allmendinger/Haughton 2012; Metzger/Allmendinger/Oosterlynck 2014; Legacy 2016). At the same time, conflicts are also occasions for reaching decisions democratically and for working out acceptable compromises.

3 The energy transition versus major accident prevention – protest versus indifference

There are thus plenty of reasons to assume the existence of conflicts in all general spatial planning activities and to expect that concluding a planning process with a consensus is more a theoretical construct than a common, practical reality. Still, by no means are all planning processes beset by protests. In many planning situations, the planners are faced with public indifference. Thus far there have been few scientific explanations for these major differences. For the following exploratory discussion,

the energy transition and planning for major accident prevention are regarded as planning challenges that are discussed in public and treated in planning in very different ways. This article addresses the question of whether a better understanding of day-to-day planning activities could help to deal more successfully with even the most contentious issues. It provides ideas about how planners can act to move closer to cooperation and away from both protest and indifference in all issues.

The foundation for this is empirically grounded basic research in German municipalities of all sizes² on the question of which internal and external factors affect the implementation of regulations in urban land-use planning. One focus of the analysis is planning for major accident prevention. Many citizens live in the immediate vicinity of facilities with a high potential for damage to property and health in the event of major accidents. In spite of this, indifference rather than protest is the rule even in the case of new plans. But what differentiates the invisible challenge of major accident prevention from the (apparently) visible or more publicly discussed challenge of the energy transition?

In Germany the *energy transition* is primarily associated with the government decision to phase out nuclear power by 2022 and with the policy objective of reducing greenhouse gas emissions. The latter is based on two pillars, the production of energy with renewables and increases in efficiency, and its goal is emissions reductions of 40% by 2020 and 80% by 2050. The complete decarbonisation of society and the economy is now set as a long-term objective. The expansion of the extra-high voltage grid for the transmission of electricity from the windy northern federal states to the southern federal states, which have thus far been more dependent on nuclear power, was the subject of particularly vigorous discussions regarding the practical implementation of these objectives. *Major accident prevention* has been integrated in immission control, urban land-use planning and building regulations through the European Union's Seveso Directive. The Seveso I Directive (82/501/EEC) was adopted in 1982 and the Seveso II Directive (96/82/EC) in 1996. The requirements of the Seveso III Directive (2012/18/EU) adopted in 2012 and implemented in Germany in 2016 are now implemented in German planning and immission control laws. The separation principle anchored in section 50 of the Federal Immission Control Act (*Bundesimmissionsschutzgesetz, BImSchG*) obliges municipalities to observe the requirements of major accident prevention in their urban land-use planning (Schoppengerd 2015: 80 et seq.). Though both issues can look back on a long history, only in about the last five years have they fully taken effect in planning practice. For major accident prevention, an oft-cited catalyst is the judgment in the Mücksch case on 15 September 2011 (Court of Justice of the European Union (CJEU) 2011; cf. Uechtritz/Farsbotter 2015); the public is to be accorded higher standing in the implementation of the Seveso III Directive (Wasielewski 2015: 152 et seq.).

2 See the explanations in the next section.

	Energy transition	Major accident prevention
Spatial reference	Linear (power line routes) and point-like (facilities)	Point-like (operating areas according to the 12th Federal Immission Control Ordinance)
Time frame	Medium- and long-term negative impact; (usually) no imminent risk	Short-term negative impact; imminent risk
Consequences	Economic consequences (property values) – high probability	Physical consequences (personal health) – low probability
Negative impact	Perceived subjectively (landscape appearance)	Objective risk (major technical accidents)
Starting point	Popular consensus / political objective	Technical after-effect (of economic activity)
Discussion level	Political and public debate (e.g. Fukushima)	Technically and legally implemented (Seveso Directives, KAS guidelines)

Table 1: Energy transition and major accident prevention. Source: the author

Table 1 compares different aspects of the energy transition and planning for major accident prevention. The energy transition's spatial reference includes linear power line routes and point-like installations for producing energy with renewables. Major accident prevention assumes operating areas as defined in the 12th Federal Immission Control Ordinance (*Verordnung zur Durchführung des Bundes-Immissionsschutzgesetzes, BImSchV*). Major-accident legislation does not cover transport routes that are outside of an operating area. Facilities with potential for major accidents include large biogas plants with 10 tonnes or more of raw biogas.

The time horizon for the energy transition is medium- to long-term over years and decades. Between planning and the actual spatial changes, there can be long time spans during which there is generally no imminent danger. However, there is a high probability of economic consequences ranging from changes in property values to loss of properties. There are also subjectively perceived negative impacts from effects such as changes in the appearance of landscapes. In contrast, major accidents have a short-term impact with imminent danger to personal health but a low probability of occurrence. Major-accident legislation gives special attention to the accidents that could be possible in spite of compliance with all technical and legal regulations. When they do occur, major technical accidents are an objective danger for all people and animals living in the vicinity.

The energy transition's starting point is a political objective based on a social consensus. It involves considerable political and public discussion about aims, alternatives and actions – especially since the tsunami and the nuclear accident in Fukushima in 2011. In contrast to major accident prevention, it involves the possible technical consequences of economic activities and production. This matter is mainly

implemented by technical and legal means, for example with the Seveso Directives and their integration into national legislation, and with the guidelines of the Commission for Process Safety (*Kommission für Anlagensicherheit, KAS*) at the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

4 On the path to day-to-day (urban land-use) planning

Identifying reasons for differences in planning responses requires insights into day-to-day planning, in this case in urban land-use planning. Current studies on actual day-to-day planning in German municipalities, except for flagship or city projects, are rare. Exceptions include the investigation by Rüdiger (2009) on the relationship between city size and everyday spatial planning in medium-sized German cities. Equally relevant are the papers by Selle (2006), which focus on analysing everyday planning practice, and by Klemme and Selle (2010) on stakeholders, interdependencies and options in the development of settlement areas.

This article is based on the results of a research project on the implementation of industrial immission control regulations in urban planning (*Implementation von Rechtsvorschriften zum gewerblichen Immissionsschutz in der Stadtplanung, IRIS*), which is funded by the German Research Foundation (*Deutsche Forschungsgemeinschaft, DFG*) and has been in progress in the Urban and Regional Planning department at TU Dortmund University since 2014.³ By means of two questions, it draws a distinction between external and internal influences (see Fig. 2). Both questions aim to identify the most important factors influencing how legal regulations are applied and interpreted in day-to-day planning (cf. Fig. 1 in next section).

Between November 2015 and January 2016, the IRIS project⁴ contacted all German municipalities with a population exceeding 20,000. In all, 109 complete responses (response rate 15.9%) were analysed. The results cover all size categories. The largest share of the responses (68.8%) was from municipalities with populations between 20,000 and 50,000. Averaged over all surveyed municipalities, eight people work in urban land-use planning. In 25.0% of the municipalities, the figure is only one or two, in 64.8% it is five or fewer. The assessment of the results was underpinned by interviews with researchers, planning practitioners and immission control experts, and by qualitative case studies in 15 German cities in eight federal states. The case studies reveal that aside from sound data acquisition, many personal factors that cannot be ascertained in quantitative sampling are crucial. Though municipal planning activities are influenced by institutional factors, even at the micro level differences in the application and interpretation of legal regulations are attributable to differences in detail that can be traced back to the level of individual staff members and to their networks and motivations. These factors become all the more important when one considers that urban land-use planning is carried out in most municipalities by only a few individuals.

3 The author of this article has been working on this project since May 2016.

4 This paragraph has been adopted from an article submitted by Lamker and Rüdiger (forthcoming).

5 Factors influencing planning activities

The actions of any public planning authority are determined by its institutional framework, which also includes the relevant legal requirements. Though the legal certainty of planning decisions is frequently emphasised, more than half of the surveyed municipalities indicated deficits in knowledge about current planning law regulations relating to industrial immission control. In practice, then, planners' weighing of interests and decision-making also depend on the knowledge of other actors such as specialists and consultants.

The empirical starting point for the exploratory analysis in this article is the influencing factors that connect the day-to-day work of planners, the institutional framework, and legal regulations against the backdrop of planning stipulations in binding land-use plans (cf. Fig. 1). All variations on the continuum between vehement protest and complete indifference are conceivable at the interface between day-to-day planning and the stipulations made by planners. The themes considered here – the energy transition and major accident prevention – represent two paradigmatic cases (cf. Flyvbjerg 2006: 232) which can offer a perspective on the range of influencing factors in very different areas of planning practice.

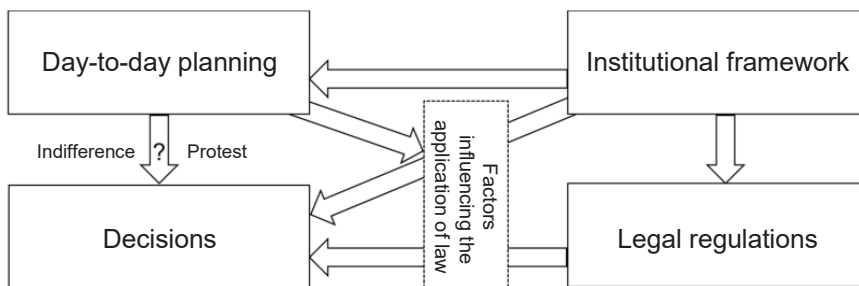


Figure 1: Simplified illustration of the empirical starting point. Source: the author

The model described by Schoppengerd (2015), adapted based on the empirical findings, served as a basis for the theoretical model used to *classify the influencing factors*. Fig. 2 shows the main categories of the 14 identified influencing factors. Behind them are a total of 51 influencing factors (22 external, 29 internal) that were used in the analysis of the empirical material. The theoretical basis of the model is the actor-centred institutionalism described by Mayntz and Scharpf (1995). Whether planning is successful (meaning in this case that it ends in the adoption of a plan) depends on a complex interplay among all of the influencing factors. With regard to planning for major accident prevention, this also includes the initial question of whether the matter is considered at all (Schoppengerd 2015: 243 et seq.). Not all municipalities even know that they have facilities with potential for major accidents; 14.6% of the surveyed municipalities answered the question about such facilities with 'don't know'. Even among those that have such facilities and also have basic information about their operating areas, 6.3% do not address the issue in their urban land-use planning. They often become aware of the (initial) situational relevance of

the matter through their own knowledge, external information or compulsion (Schoppengerd 2015: 245 et seq.).

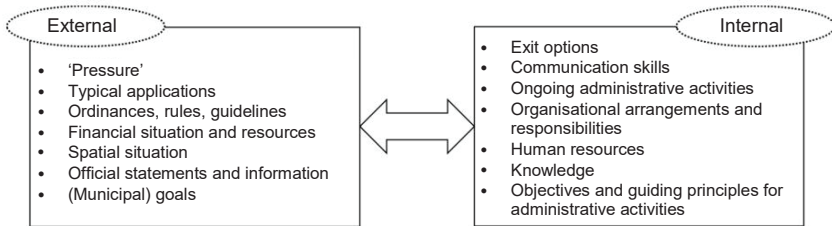


Figure 2: External and internal influencing factors. Source: the author

The picture emerging from the ongoing investigation indicates that the crucial factors influencing planners' treatment of major accident prevention issues are largely internal. Ongoing administrative activities, organisational rules and responsibilities, availability of staff and knowledge have a significant influence on whether and how stipulations are made. Additional influence includes pressure, official statements and information from external sources, especially higher-level administrative authorities. Whether and in what form major accident prevention is integrated into planning practice differs significantly from one municipality to another, even in similar spatial situations. The survey of German municipalities also confirms that the identification of conflicts in major accident prevention mainly takes place within agencies through information provided by other agencies (84.4%), through available expert reports (81.3%) and through statements by public agencies (78.1%). Active surveys of and information provided by businesses (46.9%) or residents (3.1%) are much less relevant. This causes considerable uncertainty for urban land-use planners in the application of the law, but also grants them freedom of action. In interviews, many planners indicate that residents are indifferent to facilities with the potential for major accidents, even when such facilities are in their immediate vicinity, as long as the facilities do not have a direct impact on their property, for example through land acquisitions or compulsory purchases.

The energy transition is mainly discussed in connection with external factors. Angry citizens, decisions described as having no alternative, and material or legal constraints serve to justify decisions made in spatial matters and to solicit public acceptance (Mitschang/Schwarz/Kluge 2012; Beckmann et al. 2013). In this respect, typical applications, ordinances and guidelines, external pressures, the spatial situation, official statements and information, and the aims and demands of (municipal) politics appear particularly relevant. The meaning of the energy transition is a matter of intense discussion outside of planning administrations and is often returned to them as an external mandate. Urban land-use planners' own freedom of action is highlighted less often in such discussions.

