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## Conference Paper

# Local sustainability in the metropolis of Barcelona

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## **Local sustainability in the metropolis of Barcelona**

Abstract:

The process to the sustainability is a creative way that we have to define, there are a set of basic criteria that show us the way to follow. The actual model of development of our cities is based in an energetic consumption and of goods that do not have in consideration the exhaustion of the necessary resources to cover the demand. This model has brought an irresponsible use of natural resources that have been exploited and in lots of cases wasted.

Traditionally seems that to save we have to give up of services and products that represent the actual paradigm of “quality of life”. This is not always truth because it is possible to reach a superior welfare using half of the resources. For example, a good public transport system will allow people’s mobility and accessibility equal or superior than the actual with less fuel consumption.

Energetic efficiency is one of the factors with more possibilities for initiate the way of sustainability. This involves an important economic save in short time. We can not also forget the necessity of a progressive substitution of energetic sources and non-renewable material for others that are renewable.

The aim of this paper is to study the situation of the environmental policies and strategies in the metropolis of Barcelona. We will study the local strategies towards sustainability in this area. Participation into the initiatives of the Local Agenda 21. Plans of Barcelona’s Local Authority towards sustainability.

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## **I. INTRODUCTION**

The crescent interest in the last years for the sustainable development it is not due to a fashion moment or actuality –that is not- if not because affects the bases of the human survival.

It is in the modern metropolis where is more evident the conflict between man and nature, as much in the social contradictions of the metropolitan society as in the damage of the environmental quality for all the social groups.

If the theft of the nature is socially organised, the building of a model that do not destroy the bases of the society itself is a question of how it is organised this property and this question cannot be reduced to a technocratic problem. We have to establish a more specific level “for what” and “how” has to be conceived the development or the urban planning. We have to establish models of economic, social and political development compatibles with the environment. Sustainable development does not imply add an adjective to the process of social and economic growth if not it is to plan the bases of a new model that eliminate the asymmetries that accentuate the seriousness of the existing environmental problems.

## **II. THEORETICAL EVOLUTION IN THE HUMAN –URBAN- ENVIRONMENTAL APPROACH**

As we have said before the debate of the sustainable development is not an actual problem. In the middle of the fifties the works of Gunnar Myrdal (1957) and A.O.Hirschman (1958) with their theories of “circular accumulative causation” have an impact in the unbalanced development, it is said, in the process of concentration thanks to the free operation of market forces of the social, economic, human resources in those cities or development centres that have been accounting with take off conditions adequate for that. It was establish in that way a dynamic of a wealthy megalopolis’ construction in front of the “nothing” space.

Diseconomies of agglomeration and bottlenecks incite political strategies to solve the pose problems. The objective of the theorists of the unbalanced and accumulative development it was not, however, pose the problem of a future poverty, but to raise the problem of the present poverty, to combat the virtuous circle of wealth and the vicious circle of poverty. Their preoccupation was not in

the growth-development model-nature contradiction, but in the exclusion of social welfare of the majority of population.

In 1968, the Roman Club (a group of intellectual, business man and Scientist from Europe and North America, with later inclusions of Asian, African and Latin American studios) resolve to back, thanks to the methods that social science was able to offer in those days, an exam of the interrelations between national resources and contamination of the environment in a large term perspective.

The research made by the Group of Dynamic's Systems of the Massachusetts Institute of Technology publish in 1972 a book called "The limits to Growth" under the direction of Professor Dennis L.Meadows. Some of the traits pointed in this inform have been present in the scientific world from long time as it has been noted in the International Conference of Human Environment of United Nations celebrated in Stockholm in 1972. Nevertheless, the economic crisis in 1973 made that other problem occupied the priorities of the international community. It was in middle eighties when emerge it again as a political priority the knowledge and the answer of the impacts of the human activities in the environment. Because of the new forms of contamination like the radioactive pollution, the acid rain, the damage of the ozone surface and the global warmer of the planet.

Political leaders try to reduce in the Conferences of Vienna (1985) and Montreal (1987) the emissions of substances that damage the ozone surface. Conference of United Nations celebrated in Rio of Janeiro in 1992 centred its attention on political actions that were necessary to achieve a sustainable development. Local Agenda 21 started as a manifesto for sustainability.

