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SOME ASPECTS OF SUSTAINABLE DEVELOPMENT OF THE CITY OF CRACOW

The term *sustainability* was defined for the first time on the UN Conference on the Human Environment held in Stockholm in 1972. The terms *sustainable development* was used for the first time by the World Commission on Environment and Development (known as the Brundtland Commission) in 1987 and was defined as *development that meets the needs of the present without compromising the ability of future generations to meet their own needs*.

The growth of population and energy demand are the main factors changing the life, and the sustainable development allows us to deal with these problems in the most efficient way. The problems of a sustainable development are especially important in the case of big historical cities and the development of the city of Cracow shows how to overcome the barriers of such a development.

1. INTRODUCTION

Since 1972, i.e. since the UN Conference on Human Environment in Stockholm, the term *sustainable development* or *sustainability* has been widely used. In 1987, the World Commission on Environment and Development (WCED) presented their report *Our Common Future* sponsored by UN. This has led to a wide discourse about the concept of sustainable development, resulting in a large variety of definitions and interpretations [1]. All the questions about the sustainable development were connected with big, mainly historical cities, and thus the authorities of these cities should give the answer of how to deal with them.

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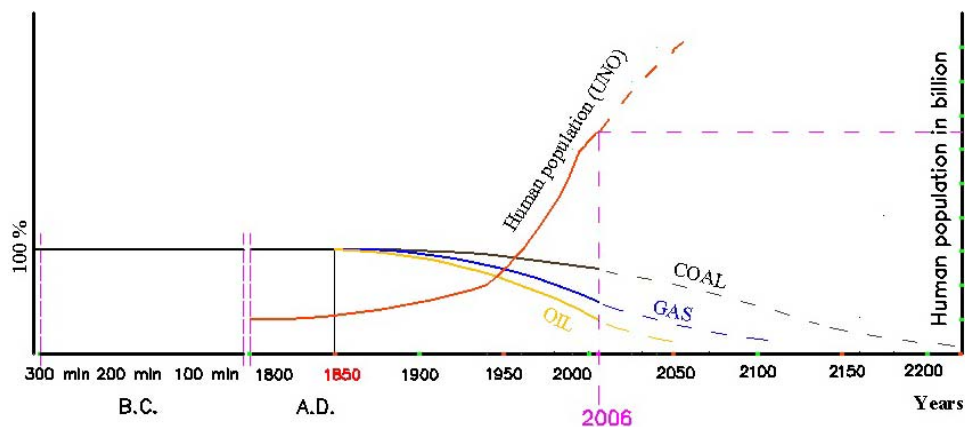
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2. GROWTH OF POPULATION AND ENERGY DEMAND

About 10,000 years ago the human population approached an enormous number of 10 million [1]. To resolve the problem of exhaustible natural resources, some people intensified their migratory life style and the others began to domesticate animals and cultivate plants, and as a consequence settling in one place, which was a new idea. For the first time people took possession of land. Thus, the ideas of wealth, trade, money, and power were born.

Nevertheless, agriculture was a successful response to the life style of the hunter society. This permitted a slow but continuous population growth, which led to its huge increase in size, i.e. from about 10 million to about 800 million by 1750 [1].

Once again, everything changed in a way that no one could have imagined. Coal was taken from under the earth and burned as a fuel which encouraged invention of steam engines. Machines, not land, became the main means of production. That bare instrumentalism has led to a great material productivity and the industry that today provides, at least partially, about 6 billion people with various goods [1] (the figure).



Variations in human population and traditional energy resources versus time

Throughout the major part of human history, the growth of population, the degradation and depletion of resources, the restructuring of societies, and the development of new technologies have usually been so slow as to be imperceptible during an individual lifespan [1]. However, during the past two centuries, and especially during the last five decades, the global economy has shown an incredible growth, transforming the character of the planet and especially of the human life [2].

This last period ties in with a rapid increase in the population causing a lot of troubles as well as a lot of international reports, conferences, protocols, programmes,

which bring the proposals of how to deal with them. All the above questions can be summarized as they relate to sustainability development [3].