In the investigations for the IRIS project, knowledge transfer was found to be a crucial factor for differences in the application of law:

- > *vertically*, from higher-level (sectoral) agencies down to the administrative level;
- > *horizontally*, between different agencies within a city and the agencies in other cities;
- > *with respect to substance*, between the authors of complex legal regulations, the specialists applying them, and the planners integrating them;
- > *personally*, in exchanges between individual staffers.

The personal aspects have thus far been addressed least in planning theory, but they are the cause of significant differences in the case studies. As a niche issue, major accident prevention reveals the dependence on the knowledge of individuals and on their abilities to impart it systematically to their colleagues and apply it to new situations. In many cases, a high-degree of staff self-motivation could be observed, above and beyond the reactive gathering of knowledge and catch-up learning from mistakes (*trial and error*). The IRIS project did not evaluate or audit planning decisions, but overall it can be seen that very different solutions are implemented and accepted at the local level. The high degree of technical and legal uncertainty (cf. Uechtritz/Farsbotter 2015: 1919 et seq.) leads in some cases to inaction but in others to very far-reaching and creative solutions.

6 Starting points on the path to cooperation

Everyday planning is shaped by a variety of influences, from external and internal factors to factors specific to individual planners. Though it is easy to recognise and distinguish protest or indifference retrospectively, it is nearly impossible to identify such developments in advance. A comparison of two paradigmatic cases from very different fields (the energy transition and major accident prevention) contributes to a more nuanced understanding of the factors influencing planning stipulations as a legally standardised fixation of planning activity. It remains to be noted here that planning need not always polarise and politicise. Day-to-day urban land-use planning also involves situations and issues for which planning goes ahead without public protests in spite of far-reaching spatial effects. A greater understanding of the internal *and* external influencing factors *and* their interactions is necessary for a scientific examination of the issue. This enables a focused look at minor local differences and the development of relatively small-scale starting points to support practical planning work in many fields.

The energy transition is characterised by arguments to the effect that there must be no externally imposed decisions with no alternatives; instead, local and democratic decision-making processes are important to increase acceptance. These processes include public participation and new forms of involvement in decision-making processes and economic benefits (Beckmann et al. 2013: 17 et seq.). At the same time,

there is comprehensive guidance on exactly what the energy transition is supposed to mean in individual cases in planning practice. A context-specific interpretation of this guidance is necessary for open discussion in everyday planning and opens up room for manoeuvre that makes alternatives possible. That shifts the focus more towards the internal local influencing factors.

From the exploratory comparison of the energy transition and major accident prevention action areas, this article sets forth the following three theses suitable for further scientific examination:

- > ‘Successful’ planning requires a systematic analysis of internal and external influencing factors and their interactions.
- > Planning that is mainly affected by internal factors has few conflicts but can fail at its legal mandate.
- > Planning that is mainly affected by external factors is beset by many conflicts and has few starting points for dealing with them.

A systematic analysis of even the less apparent factors influencing planning stipulations and the examination of interactions can contribute to a generally more successful planning process that can develop formal and binding plans from the debates and bring them to a successful conclusion. However, this deliberately excludes the question of how the interfaces to political decision-making can be safeguarded (cf. Diller 2015).

When planning is mainly influenced by internal factors, it appears potentially freer of conflicts. On the positive side, it offers the chance to develop new and creative solutions that actually focus on local particularities and the needs of local residents. But on the negative side, it also involves the possibility that an issue may not be addressed at all or that only minimalistic solutions will be worked out. In this case, planning threatens to fail at its legal mandate. Planning that is mainly influenced by external factors has the potential for many conflicts. On the positive side, it can work according to guidelines and fulfil its legal mandate. On the negative side, however, it has less potential for the weighing of interests by planners, fewer options for explaining its actions and fewer opportunities to address specific local issues.

With regard to the challenges facing society as a whole, more than just the perspective on legal or technical factors is relevant. Personal knowledge and abilities as well as organisational rules and responsibilities in planning administrations are key elements behind local differences in the application of law:

- > Who implements the energy transition in (local) practice?
- > How can purposeful action be effectively supported (and explained)?

If the goal is collective democratic planning and decision-making at the local level, support from planners has to go beyond guidelines or good examples from other

locations. Concentrating merely on the design of communication-based and inclusive decision-making processes is less likely to be successful as that involves disregarding important factors that influence decisions in favour of a focus on consensus. Also important in this regard are connections with other informal instruments that can be used in a complementary manner.

The great importance of interpersonal knowledge transfer and location-specific reactions in major accident prevention in combination with uncertainty among local planners offers fertile ground for joint transdisciplinary approaches to generating and transferring knowledge. From a scientific point of view, major accident prevention remains a very interesting field from which all planning organisations can learn. There are few other fields that have such long-term relevance for planners and which enable both deep insights into the integration of new issues in everyday planning and into small-scale differences in implementation.

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References

- Allmendinger, P.; Houghton, G. (2012): Post-political spatial planning in England. A crisis of consensus? In: *Transactions of the Institute of British Geographers* 37, 1, 89–103.
- Beckmann, K. J.; Gailing, L.; Hülz, M.; Kemming, H.; Leibenath, M.; Libbe, J.; Stefansky, A. (2013): Räumliche Implikationen der Energiewende. Positionspapier aus dem Raumwissenschaftlichen Netzwerk 11R. = difu Paper.
- Diller, C. (2015): Bürgerpartizipation und politische Planungsprozesse: drei kritische Schnittstellen – Eine Auswertung des Forschungsstandes. In: *PND|online*, 1, 1–20.
- EUGH (CJEU) – Court of Justice of the European Union (2011): Judgment of 15 September 2011: Land Hessen v Franz Mücksch OHG.
http://curia.europa.eu/juris/document/document_print.jsf?doclang=EN&text=&part=1&docid=109609&cid=1510928
 (25 April 2012).
- Flyvbjerg, B. (2006): Five Misunderstandings About Case-Study Research. In: *Qualitative Inquiry* 12, 2, 219–245.
- Ginski, S.; Selle, K.; Thissen, F.; Zalas, L. (2016): Multilaterale Kommunikation. Die Perspektiven der Fachleute. Report on the Results of an Interview Series. Part 1. In: *PND|online*, II.
- Gualini, E. (Ed.) (2015): *Planning and Conflict. Critical Perspectives on Contentious Urban Developments.* RTPi Library Series. New York. = RTPi Library Series.
- Günzel, M. (2016): *Planung zwischen Konflikt und Diskurs. Zur Rolle von Diskursen im Verlauf planungsbezogener Raumnutzungskonflikte.* PhD Thesis, TU Dortmund.
- Hellmich, M.; Lamker, C. W.; Lange, L. (2017): *Planungstheorie und Planungswissenschaft im Praxistest. Arbeitsalltag und Perspektiven von Regionalplanern in Deutschland.* In: *Raumforschung und Raumordnung – Spatial Research and Planning* 75, 1, 7–17.
- Inch, A. (2015): Ordinary citizens and the political cultures of planning: In search of the subject of a new democratic ethos. In: *Planning Theory* 14, 4, 404–424.

- Innes, J. E.; Booher, D. E. (2010): Planning with complexity. An introduction to collaborative rationality for public policy. Abingdon/New York.
- Klemme, M.; Selle, K. (Eds.) (2010): Siedlungsflächen entwickeln. Akteure, Interdependenzen, Optionen. Edition Stadt-Entwicklung. Detmold. = Edition Stadt-Entwicklung.
- Lamker, C. W.; Rüdiger, A. (2018): Einflussfaktoren auf kommunales Planungs Handeln – Ansatzpunkte zum verbesserten Umgang mit schleichenden Gesundheitsrisiken. In: Baumgart, S.; Köckler, H.; Ritzinger, A.; Rüdiger, A. (Eds.): Planung für gesundheitsfördernde Städte. Anstöße aus Forschung und Praxis. Hanover. = Forschungsberichte der ARL 08.
- Legacy, C. (2016): Is there a crisis of participatory planning? In: Planning Theory, Online first.
- Mayntz, R.; Scharpf, F. W. (1995): Der Ansatz des akteurszentrierten Institutionalismus. In: Mayntz, R.; Scharpf, F. W. (Eds.): Gesellschaftliche Selbstregulierung und politische Steuerung. Frankfurt am Main/New York, 39-72. = Schriften aus dem Max-Planck-Institut für Gesellschaftsforschung, 23.
- Metzger, J.; Allmendinger, P.; Oosterlynck, S. (Eds.) (2014): Planning Against the Political. Democratic Deficits in European Territorial Governance.
- Mitschang, S.; Schwarz, T.; Kluge, M. (2012): Ansätze zur Konfliktbewältigung bei der räumlichen Steuerung von Anlagen erneuerbarer Energien – dargestellt am Beispiel der Windenergie. In: Umwelt- und Planungsrecht 32, 11/12, 401-411.
- Priebs, A.; Schmitz, H. (2015): Energiewende ohne Regionalplanung? Prof. Dr. Axel Priebs and Dr. Holger Schmitz discuss the current legal situation regarding the design of the energy transition and the role of the state and regional planning. Interview conducted by Gabriele Schmidt. In: Nachrichten der ARL 45, 2, 17-21.
- Reuter, W. (2000): Zur Komplementarität von Diskurs und Macht in der Planung. In: disP 36, 141, 4 (16), 4-11.
- Rüdiger, A. (2009): Der Alltäglichkeit auf der Spur: die Rolle der Stadtgröße für die räumliche Planung. Eine empirische Untersuchung der Planungspraxis bundesdeutscher Mittelstädte. PhD Thesis, TU Dortmund. Hamburg. = Publication Series Studien zur Stadt- und Verkehrsplanung 10.
- Schoppengerd, J. (2015): Umsetzung rechtlicher Anforderungen in der Bauleitplanung am Beispiel der Seveso-II-Richtlinie. PhD Thesis, TU Dortmund.
- Schüle, R.; Venjakob, J.; Acksel, B.; Berlo, K.; Best, B.; Bläser, D.; Lucas, R.; Reicher, C.; Schmitt, L.; Wagner, O. (2013): Energiewende als gesellschaftlicher Transformationsprozess. Forschungsansatz und Begriffsverständnis des Rahmenprogramms 'Energiewende Ruhr'. Wuppertal.
- Selle, K. (Ed.) (2006): Praxis der Stadt- und Regionalentwicklung. Analysen. Erfahrungen. Folgerungen. Edition Stadt-Entwicklung. Dortmund. = Edition Stadt-Entwicklung, 2.
- Tenz, E. M. (2011): Lehren aus Stuttgart 21: Von der Basta-Politik zur deliberativen Demokratie. In: PND|online, IV, 1-7.
- Uechtritz, M.; Farsbotter, J. (2015): Städtebauliche Entwicklung im Umfeld von Störfallbetrieben. Part 1: Rechtliche und fachtechnische Überlegungen zum Umgang mit dem 'Abstandsgebot' des Art. 13 der Seveso-III-Richtlinie. In: Baurecht, 12, 1919-1934.
- Wasielewski, A. (2015): Anwendung des Abstandsgebots der Seveso-III-RL im Vollzug. In: I+E, 4, 145-153.

Albert Roßmeier, Florian Weber

STORMY TIMES. CIVIC ENGAGEMENT IN WIND POWER DEVELOPMENT: BETWEEN SUPPORT AND REJECTION

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Abstract

Power generation in Germany is increasingly moving from the use of fossil fuels and nuclear power towards renewable energy. A significant 'pillar' of this transition is the use of wind power. However, despite high levels of general support for the energy transition, there is an increasing amount of civic protest against the construction of wind turbines. This article aims to explore the range of the key patterns of argumentation used by citizens' initiatives, some of which *support* and some of which *oppose* the further development of wind power. Discourse analysis is used to identify centrally anchored patterns within the structures of the arguments used by the protest movements in order to shed light on the discursive field of the energy transition. The key areas of conflict in the negotiation processes are multifaceted, spanning from economic or health-related aspects to issues related in particular to the topic of landscape and the legal frameworks of nature conservation. Both supporters and opponents refer to these issues – although using significantly differing arguments.

Keywords

Energy transition – wind power development – discourse analysis – power of social resistance – citizens' initiatives and protest

1 Introduction

Since the adoption of the Renewable Energy Act (*Erneuerbare-Energien-Gesetz, EEG*) in 2000, renewable energy's share of gross electricity production in Germany has risen considerably, from approximately 6% to slightly over 32% in 2016. The aim of the Renewable Energy Act is to shift energy production away from the use of fossil fuels that are hazardous to health and climate and to seek renewable alternatives. Additionally, phasing out nuclear power production became a fundamental political aim within the German energy transition. The departure from nuclear power production was initiated following the nuclear disaster in Fukushima (Japan) in March 2011, thus focusing political measures even more on the further development of renewable energy sources. Accordingly, the German Federal Government has specified decisive goals for the future use of renewable energy. Renewable energy is to provide 40 to 45% of gross electricity generation by 2025 and 55 to 60% by 2035. A key measure for achieving these objectives is the coordinated expansion of both renewable energy and the electrical grid (cf. *BMWi* [Federal Ministry for Economic Affairs and Energy] 2017a; Weber et al. 2016; Weber et al. 2017).

