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## Sustainable Urban Development

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*The urban environment is becoming the host for most of people around the world. Therefore, the concern regarding the environmental challenges is increasing and the range of solutions is widening. Various combinations of these solutions are proposed as models of urban sustainability and some of them are supported by governmental policies. Integrated urban development and urban regeneration models are presented in order depict how could be resolved sustainability issues related to air and water pollution and waste management. Strategic approach, coordination and public-private partnership result as the key prerequisites for implementing these models.*

**Keywords:** *air pollution; water pollution; urban sustainability; waste management.*

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### Introduction

Cities are the cradle of social progress and striving for personal and professional development opportunities, the origin and development are closely linked to economic activity. Urban was and remains attractive by the possibilities it offers for human development and ensuring social conditions for a synergistic interaction that transforms individual accumulation of knowledge resources to unlimited creativity.

Concentrated human presence exerted a strong transformers influence so that city space is much different from the natural and rural

areas. The difference is found both in terms of morphology and structure and functional aspect, the interactions between the components. Unlike rural areas, urban areas is relatively independent of the physical processes in the atmosphere rhythms, hydrosphere, biosphere, is a more powerful medium influenced by the pace of social, economic, cultural and political.

The high population density, concentration of industrial production, the proper development of infrastructure limits the ability of natural processes to counteract the environmental effects of human activity. Therefore, in urban areas is concentrated, and many of the environmental and cities are at the same time and determines the source of pollution of global environmental problems such as, for example, climate change.

Urbanization has the ability to transform the pattern of economic and social development of a nation. Cities are responsible for most of the production and consumption around the world, as engines of economic growth and development. Three quarters of economic activity take place in urban and populous district is growing. Respect for the right to development for poor nations and developing sustainable urbanization can be achieved. On the other hand, cities are manifested in space and worst deviations of social behaviour, and the most serious environmental problems. Much of the increase is due to urban expansion and development by building makeshift areas, where the population lives in unacceptable and continuously deepen social inequalities.

The dynamism of cities represents a major opportunity for sustainable development. The sustainable urban development in cities can create jobs and decent living conditions, are accelerating economic growth, social inclusion and improve quality of life and promote decoupling economic growth from material and energy flow intensity. On the other hand, urban management mistakes are very hard to remove. Investments in infrastructure, land use patterns are results that persist over centuries.

Environmental problems of urban space are a continuous challenge for management. Complexity interactions confined to some extent effective solutions, but it also has a great potential for identifying appropriate interventions.

To improve the quality of urban environment can appeal to a wide variety of techniques whose effectiveness has been demonstrated by pilot projects, but not enough to have a widespread use. Modern technology innovation is necessary but not sufficient to transform cities into sustainable

environmentally areas. This transformation occurs as a result of the complex interaction between institutions, infrastructure, markets, regulations and technologies and people that form a network of constraints on efforts to address urban environmental problems.

Reducing pollution in urban areas is an imperative of the third millennium that could be achieved by adopting a set of measures in accordance with strategic vision, built based on the principles of sustainable development. Economic and environmental implications of these measures is materialized in the creation of new business and employment opportunities, accompanied by improvement of the environment in cities, but also in their areas of influence.

## **Environmental impact of urbanization**

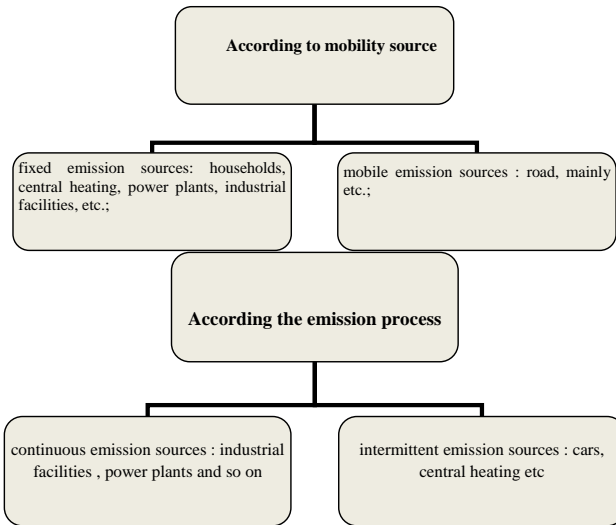
Urban environment pollution was the main form of environmental degradation, there was a strong trigger to manage a response from the community. Between 5 to December 9, 1952 in London were killed more than 4,000 and more than 100 thousand people were infected due to the formation of a stifling and toxic mist. The fog was due to air pollutants combined with moisture droplets having a bluish- white appearance. This phenomenon is known as smog and now has become the benchmark in environmental protection by adopting primel that prefigured the air quality protection laws (Clean Air Act, 1956) [1].