### **III. CITIES AND SUSTAINABLE DEVELOPMENT**

Cities are places of environmental impact. They have been created and extended as we have seen through the expropriation of "green" land and from the uses of agriculture, a natural habitat traditionally rich.

Based in the separation and expansion of uses –urban versus rural- those urban systems imply transport and journey, moreover never are auto-sufficient, but require a complex set of imports and exports adapted to the population: food, products of consumption and produced goods. Historically in the North and

actually in the South those systems have been form of generation and concentration of residuals that have threatened public health. Contamination is sometimes visible, it can be touched and smelled in places of concentrated use of the cities, thing that can accentuated the environmental urban quality. At the same time cities are areas of economic decline as areas of growth. Urban regeneration is the central point of a lot of urban zones in the North. Social necessities are not distributed here spatially, in order that cities become places of poverty or at least places of social and economic deprivation. As Jane Jacobs said three decades ago (1961) economic life of cities and the social model of its results are part of its cultural life and of the social interaction between its inhabitants. In this way the problem of a sustainable city is based in the complex interrelation of the economic, social and cultural world.

More than half of human beings life in urban agglomerations. It is not possible understand none of the big national themes without related them with the urban question. Economic development, social justice, democratisation, environment, quality of life, any of those themes have to be related with the problematic of cities to acquire deepness and understanding.

Continuos structural changes in cities act in a decisive way over determining them, for that reason it is not possible think of cities without related them with a global social. A lot of the countries at the same time that they appear incapable of resolving determinate structural problems that made them retard in its development, generate regional de-equilibrium, degrade its natural resources and generate unfair social relations and non sustainable in middle and long term. They are seen in the middle of quick changes that sweep the entire planet and that are called in a generic form “process of globalisation.

#### **IV. SUSTAINABLE DEVELOPMENT**

Sustainable development is an expression that has been introduced in the common vocabulary in front of the crescent preoccupation of the environment in the last part of the eighties. . There is no definition commonly accepted of sustainable development. As Pierce, Marxandya and Barbier (1989) pointed in an appendix of one of their book “Blueprint for a Green Economy”, there are to twenty four different definitions of the concept. The most cited is, as we have

said before, the definition from the World Commission on Environment and Development (W.C.E.D, 1987) known as Brundtland Report:

**“Sustainable development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs”.**

Growth of population and technological changes has increased quickly the capacity of human dynamic to made fundamental changes in the environment actually and in the future.

For some authors and for the countries that have signed Rio Conference there are three major principles, which must underpin the process of sustainable development: inter-generational equity, intra-generational equity and transfrontier responsibility.

- a) Principle of inter-generational equity. Future human generations have to have the possibility to meet their needs and economic and social aspirations. Principle of futurity is present in the actual development of strategies.
- b) Principle of social justice. Poverty in most of the part of actual generations is seen as a prime cause of degradation. Sustainability requires more control over the resources to make compatible basic necessities and common aspirations. Wider participation in environmental strategies and policies is an integral element of achieving this aim, sometimes also known as intra-generational equity.
- c) Principle of transfrontier responsibility. At the broad level stewardship of the global environment is required. More specifically, transfrontier pollution needs to recognised and controlled. where feasible, the impacts of human activity should not involve an uncompensated geographical displacement of environmental problems. Rich nations should not overexploit the resources of other areas, distorting regional economies and ecosystems. Similarly, the environmental costs of urban activities

should not be displaced across metropolitan boundaries, in effect subsidising urban growth.

The essential defining characteristic of sustainable development is its emphasis on futurity or inter-generational equity in terms of access to beneficial aspects of the environment. This inter-generational equity requires that natural capital assets of at least equal value to those of the present are passed on to future generations. This is a more difficult concept than it at first seems, since society still has an imperfect knowledge of the value of the natural environment, ranging from still undiscovered or little-understood rainforest plant and animal life to broader issues, such as the role of the atmospheric ozone layer and the oceans in mediating global climatic patterns.

## **V. BARCELONA'S COMMITMENT**

Barcelona attended the Rio Conference, and takes an active part in international initiatives to define action for fulfilling its freely acquired commitments at the local level.