Along with biomass, hydropower and geothermal energy, photovoltaics and especially wind power are the cornerstones of the energy transition in Germany. With repowering measures and further expansion at suitable onshore locations and through the use of offshore wind farms, wind power is expected to supply a substantial part of renewable energy production in Germany, in line with the stated policy objective of 'achieving an economically viable and climate-friendly energy supply while ensuring affordable prices and a high standard of living' (*BMWi* 2017b: n.p.). In this regard, according to the Federal Ministry for Economic Affairs and Energy, the provision of a variety of participation measures needs to be guaranteed while the development of renewable energy sources and the expansion of the electrical grids require effective management. This is considered vital especially with regards to concerns about bottlenecks in northern Germany's transmission networks (*BMWi* 2017a; for an overview on adapting the power supply, see also Monstadt 2007; Riegel/Brandt 2015; Schmitt 2016).

However, it is not only the technical aspects of power generation and transport that are crucial to Germany's energy transition. Spatial and social aspects are gaining in relevance as well, as shown by numerous public protests in the context of renewable energy production (e.g. Hildebrand/Rau 2012; Hübner/Hahn 2013; Neukirch 2014; Lennon/Scott 2015; Stegert/Klagge 2015; Kühne/Weber 2016b). This is due to the fact that the physical consequences of the transformation are perceived differently by those affected and are vigorously rejected by some. Against this background, by taking a discourse-theoretical perspective, our article traces the power structures and the assertiveness of specific positions in the context of wind power development along the following key research questions: What is the nature of civic engagement in the context of wind power development, and what key positions are anchored among its proponents and opponents? Additionally, the discourse-theoretical perspective offers the possibility to work out alternative perspectives, thus specifically highlighting power-related aspects by focusing on the construction of 'social reality' (in line with Berger/Luckmann 1966). This analysis is based on a mixed-methods approach that comprises quantitatively oriented and qualitative components, simultaneously

addressing the central themes of wind power discourses as well as allowing for a closer look at specific individual aspects. In various areas such as urban development and marketing (Mattissek 2008; Weber 2013), geocultural spaces (Glasze/Husseini/Mose 2009; Glasze 2013) or nature conservation policy (Chilla 2007), the potential of discourse-analytical perspectives has already been demonstrated and used, though only to a rather limited extent in relation to the energy transition (Zimmer/Kloke/Gaedtke 2012; Leibenath/Otto 2013; Gailing/Leibenath 2015; Weber et al. 2016; Weber/Jenal 2016; Weber et al. 2017) and not yet with respect to the currently growing resistance. This is the starting point of our project: the quantitatively oriented examination of citizens' initiatives and their motivations as well as the qualitative outlining of the spectrum of the key positions.

Below, we first present the basic theoretical perspective, methodology, and the individual components of our analysis. A closer look at the key structures of argumentation within the discourses about wind power and renewable energy development follows, including a comparison of the discursive patterns of both proponents and opponents. We conclude by pointing out key connections and outlining the consequences for the participatory implementation of the energy transition in Germany.

2 Theoretical perspective, methodology and analytical components

Below we introduce the social constructivist perspective and the central premises of discourse theory based on the work of Ernesto Laclau and Chantal Mouffe (Laclau 2007; Laclau/Mouffe 2015 [original English version 1985]) to elucidate the research perspective of this article. Additionally, we present the methodical approach and thus the triangulation of quantitatively oriented and qualitative analytical components that are based on the underlying research perspective.

2.1 The social constructivist perspective

In recent years, there has been increasing criticism of an 'unconditional belief in the reality of the physically perceived world' (Wetherell and Still 1998), particularly in the humanities and social sciences. Gaining absolute knowledge about the world is viewed as impossible. Thus there is 'no such thing as pure and simple facts' (Schütz 1971 [1962]: 5; Burr 2005; Kühne 2013). Social constructivist approaches emphasise the social construction of 'reality' in everyday practices and perceptions, i.e. within patterns of behaviour which emerge from social interactions (Berger/Luckmann 1966). Accordingly, the premise also lies in rejecting the self-evidence of reality and thus the notion of reality as subjective abstraction or subtraction (cf. Bruns/Kühne 2015; Kühne 2015; Pörksen 2015).

As a result, the social constructivist perspective forms the foundation for numerous other fields of research including gender studies, critical psychology, discursive psychology, cultural studies, deconstructivism, post-structuralism and, in general, postmodernism as well as the discourse analysis used here (Burr 2005; Gergen/Gergen 2009). The potential of the constructivist perspective lies in its ability to take

a specific, critical look at things and to show that their meanings are relative and reversible.

This also opens up an alternative approach (as will be shown in detail later) for the 'landscape' theme that is of central importance to the protest movements. Against the backdrop of socially constructed reality, the overarching, analytical question arises of how 'landscape' is produced and what meanings and attributions become established, particularly with respect to wind power and the energy transition (Kühne 2006; Kühne/Weber 2016a) – i.e. beyond the 'natural existence of landscapes'.

With the following discussion of our discourse-theoretical approach, we will complete the explanation of the key research perspective based on which we are able to address the raised questions.

2.2 The discourse-theoretical approach

The energy transition involves radical changes, with certain positions gaining so much influence that others are relegated to the sidelines. An analytical perspective based on discourse theory can assist in understanding these developments. The starting point for our poststructuralist, discourse-theoretical considerations based on the work of Ernesto Laclau and Chantal Mouffe (Laclau 1990, 2007; Laclau/Mouffe 2015 [engl. Orig. 1985]) is the assumption that meanings are never conclusively anchored. Potentially, they are always subject to changes (Glasze 2013: 73). Again and again, observations show that shifts can take place even in putatively stable circumstances (Laclau 1994: 1-2; Weber 2013: 50). Nuclear power plants can serve as an example: in the 1960s, in Germany, they were widely regarded as pioneering but are now increasingly associated with risks (Bauer 1995; Gleitsmann 2011: 20).

Additionally, time and again, temporary fixations of meaning arise that appear accepted and 'normal' in everyday life. For a time, they are not called into question and supplant alternative interpretations. However, as a consequence of the 'impossibility of a comprehensive, fixed social structure' (Glasze 2013: 74) and constantly ongoing negotiation processes, changes and ruptures are possible within temporary fixations – meanings and attributions can be transformed through processes of social negotiation. Ernesto Laclau and Chantal Mouffe call these temporary settings of meaning 'discourse' (Laclau/Mouffe 1985: 112). Discourses are described as an attempt to temporarily fix meanings, whereby their contingency remains central. 'Every discourse is a contingent construct because it was created by people but does not necessarily need to be as it is and could also be constructed differently, though not arbitrarily so' (Leibenath 2014: 125); thus multiple discursive threads can exist and gain relevance simultaneously. And whether wind turbines are determined to be 'modern' and 'aesthetically pleasing' or 'ugly' and 'a disfigurement of landscapes' is not naturally preordained but is the result of social negotiation processes in which different positions can gain interpretive authority (on the topic of interpretive authority in spatial contexts, see also Kühne 2008). Thus, what is crucial is which positions become so established that their constructive character recedes into the background (i.e. is forgotten) and they are considered to be immutable; such fixed

meanings are called hegemonic (i.e. especially powerful and successful) discourses by Laclau and Mouffe. They can arise when different moments are equated around a central nodal point that becomes crucial for the discourse (Jørgensen/Phillips 2002: 26-27). Yet they can also occur through demarcation from the outside, i.e. from that which the discourse is *not*; in this way, the outside provides identity and has a constitutive effect (Laclau 1993; Thiem/Weber 2011: 175-176; see also Fig. 1). Alternative social realities are suppressed and marginalised as a result of the success of hegemonic discourses (Laclau 1993; Glasze/Mattisek 2009: 162). The marginalised discourses are also to be understood as sub-discourses that stand in the shadow of hegemonic discourses but can potentially advance to become successful, hegemonic discourses themselves (Weber 2013: 63).

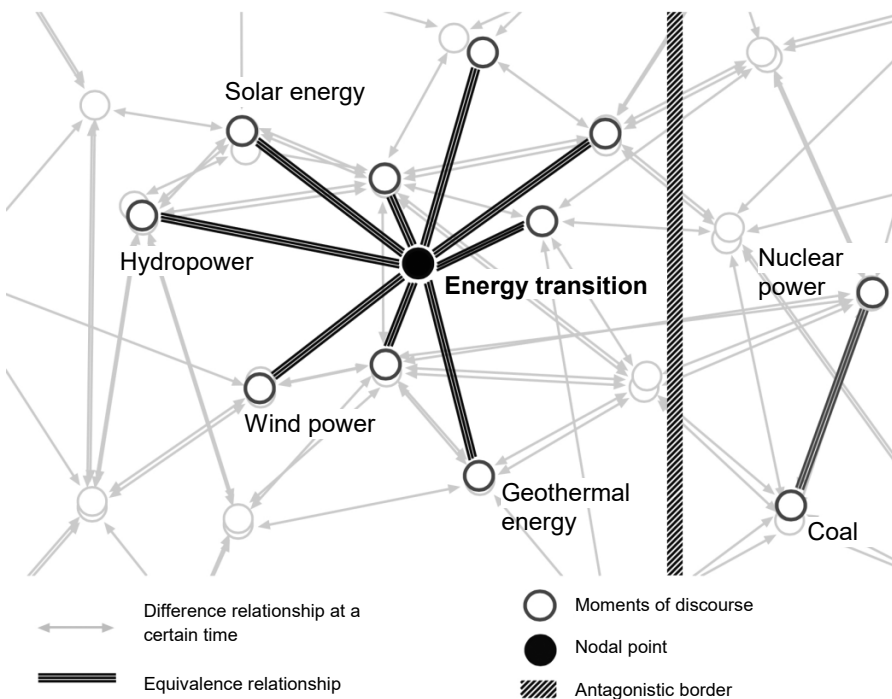


Figure 1: Discourse theory of Ernesto Laclau and Chantal Mouffe. Source: the authors, based on Glasze (2013) and Weber (2013)

Ultimately, a discourse theory perspective can on the one hand differentiate discursive settings, central nodal points, moments in a discourse and the outsides of discourses in order to illuminate how discourses are constituted and how they gain special power. On the other hand, it can also use the presumed unambiguousness of hegemonic discourses as a starting point to reveal alternative, parallel threads of discourse. That puts the focus on the power aspects that play a key role in the discursive analysis of social resistance movements against the energy transition.

2.3 Methodology and analytical components

Building on the theoretical ideas of Ernesto Laclau and Chantal Mouffe and their concept of discourse (see Fig. 1), our analysis of civic resistance focuses on examining temporary fixations of meaning. For our operationalisation of the concepts, we used a triangulation of quantitative and qualitative methods. Using quantitative methods and starting from the initial argument, regularities and connections in lexical elements can be identified, thus making ‘large-scale structures of speech, i.e. patterns of language use’ (Mattissek 2008: 122), tangible and visible (Guilhaumou 1986: 27; Teubert 1999; Glasze 2007: paragraphs 34 and 35; Weber 2015). Our examination of the citizens’ initiatives’ websites (discussed in detail below) builds on this premise: (re)produced patterns of argumentation and associations were quantified so as to make an overarching determination of which positions hold hegemonic status.

In addition, we use qualitative methods to further differentiate quantitative peculiarities within the discourses (Weber 2015: 105). What arguments are used to support certain positions? What regularities can be identified? Here, we make use of the method of narrative pattern analysis (Glasze/Husseini/Mose 2009). Narrative patterns are ‘conceived of as regular combinations of elements that establish relationships of a specific quality’ (Glasze 2013: 115). Relationships of equivalence and difference are especially traced out to identify moments and nodal points, but also elements from the discursive outside (Somers 1994: 616; Glasze 2013: 116). In this way, we can work out both fixed meanings as well as signs of change processes (see also Glasze/Husseini/Mose 2009; Weber 2013: 66 et seq.).

The analysis underlying the results presented below focuses on negotiation processes in the discursive field of the energy transition and specifically in that of wind power development. For this purpose, we used a *Google* search (*Google* is currently used by nearly 95% of internet users in Germany and can thus be viewed as the central source for information research online (statista 2015)) with specific German keywords (see Text box 1) to identify a total of 280 German citizens’ initiatives *for* and *against* the development of wind power. The sample is highly unbalanced, with 10 of the identified citizens’ initiatives arguing *in favour* of the local or supra-regional development of wind power and 270 *against* it.