Environmental impacts of urbanization are manifested in various ways, a synthesis of them being presented in table 1.

**Table 1:** Environmental impacts of urbanization

Environmental pollution, especially air and water
Reduction of area occupied by natural ecosystems through expansion and extension of infrastructure
Concentration and increased resource consumption of energy, water , raw materials
Generation of municipal waste in landfills and contaminate occupy significant areas near cities
Noise and vibration
Light pollution.

Air pollution is a specific environmental condition of urban areas due to the concentration on a relatively small area of a large number of emission sources. They are divided according to several criteria, the most common being presented in fig.1.



Source: [2] V. Rojanschi, F. Bran, G. Diaconu, Protecția și ingineria mediului, Ed. Economică, Bucharest, 2002, p. 78

**Figure 1:** Classification of air pollution sources in urban areas

Nature pollutants can be very different depending on the profile of industrial activities. However, there is a set of indicators that can characterize the degree of pollution of any city. It contains average concentrations for pollutants such as sulfur dioxide, nitrogen oxides, particulate matter, carbon monoxide, benzene, volatile organic compounds and lead.

The city is also a major source of greenhouse gas emissions, but their impact is manifested not territorial but due to the accumulation in the atmosphere. Due to the use of large quantities of fossil fuels, cities are responsible for more than three quarters of greenhouse gas emissions, particularly carbon dioxide and methane. Landfills and road transport are important sources of this view.

Water pollution is due to the concentration of a large number of users both to domestic and industrial use relatively large amounts of water distributed through the water. Except for the operation of industrial facilities discharging toxic pollutants, urban wastewater, municipal wastewater so called, from households and companies similar (catering, hostelling , trade), street sanitation, food industry establishments, bearing a load of pollutants dominated by organic substances decompose relatively easily emissaries. However, the large volume of wastewater flow versus envoy could compromise its ability to neutralize urban pollutants, justifying the setting up sewage treatment plants.

The space is strongly artificialized, cities loaded with alien elements (construction, infrastructure, communication paths etc.) To satisfy human needs increasingly sophisticated occurred with increasing degree of civilization [3].

Therefore this area capability to develop ecological relationships is limited, with significant impact on biodiversity. Although there are a number of species that were able to adapt to rapidly changing civilization, most native species are removed from intensive human presence and powerful environment transformed city.

Municipal waste generation is perhaps the most visible environmental impact of urbanization. Per capita in developed countries generate on average each year between 300 and 800 kg waste, which is between 0.82 and 2 kg/capita/day. Waste generation rate in Romania is 1.07 kg/capita/day [4]. The economic growth rate is positively correlated with waste generation. For example, the European Union waste generation rate reached 2.2 kg/capita/day. The composition of municipal waste is also influenced by the degree of development. Thus, as you increase the level of development increases, decreases the proportion of biodegradable materials and humidity and increase the proportion of paper and plastics. Modification of the composition is determined primarily by product packaging. In other words, packaging waste form is the largest proportion of municipal waste.

Landfills are arranged near the cities major pollution sources that has impact on all environmental factors. The smell can alter air emissions and releases greenhouse gases. By leaking rainwater contaminate rivers, lakes and groundwater. Lighter elements are dispersed by air currents over large areas altering both aesthetics and soil quality [5].

Urban transport is particularly intense; a large number of vehicles are concentrated in relatively small spaces. Focuses on the city and many types of vehicles and infrastructure elements necessary overlap them. Moving and handling of these vehicles and agglomeration are the main sources of noise pollution that turns the city into a noisy place. Aviation and some industrial units may increase the pollution, especially in cities.

Light pollution is due to the operation of many luminaries night modifying environmental characteristics that have adapted to nocturnal species. There are studies that provide empirical results on the negative impact of pollution on health [6].

Urbanization process and the multiple dimensions of negative ecological effects of urban pollution individualization warrants that field of action and the environmental policy decision [7]. In addition, global urban pressure amplification is expected, given that cities are considered as engines of social progress, innovation and performance often influencing cultural, intellectual, educational and technological [8], [9].