In the chapter devoted to the environment, the Municipal Action Programme manifests the city's commitment to comply with international directives, particularly the broad supranational directives for the conservation of the global environment.

In 1994, Barcelona signed the Aalborg Declaration on Sustainable Cities, and was conference co-ordinator for the Second European Conference on Sustainable Cities (Lisbon 1996).

Moreover, both the 5<sup>th</sup> European Union Environment and Sustainable Development Programme and its later revised versions and the Green Book on the Urban Environment which preceded it, constitute important landmarks in European environmental policy and important points of reference for local policy.

It is in this context, then, that Barcelona City Council promotes the drafting of the Barcelona Local Agenda 21 through its Environment and Sustainability Policy Committee constituted by Mayoral Decree of 29 November 1995.

Citizen participation is an indispensable element in developing the process of agreeing and defining the city of Barcelona's Local Agenda 21.

In order to make this possible, a consultative body, the Municipal Council for the Environment and Sustainability has been set up on the lines of similar councils (Social Welfare, Traffic) created by Barcelona City Council. The new Council is made up of some one hundred members representing a broad spectrum of society: civic and environmentalist organisations, the world of business, the university and the administration, amongst others.

The purposes of the Municipal Council of the Environment and Sustainability are:

1. To encourage, promote and provide a vehicle for citizen participation in the process of drawing up and implementing the Barcelona Local Agenda 21.
2. To publish reports and proposals on the environment and urban sustainability and the policies of the governing bodies of Barcelona City Council, and on the broad issues considered by the Municipal Council for the Environment and Sustainability.
3. To promote and strengthen co-operation between associations and organisations engaged in the above-mentioned fields.
4. To promote initiatives for environmental and sustainability studies and analyses.
5. To analyse and assess the situation regarding the drawing up and implementation of the Barcelona Local Agenda 21.

To inform, debate and make public issues relating to the drawing up and implementation of the Barcelona Local Agenda 21.

Members of the environmental Council are to be designated by the mayor in the number and representation stipulated in Article 6, Section 1 of the Governing Regulations. The proposer of the designation should not be stated, it is understood that the Councillor-President of the Municipal Council makes the proposal for the Environment and Sustainability. Non-individual members must have formal legal status. No type of economic compensation whatever will be made to representatives for their services on the Municipal Council of the Environment and Sustainability. The Council's president will be the mayor of Barcelona.

## VI. BARCELONA AND THE ENVIRONMENT

The environmental quality of Barcelona depends, to a large extent, on its green spaces, natural zones and beaches, on the quality of the air we breathe, and on noise levels, a variable, which is given ever-increasing importance.

Barcelona, like all large urban systems, consumes enormous quantities of energy. The consequences of energy consumption, as occurs with air and water or the waste we generate, go far beyond the urban environment, however. In the final outcome, the environment of the entire planet depends on the cities.

The presence of green zones, natural spaces and beaches in a large city like Barcelona means that its citizens have access to common areas for social and leisure activities.

Barcelona's green and natural spaces also perform a number of environmental functions: cleaning the environment, purifying the air, providing protection from the wind, diminishing noise, etc.

Table 1

*Growth of the city's "green heritage" (in hectares)*

	1994	1995	1996	1997	1998
<b>Urban green*</b>	856,8	912,6	923,4	933,4	939,4
<b>Trees along streets</b>	84,1	79,0	79,8	81,0	82,4
<b>Parks and gardens</b>	13,8	16,5	17,5	22,4	27,0
<b>Beaches</b>	6,3	6,3	6,3	6,3	6,3
<b>Total</b>	<b>961,0</b>	<b>1014,4</b>	<b>1027,0</b>	<b>1043,1</b>	<b>1055,1</b>

\*It doesn't include the Collserola Park's 1,795 ha. that lie within the municipal boundaries of the city of Barcelona