Bürgerinitiative Windkraft (wind power citizens’ initiative), *Bürgerinitiative Windpark* (wind farm citizens’ initiative), *Windkraftgegner* (wind power opposition), *Bürger gegen Windkraft* (citizens against wind power), *Bürger Gegenwind* (citizens against wind [translator’s note: *Gegenwind* means ‘headwind’, but is read here as ‘against the wind’]), *Bürgerinitiative pro Windkraft* (citizens’ initiative for wind power), *Bürger für Windkraft* (citizens for wind power), *Bürger machen Wind* (citizens make wind [translator’s note: German phrase for ‘to stir up’])

It should be noted here that this research does not cover the entirety of civic associations operating in Germany but is merely a subset of the citizens' initiatives that can be found using *Google*. In addition, the online content of the citizens' initiatives does not necessarily correspond to their level of local activity. Thus, while the publicly accessible content of the citizens' initiatives' websites and profiles is examined in this article, the local impact inevitably remains 'hidden' for the moment. The evaluation of the citizens' initiatives' websites is divided into different stages of analysis. In the first stage, basic data pertaining to the citizens' initiatives was compiled, such as their locations and the respective population density in inhabitants per square kilometre. Such data can be used to draw conclusions about the distribution and possible concentrations of citizens' initiatives as well as to illustrate other structural differences. In the second stage of analysis, using quantitative approaches, key positions and patterns of argument were inductively compiled and systematised in order to show hegemonic, anchored positions as well as sub-discourses. This enabled us to investigate the questions of different basic attitudes and a spatial variation in the argumentation and discourses of the supporting and opposing citizens' initiatives. To reveal further specific and more detailed regularities in the citizens' initiatives' negotiation processes, the third step analysed narrative patterns in more detail, examples of which are shown in text boxes below. By means of the approaches described above, further light is shed on the discursive associations relating to wind power development. They provide information about the social construction and interpretation of the central concepts and fields of conflict in the context of the energy transition.

3 Citizens' initiatives in the context of wind power development

The starting point for this analysis is the *Google* survey of 280 citizens' initiatives that have formed to *support* or *oppose* the construction of wind turbines. From a discourse theory perspective, the citizens' initiatives are to be viewed as institutionalised groups that present certain positions and (re)produce them (hierzu Nonhoff 2006; Glasze 2013). The spectrum of the key fields of conflict in the negotiation processes of these citizens' initiatives covers a diverse range of aspects that we present below. We begin with an examination of the findings regarding the spatial distribution and concentration of civic resistance; this is followed by a discussion of the discursive regularities of the supporting and opposing citizens' initiatives, which reveals striking parallels.

3.1 Spatial distribution and concentration of civic engagement

What peculiarities are initially apparent in the spatial distribution of the 280 citizens' initiatives? As regards location (Fig. 2), there is a spatial concentration of citizens' initiatives opposing the development of wind power in the southern and western German federal states. Regarding the opposition movements, the following spatial clusters can be observed: 60 groups in Hesse, 45 in Baden-Württemberg and 42 in North Rhine-Westphalia (see Fig. 3). This is in contrast to the number of wind turbines in those federal states: especially in Hesse and Baden-Württemberg there is a high

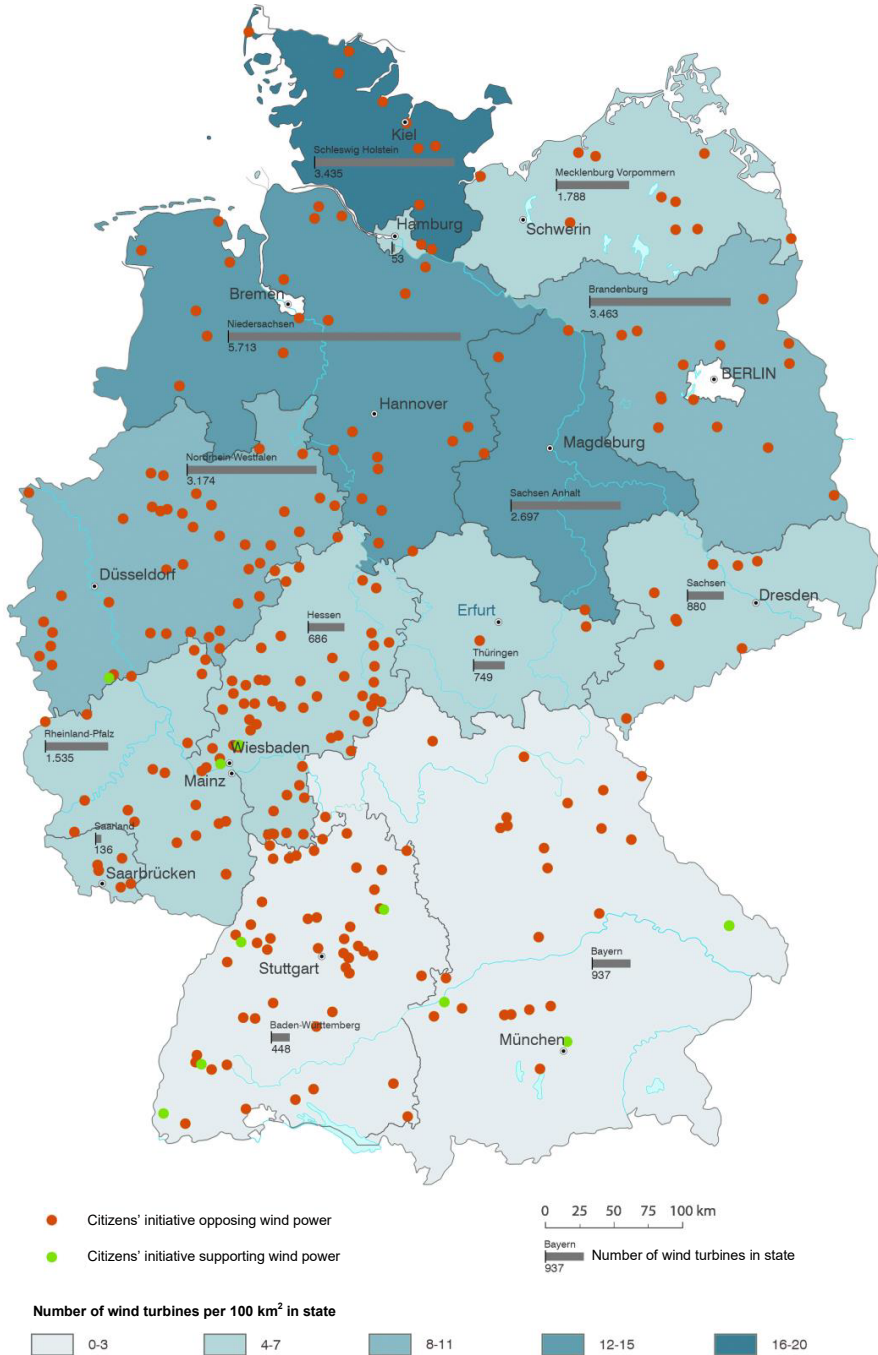


Figure 2: Location of citizens' initiatives and number of wind turbines per 100 km² in Germany's federal states. Source: the authors. Produced by Albert Roßmeier, 2016. The locations of citizens' initiatives supporting and opposing wind power are marked (based on Google research). Also indicated are the number of wind turbines in each federal state and the number of wind turbines per 100 km² in each state (based on German Wind Energy Association 2016; statista 2016).

degree of resistance and a relatively small number of wind turbines. Our research finds that there are more civic protest movements in southern and western Germany where wind power is used to a much lesser extent; these movements mainly reject further development in their own federal states but tend instead to call for supra-regional development (cf. Figs. 2 and 3).

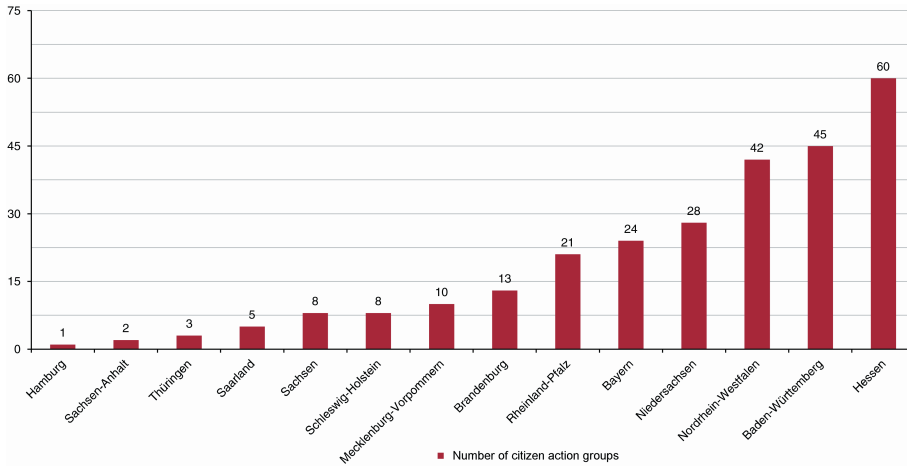


Figure 3: Number of citizens' initiatives opposing wind power in the federal states ($n = 270$).

Source: the authors (survey and illustration based on Google research)

It can also be claimed that the acceptance of wind turbine projects is particularly low in sparsely populated areas (see also Kühne 2006). The distribution of the citizens' initiatives against wind power by the population density of their locations shows a high concentration in sparsely populated areas that are designated as rural. More than half of the citizens' initiatives studied were established in areas that feature population densities of less than 150 inhabitants per square kilometre and are classified as rural areas (see Fig. 4) by the Federal Institute for Research on Building, Urban Affairs and Spatial Development (*Bundesinstitut für Bau-, Stadt- und Raumforschung, BBSR, BBSR 2011*). On the one hand, it is in a way 'automatic' that many wind turbines are found in sparsely populated areas designated as rural, so that resistance there is not especially surprising. On the other hand, one should investigate the proposition that transformation processes in 'spaces designated as rural' (see Linke 2015) are viewed with greater scepticism than in urban or suburban areas and are thus rejected (auch Weber et al. 2017).

To outline the specific regularities in the discursive field of the German energy transition, below we discuss the prevailing patterns of argumentation and positions used by the citizens' initiatives to support and oppose wind power development.

Number of citizens' initiatives against wind power for different population density ranges

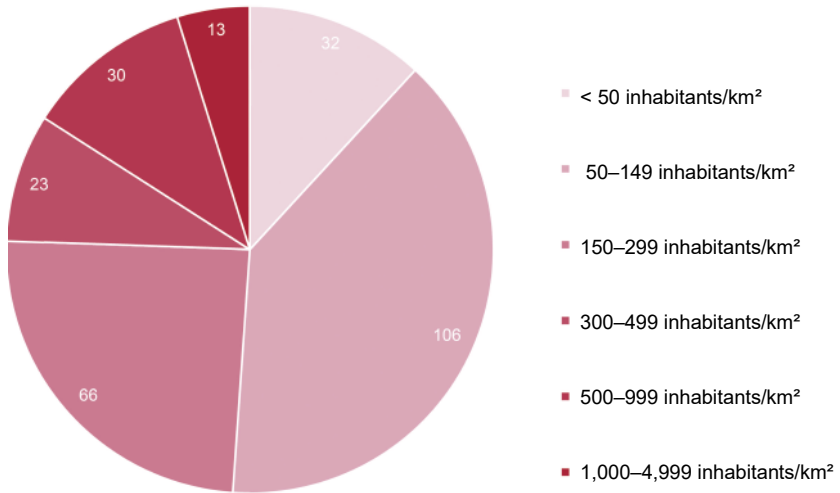


Figure 4: Number of citizens' initiatives against wind power, grouped by the population density of their locations (n = 270). Source: the authors (survey and illustration based on Google research)

3.2 Patterns of argumentation used by supporting citizens' initiatives

Argumentations based on the usefulness or necessity of wind power development

The citizens' initiatives that argue in favour of the energy transition and wind power development—both locally and supra-regionally—emphasise in a largely similar manner the usefulness or necessity of using wind power, in general and also within Germany specifically. Accordingly, their websites feature arguments about the 'urgency' of the energy transition and a combination of different renewable energy carriers. The citizens' initiatives see the shift to wind power as unavoidable, particularly in view of the highlighted risks of conventional energy production; as a result, nuclear and coal-fired power are pushed to the outside of the energy transition discourse and cannot (or can no longer) be linked to constructs of 'viable' and 'safe' energy production. This also makes the variability of discourses evident, even those that are largely hegemonic and established; in its early phases, nuclear power was often propagated as pioneering and advanced (Gleitsmann 2011), a view that underwent further significant change after the Fukushima disaster. In the negotiation processes of their proponents, wind turbines ultimately represent, 'a new and sustainable energy industry that is free of elemental hazards, helps to avoid climate change, and reduces dependency on energy-exporting countries' (citizens' initiative *BürgerWIND Bayerwald* 2015). Wind turbines are discursively linked in an equivalency chain with a 'cleaner', 'safer' and 'more viable' energy supply.