The trend of development of cities and their role in development of the area and the diversity of their functions requires a development process as controlled, taking into account the principles of sustainable development and the impact of environmental conditions on the quality of human life generates [10].

## **Integrated urban development plan**

One of the ways to take action to ensure sustainable urban development is the integrated **urban development plan**. This plan is provided through programming short, medium and long term projects. It is also ensured programming urban functions in relation to local development strategy and issues of reservation land and resource allocation so as to ensure the implementation of urban development strategies.

In terms of urban planning are two types of approaches:

- ✓ the traditional approach;
- ✓ an integrated approach.

**Traditional urban planning** type is characterized by strong state intervention that has the necessary means to carry out actions in urbanism. This planning has limited flexibility in decision making and also a default hierarchy. Urban plans and urban development to the allocation of

resources over a defined time period. These plans must be made in accordance with the rules and parameters that refer to soil occupation.

**Integrated Strategic Planning** quantifies the contribution of local actors in the development of urban development projects. Integrated urban planning type is characterized by high flexibility and a high possibility of adjusting the goals against the interests of local actors, but also financial means. This type of planning has expanded because of decentralization of states, and its development has been driven by the reduction of urban development funds. So, now the current planning is characterized by diminishing role of the state and increase the role of local actors. Decision-making is done by negotiation between the government and local and compliance requirements and interests of actors. By making negotiations are integrated objectives and actions necessary for the implementation of projects.

**Integrated development project** involves the integration of economic, social and environmental and rely on government involvement, and public representatives, NGOs and businesses. Integrated development projects consistent of formal economic issues and aesthetics in relation to the new guidelines of the economic and social development.

## Urban regeneration

The city as a whole requires measures for an economic, social and environmental recovery correlated with social support programs [11]. In this context, a way of achieving these goals is the urban regeneration projects [12].

Urban regeneration projects were launched in the early 1980s, the city dwellers awareness campaigns on the need to improve environmental quality and increasing modernization of existing housing initiatives, social and cultural. We illustrate some of the successful projects.

### *Design in Dublin city*

In the early 1960s one of Dublin's neighborhoods started to decline as a result of poor planning , poor management of housing and poor quality of construction. So gradually apartments in the area began to be emptied and the area went into economic decline, registering a high unemployment rate and low interest investment.

Urban regeneration program was started by consultation of the residents needs and identifying the needs of social, economic. Thus, the project has identified the need to build a new residential neighborhood with new economic and social facilities.

In order to implement the project, the old houses were demolished, and economic development was built for trade. Also, residents have benefited from the arrangement of buildings parks and recreational functions.

Financial resources for the project were provided by European funds and by government funding. Among the important issues to ensure project success are: participatory approach, involving a large number of specialists and information campaigns.

#### *Project in the city of Dortmund*

Dortmund city center has undergone several restoration projects, but without being made an integrated approach. So the area has experienced a number of issues among which:

- ✓ rising unemployment;
- ✓ increasing the low-income population;
- ✓ Lack of recreational facilities;
- ✓ Poor economic development of the area.

In order to revitalize the area, urban regeneration project aimed to achieve the following objectives

- ✓ redevelopment of the parks;
- ✓ development of new recreational facilities. An example is the construction of a football field;
- ✓ development of education by rehabilitating schools and promoting projects on changing the appearance of building facades .

To ensure success of the project were continuously provided consultation between social actors and the implementation of the project attended a multidisciplinary team of specialists.

#### *Latvia project*

Following the departure of Soviet troops, the military base was deserted, the people who remained in the area did not know well Latvian language and the degree of integration into the community was very low.



The area is characterized by high unemployment, a high rate of female offenders and abandoned buildings and deserted streets.

Through an urban regeneration program which required a multidisciplinary approach was accomplished Soviet base in a real tourist attraction. Specific measures imposed following:

- ✓ development of an industrial park ;
- ✓ development of transport infrastructure ;
- ✓ creation of tourism facilities such as museums , hotels and restaurants ;
- ✓ building a university campus ;

Rehabilitation of historic buildings such as admirals homes were transformed into information centers and prison into a museum.

## Conclusions

One of the important characteristics is the economic role of cities. This is assessed according to its contribution to national economic growth. Because this contribution is high, cities are engines of economic development with a strong correlation between the level of development and level of urbanization.

Sustainable urban development requires appropriate funding opportunities related to the development, construction and housing, measures to preserve cultural values, improving utility systems and improving urban infrastructure.

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