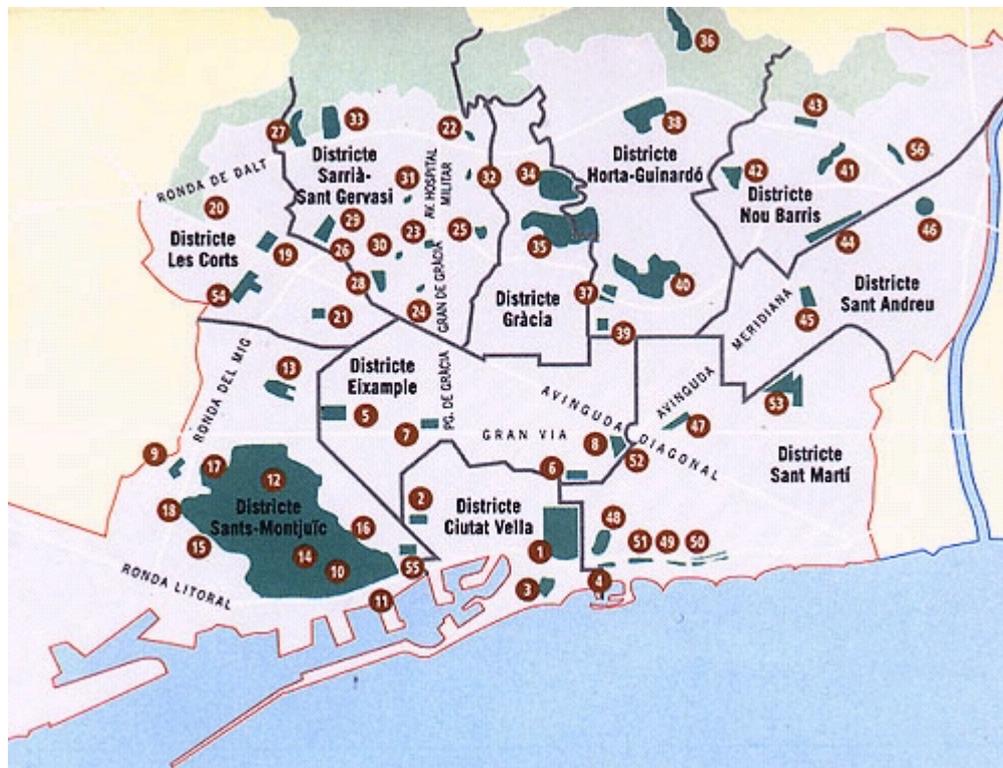
Source: Anuari Estadistic de la ciutat de Barcelona

### A. Parks and Gardens

As we can see in table 1 urban green and parks and gardens have been growing in the last four years. The city has many different types of parks: historical like the Ciutadella, La Font del Racó or Guinardó; parks which were originally private property, such as the gardens of the poet Eduard Marquina, the Vil.la Amèlia, the Parc del Laberint and the Parc Güell; those outstanding due to their vegetation, such as the exotic Jardí Costa i Llobera, the Jardí de Mossèn Cinto Verdaguer and the Parc del Turó de la Peira, amongst others.

Figure 1

*Location of the green spaces in the city*



- |  |                                    |                                      |
|--|------------------------------------|--------------------------------------|
| 1.- Parc de la Ciutadella i Zoo        | 20.- Parc de Cervantes i Roserar   | 39.- Jardins Princep de Girona       |
| 2.- Parc de Sant Pau del Camp          | 21.- Parc de les Corts             | 40.- Parc del Guinardó               |
| 3.- Parc de la Barceloneta             | 22.- Parc de la Font del Racó      | 41.- Parc de la Guineueta            |
| 4.- Parc de les Cascades               | 23.- Parc del Turó del Putget      | 42.- Parc del Turó de la Peira       |
| 5.- Parc de Joan Miró                  | 24.- Parc de Moragas               | 43.- Parc de Josep Maria Serra Martí |
| 6.- Parc de l'Estació del Nord         | 25.- Parc de Monterols             | 44.- Parc Esportiu de Can Dragó      |
| 7.- Jardins de a Universitat Central   | 26.- Jardins de la Vil.la Amèlia   | 45.- Parc de la Pegaso               |
| 8.- El Bosquet dels Encants            | 27.- Parc del Castell de l'Oreneta | 46.- Parc de la Trinitat             |
| 9.- Parc de Can Sabaté                 | 28.- Turó Park                     | 47.- Parc del Clot                   |
| 10.- Jardins de Mossèn Cinto Verdaguer | 29.- Jardins de Vil.la Cecília     | 48.- Parc de Carles I                |
| 11.- Jardins de Mossèn Costa i Llobera | 30.- Parc de Can Castelló          | 49.- Parc dels Ponts                 |
|  | 31.- Jardins de Ca N'Altamira      | 50.- Parc del Poblenou               |
|  | 32.- Jardins de la Tamarita        | 51.- Parc del Port Olímpic           |
|  | 33.-Jardins de Can Sentmenat       | 52.- Plaça de les Glòries            |
|  | 34.- Parc de la Creueta del Col    |                                      |