The websites of these citizens' initiatives also present concerns about climate change processes that further underscore the necessity of continued wind power development, among other things by emphasising the usefulness of energy production

in southern Germany, specifically in Baden-Württemberg. For example, a Bavarian citizens' initiative writes: 'Wind power needs to be expanded in southern Germany to replace dangerous nuclear power plants and coal-fired power stations that are harmful to the climate [...] Along with solar energy, wind power is the main pillar in the use of renewable energy to generate electricity' (citizens' initiative *Energiewende Waldkirch* 2013; cf. also the citizens' initiative *Windkraft für Michelbach* 2016).

Argumentations concerning political leadership in the energy transition

The discourse threads of the citizens' initiatives arguing in favour of building wind turbines include various largely similar positions critical of energy policy measures and guidelines. The citizens' initiatives underscore their criticism of the political leadership with arguments about the necessity of wind power development, referring to the 'fundamental dangers' (citizens' initiative *BürgerWIND Bayerwald* 2015) of climate change. They use emotional language in connection with the continued use of conventional energy sources, saying that in addition to phasing out nuclear power, the use of coal-fired power should also be brought to an end. The citizens' initiatives also cast doubt on the motivation of municipal policies with regard to the energy transition and the use of renewable energy: 'Most municipalities are not acting systematically with regard to the energy transition. Instead they are misusing the planning autonomy delegated to them for short-sighted, purely egotistical goals. [...] The result is isolated, low-yield wind turbines on lots of mountains [...]' (citizens' initiative *Bürgerwindrad Blauen e.V.* 2016).

The proponents' negotiation processes also include positions critical of the Bavarian state government's '10H rule'. The aim of this regulation adopted on 21 November 2014 was to 'establish a balance of interests between the requirements of the energy transition and the interests of local residents' (STMI undated). However, the supporting citizens' initiatives frequently (re)produce the regulation's restrictive character with respect to further development (citizens' initiative *Mütter gegen Atom-kraft e.V.* 2016); they argue that tall and 'efficient' wind turbines would no longer be feasible because of the great distances that they are required to be from residential areas (2 km for a 200 m wind turbine according to the 10H rule).

In addition, political aspects of energy supply also play a key role in the discourses supporting wind power, with criticism formed around a politically induced dependency of nationwide energy production on 'raw material imports and multinational corporations' (citizens' initiative *Energiewende Waldkirch* 2013). Thus the use of wind power is ultimately viewed as an alternative means of centralised energy production and is discursively linked to arguments about regional value creation opportunities: 'With a company based in the region, we see more long-term contractual security and regional participation in a future-oriented industry [...]. We thus support a development that enables a decentralised energy structure instead of the monopolistic corporations of the nuclear age' (citizens' initiative *Windkraft für Michelbach* 2016).

Argumentations concerning economic aspects

The negotiation processes among supporters of wind power also feature argumentations involving economic aspects. Along with positions describing wind power as an ecological and economical alternative to conventional energy production, patterns of argumentation around the potential for municipal and regional value creation are also crucial: ‘The future belongs to wind power [...]. The added value from wind power stays in the region, and that means additional income from business taxes for the municipalities’ (citizens’ initiative *Pro Wind Landkreis Günzburg* 2014). The citizens’ initiatives also emphasise the benefits of onshore wind power use; they maintain that compared with offshore wind power, it involves lower investment costs and less expansion of high-voltage power lines and networks, which are ‘economically absurd and expensive for end customers’ (citizens’ initiative *Energie-Zukunft-Rheingau* 2016).

Discourses on wind power also involve addressing the opposing side’s patterns of argumentation and taking positions on them. For example, in some cases the proponent citizens’ initiatives argue *against* the postulated drop in value of properties in the immediate vicinity of planned or newly built wind turbines. A Bavarian citizens’ initiative attempts to relativise the concerns of numerous wind power opponents and explains pricing as the result of various factors: ‘Property values are not objective figures, but the result of numerous factors that are assessed positively or negatively depending on the subjective interests of potential buyers. Every street, every item of infrastructure, every construction project in the neighbourhood, and even developments in neighbouring municipalities, can trigger such effects. Thus, our legal system applies objective criteria (e.g. protection against unacceptable emissions) to ensure the necessary balancing of interests’ (citizens’ initiative *Pro Wind Landkreis Günzburg* 2014).

The citizens’ initiatives also address reservations about potential losses in the tourism sector that would, according to the largely comparable argumentations shared by numerous opposition groups, result from the erection of wind turbines in areas developed for tourism; such reservations are correspondingly rejected. To some extent, however, the citizens’ initiatives supporting the construction of additional wind turbines acknowledge in their negotiation processes that such construction may have negative physical consequences, as will be shown below. However, they relativise these consequences by emphasising that perceptions of landscape are subjective. ‘There is no denying that wind turbines change the landscape. [...] There are many onshore turbines on the German coast. That clearly has no impact on tourism,’ according to a citizens’ initiative from Hesse (citizens’ initiative *Energie-Zukunft-Rheingau* 2016).

What is striking here is the active adoption of the opposing side’s line of argumentation or of criticism (re)produced in the media, which is then discursively reframed by those in favour. For the proponents, wind power development and economic aspects can ‘definitely’ be coupled and are interwoven.

Argumentations concerning health aspects

In addition to the discursive patterns described above, health aspects also play an important role in the negotiation processes around the energy transition. Here, too, citizens' initiatives in favour of wind power development address the lines of argument of those which oppose it (or of the media) and refute the inherent, discursive fixations. Here, it becomes clear that the established positions are in part diametrically opposed. As we show below, across the citizens' initiatives that have formed to oppose wind power development, wind turbines have to a widespread degree become discursively anchored as sources of harmful emissions and are drifting to the discursive outside of leisure and recreation areas. In contrast, the side approving of wind power development largely denies the harmful effects of noise emissions as well as their acoustic perceptibility. Specifically, one citizens' initiative maintains that 'infrasound below the threshold of audibility, i.e. sound with a frequency below 20 Hz and a sound intensity level below 130 dB, has no negative impact on the human body at all. [...] Even at close range (less than 200 m), the infrasound produced by wind turbines does not come close to reaching these values and is thus completely harmless' (citizens' initiative *Pro Wind Landkreis Günzburg* 2014).

Moreover, the citizens' initiatives in favour of wind turbines also point to the Federal Immission Control Act (*Bundesimmissionsschutzgesetz, BImSchG*), which regulates the minimum distances between wind turbines and residential areas; they point out that such distances are determined during approval processes and would rule out adverse acoustic effects that exceed legal limits. Accordingly, a wind turbine would have to be 'built so far from a settled area that its noise emissions will not exceed these maximum noise immission values in the settled area. Compliance with the limiting values also ensures that so-called infrasound will have no impact' (citizens' initiative *BürgerWIND Bayerwald* 2015). Wind turbines are thus largely anchored in the discourses of wind power advocates as harmless to health.

Argumentations concerning the topic of 'landscape' – aesthetic/emotional as well as nature and wildlife conservation aspects

From a social constructivist perspective, the subjective construct of reality and thus of the concepts of landscape and home is of particular interest in the arguments involving these concepts. This is because the citizens' initiatives' underlying ideas of landscape can also shed additional light on the prevailing patterns and structures of argumentation, enabling conclusions to be drawn about established regularities and interpretations in the key areas of conflict. Even among initiatives that support the ongoing development of wind turbines, 'landscape' seems to be constructed differently. Some of the citizens' initiatives place particular emphasis on the subjectivity of landscape aesthetics (see Text box 2) and thus deny any differentiation into 'landscape' and 'non-landscape' or 'beautiful, attractive' and 'ugly' debased and/or overbuilt 'landscapes' (cf. Otto/Leibenath 2013).

Quote from the website of the citizens' initiative BürgerWIND Bayerwald (2015):

'The way nature and landscape are perceived is ultimately always subjective. It is determined by the person doing the perceiving. This perception is different for each person and is influenced among other things by the person's ethics, education, upbringing, experiences and behaviour. In the actual moment of perceiving, additional subject-specific factors such as the momentary mood and the current activity also come into play. The way things are perceived is also determined by the person's own value system.'

Quote from the website of the citizens' initiative Energie-Zukunft-Rheingau (2016):

'There is no denying that wind turbines change the landscape. Whether they are considered to be attractive or ugly is very subjective.'

Quote from the website of the citizens' initiative Pro Wind Landkreis Günzburg (2014):

'Wind turbines change the familiar appearance of the landscape. Depending on the existing views and scenery as well as citizens' viewing habits, wind turbines can be perceived as disturbing, or at least be feared as such, during the day or at night (position lights). Their impact can be evaluated in advance and minimised with careful site selection, technical precautions and realistic visualisation; whether it is bearable is a matter for the project discussions.'

Quote from the website of the citizens' initiative Pro Windkraft Niedernhausen (2015):

'Wind turbines are visible and obvious encroachments on a landscape's appearance. Since wind turbines have been around for only a relatively short period, people sometimes find the sight of them to be intrusive and unfamiliar. But the energy transition and a shift to renewable energy can only succeed in Germany if we exploit wind power intensively.'

Text box 2: Narrative patterns of landscape-related argumentations for wind power

In the narrative patterns shown in Text box 2, the physical consequences of wind power development are understood as changes to be evaluated subjectively. What becomes clear in these negotiation processes is a certain regularity, revealing the specific construction of 'landscape' as the subjective configuration or individual combination of physical objects. Wind turbines could thus, over time, also come to be considered 'normal' and no longer 'intrusive'. Here, 'landscape' and wind power are discursively coupled.

Furthermore, the tight linkage between the discursive fields of landscape and home is evident in the supporting side's negotiation processes, with home frequently a construct of 'familiar landscapes'. Thus, landscape is to be understood as a 'physical

manifestation of cultural identity' (Kühne 2008: 319). Hence, the emotional appeal of the approach and particularly of the construct of 'home' becomes clear, as shown on the website of a Bavarian citizens' initiative: 'Only together can we accomplish the energy transition, retain and strengthen our home [...] and our rural coexistence' (citizens' initiative *BürgerWIND Bayerwald* 2015). This also brings aspects of intergenerational fairness to the fore, which refer back to the necessity of wind power development: 'What is at stake is a future worth living for us humans, for our health, and it's about finally phasing out nuclear power production' (citizens' initiative *Bürgerwindrad Blauen e.V.* 2016). 'Wind power', 'home' and 'health' are linked in the supporting discourse; 'nuclear power' is on the outside and, as noted above, so is coal-fired power.

However, the argumentation patterns not only include aesthetic and emotional aspects of landscape and home, but also more cognitive aspects that are frequently (re)produced from an expert nature and wildlife conservation perspective. Supporting citizens' initiatives address a wide range of criticisms of the opponents of wind power and refute them or emphasise their irrelevance. For example, citizens' initiatives in favour of building more wind turbines claim a low risk of birds colliding with the rotating rotor blades of the turbines: 'Research published so far shows a very low risk for potentially endangered bird groups. [...] There is no consistent picture; for example, the rare eastern imperial eagle only settled in the Parndorf Heath near Vienna after a large wind farm had been built there' (citizens' initiative *Mütter gegen Atomkraft e.V.* 2016). A citizens' initiative from Hesse expressed itself similarly: 'The probability of birds colliding with wind turbines can generally be considered very low' (citizens' initiative *Pro Windkraft Niedernhausen* 2015). But the low risk of collisions with wind turbines is not the only aspect emphasised in the negotiation processes. The turbines are also evaluated as a potential risk to birds along with several other significant causes of death, putting the risk in a different perspective: 'There are 150 to 200 million birds living in Germany. The highest estimated number of birds possibly killed is 100,000. A much larger number of birds (between 20 and 30 million) are killed in road traffic and by buildings' (citizens' initiative *Mütter gegen Atomkraft e.V.* 2016).

Argumentations concerning opportunities for civic participation in decision-making processes

With respect to civic participation in planning processes regarding the construction of wind turbines, supporting citizens' initiatives emphasise the need for extensive opportunities for involvement in light of the transformation of the 'home landscape' (Kühne 2006) and structures inherent to the energy transition. Here, too, it is apparent that the patterns of argumentation in the negotiation processes exhibit emotional and aesthetic (see also Ipsen 2006) references: 'Citizens need to be integrated more since most have the feeling that they are not consulted when their home is changed by the installation of wind turbines. The people should be involved more in wind projects in their areas (community wind farms). Then it might well be possible that their aesthetic feelings towards the turbines would change' (citizens' initiative *BürgerWIND Bayerwald* 2015). Aspects for increasing acceptance, which the citizens' initiatives hope for from wide-ranging participation procedures, are crucial. Thus, according to the citizens' initiatives, the opportunity for the energy transition

lies in the participatory shaping of the future energy supply and its spatial manifestation: ‘The participation of local residents and not the interests of major investors or energy corporations should be a priority in the use of wind power’ (citizens’ initiative *Pro Wind Landkreis Günzburg* 2014).