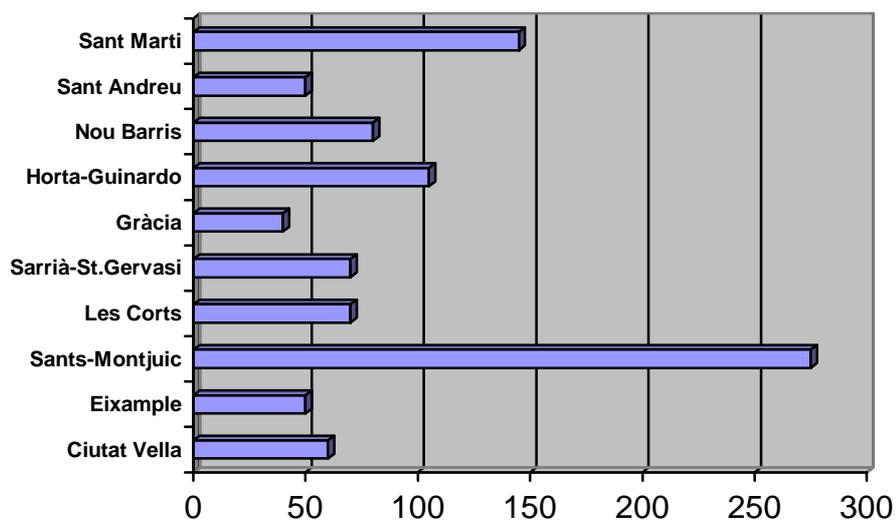
12.- Jardins Joan Maragall	35.- Parc Güell	53.- Parc de Sant Martí
13.- Parc de l'Espaya Industrial	36.- Parc del Laberint	54.- Jardins de la Maternitat
14.- Viver de Tres Pins	37.- Parc de les Aigües	55.- Parc de les Tres Ximeneies
15.- Parc del Migdia	38.- Parc de la Vall d'Hebron	56.- Parc del Pla de Fornells
16.- Mirador del Poble Sec		
17 - Parc de la Font Florida		
18.- Parc de Montjuïc		
19.- Jardins del Palau Reial de Pedralbes		

Source: web page of Barcelona City Council

There are fifty-six different parks and gardens located in the city of Barcelona as we can see in figure 1 and they occupy a total of 933 hectares, 2,822 hectares if we add the part of the Parc of Collserola which lies within the city limits. This means 6.2 m<sup>2</sup> (18 m<sup>2</sup> if we add Collserola) per inhabitant.

Figure 2

*Distribution of urban green areas by district (in hectares)*



Source: Anuari Estadistic de la ciutat de Barcelona

## B. Beaches

The beaches were recently regained as a new factor in quality of life opening up new opportunities for sports, leisure and health activities.