Through their regularity, reproduced through various citizens’ initiatives, these patterns of argumentation become established moments within the discourses in favour of wind power. Now, to demonstrate the parallelism of different threads of discourse, below we examine the main structures and patterns in the negotiation processes of the identified citizens’ initiatives that have formed to oppose the construction of wind turbines.

3.3 Key patterns of argumentation used by opposing citizens’ initiatives

As it does on the supporting side, the spectrum of central areas of conflict in the negotiation processes of the citizens’ initiatives opposed to wind power development encompasses economic, health and particularly landscape as well as nature and wildlife conservation aspects. Here, too, the prevailing patterns of argumentation can be associated with more cognitive, emotional or aesthetic evaluation patterns. As in the case of the supporters, critics also demand increased participation in the planning of wind turbines. However, their aim is less to quickly push forward with the energy transition than to give more weight to ‘the will of the citizens’, which in their view is that wind turbines should not be built at every potentially viable location.

Based on the results of our *Google* survey, we quantified four central areas of conflict: nature conservation, home and landscape, health, and economic reasons. Almost 70% to about 90% of the citizens’ initiatives mentioned these aspects on their websites, thus (re)producing and anchoring them (cf. Fig. 5; also Weber/Jenal 2016). We examine them in detail below.

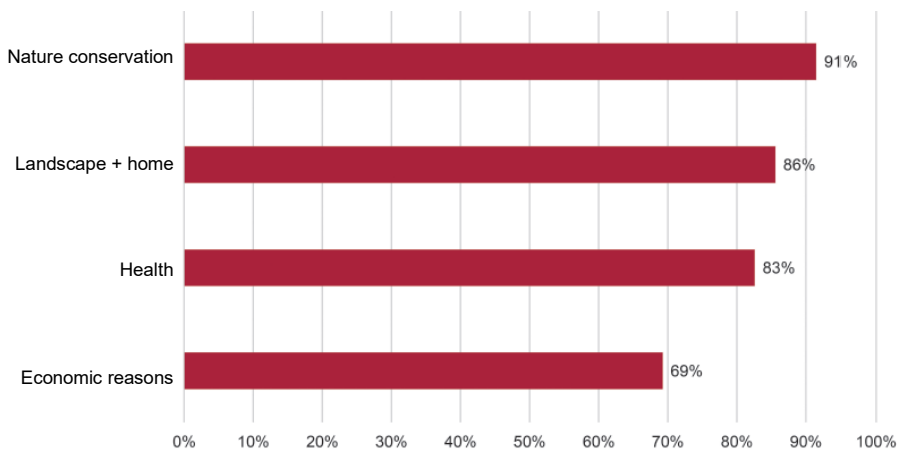


Figure 5: Key arguments: percentage of citizens’ initiatives ($n=270$) emphasising the arguments. Source: the authors (based on the results of a *Google* survey).

Argumentations concerning nature and wildlife conservation as well as landscape aspects

Citizens' initiatives that oppose the construction of wind turbines regularly voice concerns about nature and wildlife conservation, as well as worries about changes in 'home and landscape', thus shifting wind turbines to the outside of 'nature' and 'landscape' preservation discourses.

In the opposing side's negotiation processes, the energy transition as a whole or wind power development is seen as being in conflict with overarching conservation goals; 91% of the citizens' initiatives express opposition to the consequences of wind power development that are related to conservation issues. In particular, collisions – and the resulting deaths – of (strictly protected) bird species with wind turbine rotors are a preeminent motivation of the opposing citizens' initiatives. In their view, this is a disproportionate consequence that is incompatible with the aims of the energy transition and of wind power development. Ultimately, this also brings strong criticism to bear on prominent nature conservation organisations, which are impacted by the conflicting goals of conservation and the advancement of the energy transition as described by the citizens' initiatives. The clearing of forests and fears of an accompanying loss of biodiversity also play a role in arguments about the 'senselessness' and 'hastiness' of the energy transition (for more details, see Text box 3).

Quote from the website of the citizens' initiative Windkraft Bad Marienberg (2016):

'Distinctive views and scenery will be irreversibly destroyed. Sources of top-quality drinking water will become unusable. Endangered species such as the red kite and bats will either be killed or driven out of their habitats. Semi-natural recreation areas in rural regions will be encroached by energy production and become industrial sites for cities.'

Quote from the website of the citizens' initiative Gegenwind im Oderbruch (2015):

'Not only will people experience a decline in property values and a debasement of the surrounding landscape, in other words the destruction of their home as nature and recreation areas are radically distorted, they will also suffer from sleep disorders, dizziness, cardiac arrhythmia. Who is responsible for all this?'

'The wind turbines planned for the Oderbruch will destroy not only the distinctive appearance of the landscape with its dykes, villages, churches and castles, they also harbour dangers for people and animals.'

Quote from the website of the citizens' initiative Greiner Eck e.V. (2016):

The impact of the wind turbines built thus far, and especially the impact of those still in planning, on Germany's forested highlands will be a virtual ecological catastrophe. The impact on soil, water, fauna, flora, aesthetics, the recreation and enjoyment value, and not least on the health and the economic base (tourism) of the people living there and on their property, which except for wind turbine sites will often lose more than one-third of its value, will be enormous.'

Quote from the website of the citizens' initiative Gegen den Windpark Zollstock-Springstein (2016):

'Wind turbines will destroy our natural and beautiful scenery. They will lead to the industrialisation of the landscape. At least 1 hectare of forest has to be cleared for 1 wind turbine. Access roads and the construction of ramps for heavy goods vehicles will require significant additional clearing. Concrete foundations seal the ground completely with the loss of all soil services.'

Text box 3: Narrative patterns of argumentation against wind power relating to the topics of 'landscape' and 'home'

What becomes clear in the narrative patterns is the assumed reality of 'landscape': 'landscape' becomes a 'feature' that would be compromised or debased or, worse yet, destroyed as a consequence of physical changes or the implementation of physical elements. Of the analysed citizens' initiatives, 86% present arguments about the threatened loss of 'landscape quality'; the websites refer to 'disfigurement' and the 'loss of recreational value'. The close link between aesthetic/emotional aspects of landscape and the aspects of nature and species conservation is also apparent, with the opposing citizens' initiatives claiming that the construction of wind turbines would

cause land-scapes to lose not only their aesthetic value but also their function as a habitat for flora and fauna.

In addition, the negotiation processes of these citizens' initiatives also include positions on 'landscape' that have strong links to the emotional construct of 'home': since society uses landscape constructions for social anchoring in an area, the subjective loss of value also results in the 'destruction of its home' (citizens' initiative *Gegenwind im Oderbruch* 2015). And since cultural and regional identity in turn are based on the subjective constitution of home, the perceived destruction of landscapes and homes also threatens the loss of identity. Accordingly, wind turbines are linked to the 'loss of home and identity'.

'Landscape', 'home' and 'nature and wildlife conservation' line up discursively in equivalence chains, bolstering the position of rejecting wind turbines.

Argumentations concerning health aspects

In addition to the patterns of argumentation involving the multidimensional 'destruction' and 'debasement' of landscapes, the negotiation processes of the citizens' initiatives against wind power also include specific criticism of its impact on health. Of the citizens' initiatives considered, 83% criticise the development of wind power due to serious concerns and fears about imminent health hazards. The protest movements see inevitable side effects of wind turbine operation as relevant to the health of both people and animals. They claim that rotating turbine blades cause noise emissions that have different effects on organisms depending on their frequency range and that audible wind turbine emissions result in sustained acoustic and thus physical strain under which the residents' quality of life suffers. But it is emissions in the inaudible frequency range (infrasound) in particular that are reproduced with discursive regularity as hazardous to health and with reference to numerous medical studies. 'They cause many forms of discomfort in varying degrees depending on susceptibility: in particular, headaches and migraines, sleep disorders, poor concentration and memory problems, tinnitus, dizziness, nausea, changes in heart rate, irritability, agitation and anxiety will be the inevitable consequence of irresponsible planning' (citizens' initiative *Fröhner Wald – für Mensch und Natur* e.V. 2016).

Emotional language is also employed in the negotiation processes concerning the health impact of wind turbines, including terms such as 'torture, expropriation, displacement, illness and death' (citizens' initiative *Für Transparenz und Gerechtigkeit* 2016); this not only pushes wind turbines to the outside of the 'semi-natural landscapes' discourse, but also places them in diametrical opposition to the concept of 'viable energy production'. Members of the protest movements mention 'economic senselessness combined with the ecological damage [from wind power development]' (citizens' initiative *Windkraft Bad Marienberg* 2015), which also contributes to 'irresponsible planning' (citizens' initiative *Fröhner Wald – für Mensch und Natur* e.V. 2016) from a health view-point. What can thus be discerned in the field of conflict over the health impact of wind turbines is that different threads of argumentation are discursively linked and attest to regularity.

In addition to their deep concerns about emissions from wind turbines, the opposing citizens' initiatives also criticise potential malfunctions or accidents involving turbines, emphasising the risk of fires in the rotor hubs at heights where it would be impossible to extinguish them. According to this argument, wind turbines in forests are considered especially dangerous due to the economic and ecological damage they could cause. Hazards for groundwater due to leaking oil from the turbines are also mentioned in this context. In the patterns of argumentation that prevail in the negotiation processes, wind turbines are anchored as an especially worrisome form of energy production that inevitably entails '[...] hazards to our health' (citizens' initiative *Gegenwind Schneifel* 2016). Numerous criticisms are interwoven to establish a hegemonic rejectionist attitude towards wind turbines.

Argumentations concerning economic aspects

Economic aspects are a further area of conflict in the discourses opposing wind power, mentioned by 69% of the citizens' initiatives analysed. Referring to the impaired quality of life for people living in the immediate vicinity of wind turbines, the protest movements criticise the negative impact turbines have on property values. A citizens' initiative from Rhineland-Palatinate emphasises that '[...] wind turbines have a lasting impact on the quality of life in terms of subjective well-being. As a consequence, the market values of properties inevitably fall significantly. In Germany, a loss in value of between 30% and 100% (unsalability) is assumed, depending on the distance to the turbine. [...] Why should young families voluntarily move into the vicinity of a wind turbine and expose themselves to health hazards or other losses?' (citizens' initiative *Niederwallmenach und Umgebung* 2015a). As a consequence, and not merely due to the economic arguments, the citizens' initiatives call for a greater distance between wind turbines and residential areas and/or 'compensation for the decreased property value resulting from the construction of the wind farm' (citizens' initiative *Windkraft Engelsbrand* 2015).

In addition, the negotiation processes concerning the economic consequences of wind power development include concerns about sectoral losses resulting from local wind power planning, especially with largely similar concerns being voiced about falling numbers of visitors or holidaymakers in areas developed for tourism or 'attractive' areas. For example, one citizens' initiative pointedly asked, 'How will we advertise tourism in future? Adventure holidays under wind turbines for people who love to take risks?' Wind turbines are thus located on the outside of 'leisure- and recreation-oriented landscapes': areas where turbines have been installed are understood to have degraded attractiveness and to seem like 'industrial operations' (citizens' initiative *Für Transparenz und Gerechtigkeit* 2016). However, in addition to losses in the tourism sector, some citizens' initiatives also frame zoning for wind power planning as economic competition, since 'the conversion of valuable farmland [...] into wind turbines endangers jobs in the agricultural sector and the security of food and feed supplies' (citizens' initiative *Gegenwind im Oderbruch* 2015; see Weber/Jenal/Kühne 2017 for similar arguments regarding conflicts about raw material extraction).

A further criticism relating to economic conflicts is the profitability of wind turbines and wind farms. The negotiation processes of the citizens' initiatives exhibit serious doubts about the economic viability of wind turbines, especially in southern Germany. The protest movements express doubts about whether wind conditions in southern Germany are sufficient for the profitable operation of wind turbines. In addition, 'many municipalities complain constantly about financial deficits because promised business tax income fails to materialise and they are left to bear other related costs' (citizens' initiative *Windvernunft Kiel e.V.* 2015). According to the citizens' initiatives, whether operating wind turbines brings opportunities or risks for municipalities is 'often not considered by the decision-makers because of the prospect of easy money from supposedly high and guaranteed lease payments. This negligence leads to immense economic damage for the municipalities, damage that the citizens ultimately have to bear' (citizens' initiative *Niederwallmenach und Umgebung* 2015a). Thus, the citizens' initiatives fear financial losses, not only in property values but also at the municipal level. Ultimately, a number of arguments support the positions opposing wind power development as part of the energy transition.

4 Conclusions and outlook

To date, surveys continue to show a high level of fundamental approval for the energy transition in Germany (*Agentur für Erneuerbare Energien* [Renewable Energy Agency] 2015; *BfN* [Federal Agency for Nature Conservation] 2015). At the same time, there is a growing number of reports about resistance to specific plans, particularly plans regarding wind power and expansion of the electrical grid (see also Weber et al. 2017). Certain positions appear to be gaining the upper hand over others, pushing the latter into the background. Whereas criticism of renewable energy development was virtually 'unspeakable' in the immediate aftermath of the Fukushima nuclear disaster, as time goes by it appears that strong criticism is increasingly permissible. Of 280 citizens' initiatives related to wind power development found using Google, 270 take a negative stance and 10 are in favour of wind power to aid the energy transition. Against this backdrop, which key arguments are used by proponents and opponents? For this question, which this article examined from a discourse theory perspective, there were previously no comparable quantitative-qualitative results of such scope.

By subjecting both sides to a more detailed analysis, we have clearly shown that central considerations such as nature conservation, landscape and home, health, and economic aspects can be coupled with patterns of argumentation on both the supporting and opposing sides; they are, according to Laclau (2007), 'floating signifiers'. The supporting side often takes positions that play down those of the opposing side – aspects that have thus far barely been subjected to closer examination and that show the potential of discourse theory analyses: the search for alternative interpretive patterns and interpretations. At the same time, we were able to make further distinctions among established points of criticism. What is striking in this regard is how similarly structured the patterns of argumentation and the discursive settings are across the negotiation processes of the various citizens' initiatives. For

example, 'landscape' is frequently constructed in emotion-based approaches by the citizens' initiatives opposing wind power development as subject to damage or destruction; its current state is to be preserved. Citizens' initiatives refer to and network with one another, (re)producing each other's arguments, and can in combination be designated in terms of discourse theory as discourse coalitions (see Nonhoff 2006). The extent of the development of these coalitions is a subject for further research.

With respect to the discourse theory approach, one should in particular highlight its potential to establish a metaperspective access to language and focus on power structures. The main subjects of this analysis are neither positions of individuals nor structural parameters; the focal plane lies 'in between' these and enables a view of social negotiation processes that, in the case of the citizens' initiatives, show increasing political relevance as some expansion projects are withdrawn against the backdrop of massive protests or as delays of the planning processes 'impend'. For the citizenry, 'landscape' and 'home' serve as important anchor points for orientation. This means that landscape changes become major challenges for policymakers and planners, who need to address the associated fears and worries. An important aspect in this regard is that not all of the citizens' initiatives' argumentation approaches are legally relevant, but they do have considerable everyday relevance. This is exactly what policymakers and planners increasingly have to consider in this context.

In order to also gain more detailed insights into the motivations and actions of both the supporting and opposing protest movements, it would be useful to perform an extensive analysis of their underlying objectives – 'captured' through detailed interviews with representatives of the initiatives. This would enable further delineation of the various discursive settings as well as a more nuanced categorisation of the citizens' initiatives. In the course of the research project carried out for the Federal Agency for Nature Conservation (*Bundesamt für Naturschutz, BfN*), which is the source of the results presented in this article, we are converging on this research gap.

Another key question also remains open: can conflicts, especially those as emotionally fraught as the energy transition, be definitively resolved (see also Becker/Naumann 2016)? According to Ralf Dahrendorf (1972), this is impossible. In line with Dahrendorf, the citizens' initiatives with their fixed and shared attitudes can be described as an organised conflict group confronting policymakers and planners. The conflict has thus manifested itself and is being waged more or less vehemently (see also Aschenbrand/Kühne/Weber 2017; Kühne 2017). Dahrendorf recommends accepting dissent as the normal state of affairs and thus favours *regulating* conflicts; this involves dealing with conflicts by viewing the counterparty not as an illegitimate 'enemy' but as a legitimate 'opponent' with whom one must 'wrestle' over future developments (cf. Mouffe 2007, 2010, 2014 for corresponding arguments). The extent to which the circumstances of civic protest relating to the energy transition can be influenced by conflict *regulation* approaches is a field for further investigation.

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References

- AEE – Renewable Energy Agency (2015): Die deutsche Bevölkerung will mehr Erneuerbare Energien: Repräsentative Akzeptanzumfrage zeigt hohe Zustimmung für weiteren Ausbau.
<http://www.unendlich-viel-energie.de/die-deutsche-bevoelkerung-will-mehr-erneuerbare-energien> (09 March 2016).
- Aschenbrand, E.; Kühne, O.; Weber, F. (2017): Rohstoffgewinnung in Deutschland: Auseinandersetzungen und Konflikte. Eine Analyse aus sozialkonstruktivistischer Perspektive. In: UmweltWirtschaftsForum, online first.
- Bauer, M. (1995): Resistance to new technology and its effects on nuclear power, information technology and biotechnology. In: Bauer, M. (Ed.): Resistance to new technology. Nuclear power, information technology, and biotechnology. Cambridge, New York, 1–38.

- BBSR – Federal Institute for Building, Urban and Spatial Research** (2011): Laufende Raumbbeobachtung – Raumbbegrenzungen.
https://www.bbsr.bund.de/BBSR/DE/forschung/raumbbeobachtung/Raumbbegrenzungen/deutschland/gemeinden/Raumtypen2010_vbg/Raumtypen2010_alt.html (18 May 2021).
- Becker, S.; Naumann, M.** (2016): Energiewende vor Ort gelingen kann. Wie die Energiewende vor Ort gelingen kann.
http://transformation-des-energiesystems.de/sites/default/files/EnerLOG_Broschuere_Energiewende_nutzen.pdf (01 February 2017).
- Berger, P.L.; Luckmann, T.** (1966): *The Social Construction of Reality. A Treatise in the Sociology of Knowledge.* New York.
- BfN – German Federal Agency for Nature Conservation** (2015): Bevölkerungsumfrage zu Natur und biologischer Vielfalt.
https://www.bfn.de/fileadmin/Bfn/gesellschaft/Dokumente/Naturbewusstsein-2015_barrierefrei.pdf (18 May 2021).
- BMWi – German Federal Ministry for Economic Affairs and Energy** (2017a): Erneuerbare Energien.
<http://www.bmwi.de/Redaktion/DE/Dossier/erneuerbare-energien.html> (24 January 2017).
- BMWi – German Federal Ministry for Economic Affairs and Energy** (2017b): Windenergie an Land. Windenergie.
<http://www.erneuerbare-energien.de/EE/Navigation/DE/Technologien/Windenergie-an-Land/windenergie-an-land.html> (24 January 2017).
- Bruns, D.; Kühne, O.** (2015): Gesellschaftliche Transformation und die Entwicklung von Landschaft – eine Betrachtung aus der Perspektive der sozialkonstruktivistischen Landschaftstheorie. In: Kühne, O.; Gawroński, K.; Hernik, J. (Eds.): *Transformation und Landschaft. Die Folgen sozialer Wandlungsprozesse auf Landschaft.* Wiesbaden, 9–13.
- BWE – German Wind Energy Association** (2016): Statistiken.
<https://www.wind-energie.de/themen/statistiken/bundeslaender> (01 June 2016).
- Citizens’ initiative ‘BürgerWIND Bayerwald’** (2015): Initiatoren.
<http://www.buergerwind-bayerwald.de/index.php/wir-ueber-uns/initiatoren-3> (18 May 2016).
- Citizens’ initiative ‘Bürgerwindrad Blauen e.V.’** (2016): Aktuell – Blog.
<http://buergerwindrad-blauen.de/> (18 May 2016).
- Citizens’ initiative ‘Energiewende Waldkirch’** (2013): Aktuell.
<http://www.energiewende-waldkirch.de/aktuell.cfm> (11 May 2016).
- Citizens’ initiative ‘Energie-Zukunft-Rheingau’** (2016): Fragen und Antworten zur Windkraft in Eltville.
http://www.energie-zukunft-rheingau.de/wp/?page_id=273 (13 February 2017).
- Citizens’ initiative ‘Fröhner Wald - für Mensch und Natur e.V.’** (2016): Ziele.
<http://www.froehnerwald.de/ziele/schutz-des-menschen/> (18 May 2016).
- Citizens’ initiative ‘Für Transparenz und Gerechtigkeit’** (2016): Ärzte – Gesundheit Infraschall.
<http://www.btg-bayern.de/Aerzte-Gesundheit-Infraschall/> (17 February 2017).
- Citizens’ initiative ‘Gegen den Windpark Zollstock-Springstein’** (2016): Faktensammlung
<https://www.gegen-den-windpark-zollstock-springstein.de/start/faktensammlung/> (16 February 2017).
- Citizens’ initiative ‘Gegenwind im Oderbruch’** (2015): Startseite.
<http://www.gegenwind-im-oderbruch.eu/> (11 May 2016).
- Citizens’ initiative ‘Gegenwind Schneifel’** (2016): Über uns. Ziele der Bürgerinitiative GEGENWIND-SCHNEIFEL.
<http://www.gegenwind-schneifel.de/index.php/de/ueber-uns> (17 February 2017).
- Citizens’ initiative ‘Greiner Eck e.V.’** (2015): Startseite.
<http://www.bi-greinerack.de/> (11 May 2016).
- Citizens’ initiative ‘Mütter gegen Atomkraft e.V.’** (2016): Urteil im Prozess gegen 10H-Regelung.
<http://www.muettergegenatomkraft.de/termine-und-aktionen/urteil-prozess-gegen-10h-regelung.html> (02 June 2016).
- Citizens’ initiative ‘Niederwallmenach und Umgebung’** (2015a): Unsere Themen. Mensch und Natur – Der Mensch.
<https://www.niederwallmenach.org/unsere-themen/mensch-und-natur/der-mensch/> (17 February 2017).
- Citizens’ initiative ‘Niederwallmenach und Umgebung’** (2015b): Unsere Themen. Wirtschaftlichkeit von Windrädern.
<https://www.niederwallmenach.org/unsere-themen/mensch-und-natur/der-mensch/> (18 February 2017).
- Citizens’ initiative ‘Pro Wind Landkreis Günzburg’** (2014): Warum Windkraft als Bürgerbeteiligung.
<http://www.prowind-gz.de/whyforall.php> (11 May 2016).
- Citizens’ initiative ‘Pro Windkraft Niedernhausen’** (2015): Start.
<https://www.prowindkraft-niedernhausen.de/> (15 February 2017).
- Citizens’ initiative ‘Windkraft Bad Marienberg’** (2015): Ziele der BI.
<http://www.windkraft-bad-marienberg.de/356340588> (11 May 2016).
- Citizens’ initiative ‘Windkraft Engelsbrand’** (2015): Was wir wollen.
<https://www.windkraft-engelsbrand.de/was-wir-wollen/> (17 February 2017).