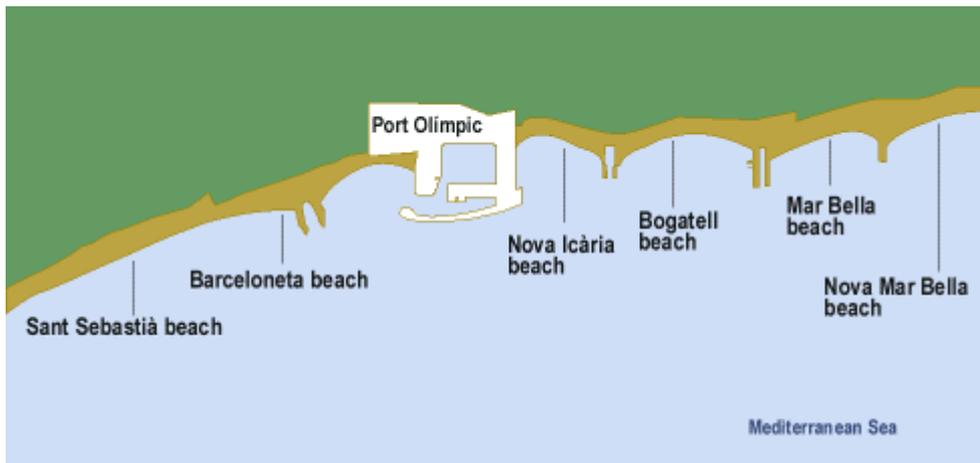
Barcelona is a Mediterranean city, a city whose history has always been linked to the sea. One of the recent transformations undergone by Barcelona in its recent history is, without doubt, the recovery of its sea front, a process culminated by two great projects: the Delta Plan and Forum 2004.

The beaches of Barcelona are located in the following areas:

- **La Barceloneta:** Sant Sebastià and Barceloneta beaches
- **La Vila Olímpica (Olympic Village):** Nova Icària and Bogatell beaches
- **El Poblenou:** Mar Bella and Nova Mar Bella beaches

Figure 3

*Map of Barcelona's beaches*



Almost eight million people visited the beaches of Barcelona in 1998, making this the most popular leisure space in the city. Of course, most visits are made in the summer months, but few months register fewer than 200,000 users. More and more people come to the beaches, both in summer and in winter, enjoying the sensation of having fresh air, sun and water close to home.

## VII. POLLUTION AND ENERGY COMSUMPTION

The functioning of any system, whether a living being, a machine or a city, is based on the input and output of energy and material.

**Error! Bookmark not defined.**Barcelona is a great urban system in constant functioning and, therefore, needs energy: the energy consumed in our homes, shops, offices, public services, in communications and, above all, to move about.

**Error! Bookmark not defined.**These are finite resources whose use also causes problems of atmospheric pollution. Moreover, their effects at regional and global scale contribute to the greenhouse effect and the depletion of the ozone layer.

The continuous traffic of people and goods entails the use of different means of Transport powered by fossil fuels, basically petrol. The result of this consumption is high CO<sub>2</sub> production, to which needs to be added the CO<sub>2</sub> produced by heating and waste treatment systems.

a small proportion of the CO<sub>2</sub> produced is absorbed by vegetation, and gaseous waste accumulates in the atmosphere, adding to the greenhouse effect.

The consumption of products of limited life and the growing use of packaging and packing materials have led to an enormous increase. A large part of this waste can be recovered through selective sorting and subsequent treatment. The recovery of waste reduces the environmental impact of refuse and, above all, permits savings in energy and raw materials. It is becoming more and more necessary, therefore, for the administration to establish policies for waste reduction, reuse and recycling. Barcelona City Council manages the collection of household waste.

## VIII. CONCLUSION

The natural region (or bioregion) of a city, habitually define as the natural environmental borders is contemplate as an important focus of changed, Centred the acts over those natural regions we aspire assure that urban residents are not divorce from the nature's paper so much as resources source as a source of individual human welfare. Berg (1990) argue that urban politics should not only clean cities they also need to regenerate the life of cities assure the reciprocity between the style of urban life and the net that envelopes cities. It is necessary contemplate the city in its bioregional context and establish fundamental changes in the majority of its habits with which people treat nature and elaborate a new code of behaviour.

Interregional equity is also an important component in the urban sustainable development. It is necessary policies that relate the urban environment with the

urban poverty and urban development. Promote development at local level requires not only the improvement of physique resources but also the sustainable development of local economies and communities. This development affects a series of aspects, we have to highlight the politic difficulty of taking in first point the environmental problems in a context of inequality, poverty and social exclusion. Cities do not be an “homogeneous whole”.

Finally we have to indicate an important characteristic of the actual situation. If in the different interdisciplinary ambits we talk about globally, we can do the same and may with more accuracy with the environment. Local projects, which are in Local Agenda 21 do not have, make to forget that cities and countries do not have to act individually. We are in front of an open system and more in the environmental ambit because nature with a difference of states does not have boarders.

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