- Citizens' initiative 'Windkraft für Michelbach' (2016): Aktuell. <http://windkraft-fuer-michelbach.de/> (20 March 2016).
- Citizens' initiative 'Windvernunft Kiel e.V.' (2015): Unser Einspruch. Wirtschaftlichkeit. <http://www.windvernunft-kiel.de/index.php?seite=wirtschaftlichkeit> (17 February 2017).
- Burr, V. (2005): *Social Constructivism*. London/New York.
- Chilla, T. (2007): Zur politischen Relevanz raumbezogener Konflikte. Das Beispiel der Naturschutzpolitik in der Europäischen Union. In: *Erdkunde* 61, 1, 13–25.
- Dahrendorf, R. (1972): *Konflikt und Freiheit. Auf dem Weg zur Dienstklassengesellschaft*. Munich.
- Gailing, L.; Leibenath, M. (2015): The Social Construction of Landscapes: Two Theoretical Lenses and Their Empirical Applications. In: *Landscape Research* 40, 2, 123–138.
- Gergen, K.J.; Gergen, M. (2009): *Einführung in den sozialen Konstruktivismus*. Heidelberg. = Carl-Auer compact.
- Glasze, G. (2007): Vorschläge zur Operationalisierung der Diskurstheorie von Laclau und Mouffe in einer Triangulation von lexikometrischen und interpretativen Methoden. 73 Paragraphs. In: *FQS – Forum Qualitative Sozialforschung* 8, 2.
- Glasze, G. (2013): *Politische Räume*. I. Bielefeld.
- Glasze, G.; Hussein, S.; Mose, J. (2009): Kodierende Verfahren in der Diskursforschung. In: Glasze, G.; Matissek, A. (Eds.): *Handbuch Diskurs und Raum. Theorien und Methoden für die Humangeographie sowie die sozial- und kulturwissenschaftliche Raumforschung*. Bielefeld, 293–314.
- Glasze, G.; Matissek, A. (2009): Die Hegemonie- und Diskurstheorie von Laclau und Mouffe. In: Glasze, G.; Matissek, A. (Eds.): *Handbuch Diskurs und Raum. Theorien und Methoden für die Humangeographie sowie die sozial- und kulturwissenschaftliche Raumforschung*. Bielefeld, 153–179.
- Gleitsmann, R.-J. (2011): Der Vision atomtechnischer Verheißungen gefolgt. Von der Euphorie zu ersten Protesten – die zivile Nutzung der Kernkraft in Deutschland seit den 1950er Jahren. In: *Journal of New Frontiers in Spatial Concepts*, 3, 17–26.
- Guilhaumou, J. (1986): L'historien du discours et la lexicométrie. In: *Histoire & Mesure*, 3/4, 27–46.
- Hildebrand, J.; Rau, I. (2012): Die Akzeptanz des Netzausbaus. Ergebnisse einer umweltsychologischen Studie. In: *EMF-Spektrum*, 2, 4–7.
- Hübner, G.; Hahn, C. (2013): *Akzeptanz des Stromnetzausbaus in Schleswig-Holstein*. Final Report of the Research Project. Halle.
- Ipsen, D. (2006): *Ort und Landschaft*. Wiesbaden.
- Jørgensen, M.; Phillips, L. (2002): *Discourse Analysis as Theory and Method*. London, Thousand Oaks, New Delhi.
- Kühne, O. (2006): *Landschaft in der Postmoderne. Das Beispiel des Saarlandes*. Wiesbaden.
- Kühne, O. (2008): *Distinktion – Macht – Landschaft. Zur sozialen Definition von Landschaft*. Wiesbaden.
- Kühne, O. (2013): *Landschaftstheorie und Landschaftspraxis. Eine Einführung aus sozialkonstruktivistischer Perspektive*. Wiesbaden.
- Kühne, O. (2015): Was ist Landschaft? Eine Einführung aus sozialkonstruktivistischer Perspektive. In: *morphé. rural – suburban – urban*, 1, 27–32.
- Kühne, O. (2017): Zur Aktualität von Ralf Dahrendorf. Einführung in sein Werk. Wiesbaden.
- Kühne, O.; Weber, F. (2016a): *Landschaft – eine Annäherung aus sozialkonstruktivistischer Perspektive*. In: BHU – Association for Heimat and Environment in Germany (Ed.): *Konventionen zur Kulturlandschaft. Workshop Documentation 'Konventionen zur Kulturlandschaft – Wie können Konventionen in Europa das Landschaftsthema stärken'*, 1 and 2 June 2015, Aschaffenburg, Bonn, 7–14.
- Kühne, O.; Weber, F. (2016b): Zur sozialen Akzeptanz der Energiewende. In: *UmweltWirtschaftsForum* 24, 2-3, 207–213.
- Laclau, E. (1990): *New Reflections on the Revolution of our Time*. London/New York. = Phronesis.
- Laclau, E. (1993): Discourse. In: Goodin, R.E.; Pettit, P. (Eds.): *A companion to contemporary political philosophy*. Oxford, 431–437.
- Laclau, E. (1994): Introduction. In: Laclau, E. (Ed.): *The Making of Political Identities*. London, 1–8.
- Laclau, E. (2007): *On Populist Reason*. London/New York.
- Laclau, E.; Mouffe, C. (1985): *Hegemony and socialist strategy. Towards a radical democratic politics*. London.
- Laclau, E.; Mouffe, C. (2015 [Engl. orig. 1985]): *Hegemonie und radikale Demokratie. Zur Dekonstruktion des Marxismus*. Vienna.
- Leibenath, M. (2014): *Landschaft im Diskurs: Welche Landschaft? Welcher Diskurs? Praktische Implikationen eines alternativen Entwurfs konstruktivistischer Landschaftsforschung*. In: *Naturschutz und Landschaftsplanung* 46, 4, 124–129.
- Leibenath, M.; Otto, A. (2013): *Windräder in Wolfhagen – eine Fallstudie zur diskursiven Konstituierung von Landschaften*. In: Leibenath, M.; Heiland, S.; Kilper, H.; Tzschaschel, S. (Eds.): *Wie werden Landschaften gemacht? Sozialwissenschaftliche Perspektiven auf die Konstituierung von Kulturlandschaften*. Bielefeld, 205–236.

- Lennon, M.; Scott, M. (2015): Opportunity or Threat: Dissecting Tensions in a Post-Carbon Rural Transition. In: *Sociologia Ruralis*, online, 1–23.
- Linke, S. (2015): Postmoderne Tendenzen in 'ländlich bezeichneten Räumen' – Chancen und Herausforderungen für die Raumentwicklung. In: Kühne, O.; Weber, F. (Eds.): *Bausteine der Regionalentwicklung*. Wiesbaden, 109–124.
- Mattissek, A. (2008): Die neoliberale Stadt. Diskursive Repräsentationen im Stadtmarketing deutscher Großstädte. Bielefeld.
- Monstadt, J. (2007): Energiepolitik und Territorialität: Regionalisierung und Europäisierung der Stromversorgung und die räumliche Redimensionierung der Energiepolitik. In: Gust, D. (Ed.): *Wandel der Stromversorgung und räumliche Politik*. Forschungs- und Sitzungsberichte der ARL 227. Hanover, 186–216.
- Mouffe, C. (2007): *Über das Politische. Wider die kosmopolitische Illusion*. Frankfurt am Main.
- Mouffe, C. (2010): *Das demokratische Paradox*. Vienna.
- Mouffe, C. (2014): *Agonistik. Die Welt politisch denken*. Berlin. = 2677.
- Neukirch, M. (2014): Konflikte um den Ausbau der Stromnetze. Status und Entwicklung heterogener Protestkonstellationen. SOI Discussion Paper 2014-01. https://www.sowi.uni-stuttgart.de/dokumente/forschung/soi/soi_2014_1_Neukirch_Konflikte_um_den_Ausbau_der_Stromnetze.pdf (18 May 2021).
- Nonhoff, M. (2006): *Politischer Diskurs und Hegemonie. Das Projekt 'Soziale Marktwirtschaft'*. Bielefeld.
- Otto, A.; Leibenath, M. (2013): Windenergielandschaften als Konfliktfeld. Landschaftskonzepte, Argumentationsmuster und Diskurskoalitionen. In: Gailing, L.; Leibenath, M. (Eds.): *Neue Energielandschaften – Neue Perspektiven der Landschaftsforschung*. Wiesbaden, 65–75.
- Pörksen, B. (2015): Schlüsselwerke des Konstruktivismus. In: Pörksen, B. (Ed.): *Schlüsselwerke des Konstruktivismus*. Wiesbaden, 3–17.
- Riegel, C.; Brandt, T. (2015): Eile mit Weile – Aktuelle Entwicklungen beim Netzausbau. In: *Nachrichten der ARL* 45, 2, 10–16.
- Schmitt, T. (2016): Die Debatten um neue Stromtrassen als Symptomkonflikte der Energiewende. In: *Geographische Rundschau* 68, 11, 18–25.
- Schütz, A. (1971 [1962]): *Gesammelte Aufsätze 1. Das Problem der Wirklichkeit*. Den Haag.
- Somers, M. (1994): The narrative constitution of identity: A relational and network approach. In: *Theory and Society* 23, 5, 605–649.
- statista – Business Data Platform (2015): Marktanteile führender Suchmaschinen in Deutschland im Februar 2015 (sowie Vorjahresvergleich). <http://de.statista.com/statistik/daten/studie/167841/umfrage/marktanteile-ausgewaehelter-suchmaschinen-in-deutschland/> (04 February 2016).
- statista – Business Data Platform (2016): Anzahl der Onshore-Windenergieanlagen in Deutschland nach Bundesland im Jahr 2015. <http://de.statista.com/statistik/daten/studie/28154/umfrage/anzahl-von-windenergieanlagen-nach-bundesland/> (02 June 2016).
- Stegert, P.; Klagge, B. (2015): Akzeptanzsteigerung durch Bürgerbeteiligung beim Übertragungsnetzausbau? Theoretische Überlegungen und empirische Befunde. In: *Geographische Zeitschrift* 103, 3, 171–190.
- STMI (undated): *Ersthinweise bzw. häufige Fragen zur bayerischen 10 H-Regelung*. https://www.stmi.bayern.de/assets/stmi/buw/baurechtundtechnik/ersthinweise_zum_inkrafttreten_der10_h-regelung.pdf (13 February 2017).
- Teubert, W. (1999): Korpuslinguistik und Lexikographie. In: *Deutsche Sprache*, 4, 293–313.
- Thiem, N.; Weber, F. (2011): Von eindeutigen Uneindeutigkeiten – Grenzüberschreitungen zwischen Geografie und Literaturwissenschaft im Hinblick auf Raum und Kartografie. In: Gubo, M.; Kypta, M.; Öchsner, F. (Eds.): *Kritische Perspektiven: 'Turns', Trends und Theorien*. Berlin, 171–193.
- Weber, F. (2013): *Soziale Stadt – Politique de la Ville – Politische Logiken. (Re-)Produktion kultureller Differenzierungen in quartiersbezogenen Stadtpolitiken in Deutschland und Frankreich*. Wiesbaden.
- Weber, F. (2015): *Diskurs – Macht – Landschaft. Potenziale der Diskurs- und Hegemonietheorie von Ernesto Laclau und Chantal Mouffe für die Landschaftsforschung*. In: Kost, S.; Schönwald, A. (Eds.): *Landschaftswandel – Wandel von Machtstrukturen*. Wiesbaden, 97–112.
- Weber, F.; Jenal, C. (2016): *Windkraft in Naturparks. Konflikte am Beispiel der Naturparke Soonwald-Nahe und Rhein-Westerwald*. In: *Naturschutz und Landschaftsplanung* 48, 12, 377–382.
- Weber, F.; Jenal, C.; Kühne, O. (2017): Die Gewinnung mineralischer Rohstoffe als landschaftsästhetische Herausforderung – Eine Annäherung aus sozialkonstruktivistischer Perspektive. In: Kühne, O.; Megerle, H.; Weber, F. (Eds.): *Landschaftsästhetik und Landschaftswandel*. Wiesbaden, 245–268.

Weber, F.; Kühne, O.; Jenal, C.; Sanio, T.; Langer, K.; Igel, M. (2016): Analyse des öffentlichen Diskurses zu gesundheitlichen Auswirkungen von Hochspannungsleitungen – Handlungsempfehlungen für die strahlenschutzbezogene Kommunikation beim Stromnetzausbau. Ressortforschungsbericht. https://doris.bfs.de/jspui/bitstream/urn:nbn:de:0221-2016050414038/3/Bfs_2016_3614S80008.pdf (01 February 2017).

Weber, F.; Roßmeier, A.; Jenal, C.; Kühne, O. (2017): Landschaftswandel als Konflikt. Ein Vergleich von Argumentationsmustern beim Windkraft- und beim Stromnetzausbau aus diskurstheoretischer Perspektive. In: Kühne, O.; Megerle, H.; Weber, F. (Eds.): Landschaftsästhetik und Landschaftswandel. Wiesbaden, 215-244.

Wetherell, M.; Still, A. (1998): Realism and relativism. In: Sapsford, R.; Still, A.; Wetherell, M.; Miell, D.; Stevens, R. (Eds.): Theory and Social Psychology. London/Thousand Oaks (CA), 99-114.

Zimmer, R.; Kloke, S.; Gaedtke, M. (2012): Der Streit um die Uckermarkleitung – eine Diskursanalyse. Survey for the UfU Independent Institute for Environmental Issues 'Erneuerbare Energien im Konflikt'. http://opus.kobv.de/zlb/volltexte/2013/20508/pdf/Streit_um_die_Uckermarkleitung.pdf (08 March 2016).

ABSTRACT

‘All change please!’ – Challenges and opportunities of the energy transition

The annual meeting of the ARL’s *Junges Forum* (forum for young professionals) on 6–8 October 2016 in Leipzig addressed various aspects of the energy transition – when, where, how and why?

The *Junges Forum*, a platform for both academics and practitioners, met for three days of discussion about the complex transformation process of the energy transition, adopting various inter- and transdisciplinary perspectives. In presentations and discussion groups, they considered not only technical, legal and planning aspects related to infrastructure expansion and the management and structuring of the energy transition, but also its significance for spatial development.

The focus of the annual meeting was selected in view of the current importance of the issue. The transition is a process intended to ensure a safe, environmentally friendly and economically successful future and as such involves a broad spectrum of social, planning and scientific challenges and opportunities that require more in-depth consideration and analysis. The following questions thus provided the starting points for the presentations:

- > What are the key action areas for the implementation of the energy transition?
- > How will the cities and the countryside of the future look?
- > How do the various actors behave and how do they react to different technologies?
- > Where and why do conflicts and competition emerge and how can resistance and acceptance be dealt with?

These key questions were the focus of the annual meeting and informed the following themes: *How ‘smart’ is the city of the future? Pole position for new forms of mobility* and *‘We say no!’ – public protest in the energy transition*. The event’s presentations and findings are documented in this volume.

Keywords

Energy transition – transformation – planning – smartness – mobility – public protests

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