3. A SUSTAINABLE DEVELOPMENT IN CITIES

The discussion about our policy towards nature and human population, which may be centred on the changes in the environmental protection, ecology, environment, sustainable development, is still actual. These changes occur due to population growth and an accompanying increase in the energy consumption. It is also evident that this increase in energy demand is typical of big cities. Many of these cities are historical centres of culture, architecture, science, etc. [9].

Almost three-quarters of European population live in urban and suburban areas which account for some 10 per cent of the total EU land area. The “ecological footprint” of the EU 25, the estimated land area required for production of the resources we consume and for absorption the wastes we generate, approaches five “global hectares” per person. Obviously within all large and small European cities an average is far lower. This results in air and water pollution, waste concentration, destruction of the historical monuments, noise, stress, etc. Improvements in transport technologies (from hybrids to hydrogen-fuelled vehicles) contribute to the reduction of the above adverse effects. These and other factors show that the big historical cities characterized by a sustainable development are like a sensitive barometer of the threats. Some of these challenges can be overcome due to an increased use of renewable energy resources such as solar radiation. They can replace some of insufficient non-renewable resources that are used in both developed and emerging economies that compete for their exploitation. Long-term coherent policies are necessary to achieve a sustainable development of these cities [5].

4. A SUSTAINABLE SPATIAL DEVELOPMENT OF THE CITY OF CRACOW

The principles of a sustainable development of the city of Cracow are based among others on the law dated April 7, 2001 (Environment Protection Law) as well as on the Study of Conditions and Directions of Spatial Development of the City of Cracow prepared by the city. The study submits three principal guidelines:

1. Protection of special qualities of the natural environment of Cracow.
2. Active development and enrichment of environmental values and spatial arrangement of the City landscape and profile.
3. Consistent restoration of the values of the environment and degraded resources (system and intervention actions).

Taking account of the vision and directions of the development of Cracow presented in the Study, the principles of sustainable development were defined as follows:

1. *Inviolability, protection and shaping the most valuable elements of the natural system* based especially on natural areas of the western part of the City, the Vistula valley together its tributaries, forest greenery. Protection and development of parks and gardens. Protection of valuable underground water and mineral water resources as well as protection of the areas threatened with flooding.

2. *Protection of the cultural heritage resources.*

3. *Intensification of the existing investment in the City zone.*

4. *Creation of a sustainable multifunctional spatial structure.*

5. *Maintaining and raising the City qualities to create the conditions for its competitiveness* in science, culture, tourism and high technologies.

Cracow is the city of a sustainable development, because of the following measures being taken:

- Two comprehensive operating objectives – I and II – divided into 5 operating plans and 34 investment projects. In order to go into details about the above activities see the study called *Kraków Development Strategy* [6].

- The issues of renewable energy carriers are included in the programme: thermo-modernisation and thermal protection of buildings (operating objective I-4).

- Long-term programme of drawing up local land development plans (operating objective II-1).

- Assumptions accepted in the plan of heat, power and gas fuel supply in the Municipality of Cracow (operating objective II-3).

- Modernisation of District Heating of Cracow Programme (operating objective II-3).

- Plan of development of MPEC S.A. in Cracow within the scope of satisfying current and future demand for heat (operating objective II-3).

- The investment project called *Environmental protection – decreasing pollution emission including the construction of geothermal plant* that has been implemented.

All the above measures are compatible with the following EU programmes and European policy towards sustainable development of big historical cities [7]:

1. 1991. The establishment of the EU Group of Experts in Urban Environment who published in 1996 the *Report of European Sustainable Cities*, where the local Agency 21 (LA21) according to the Rio Conference started its activity.

2. 1994. Aalborg Charter for European cities.

3. *Hannover Call* published by leading European 2000 cities.

4. C. E. Commission *Towards a Thematic Strategy on the 2000 Urban Environment*, 2004.

5. Aalborg +10 – Inspiring Futures 2004.

One of the important topics of the Aalborg +10 Conference was the Directive of European Commission *Towards a Thematic Strategy on the Urban Environment*

which is open to a wide public discussion. A close cooperation between the city of Cracow and the twinning European cities such as Norymberga–Kyiv–Leuven as well as the cooperation of Cracow with 18 other cities as the partners can be considered a special example of implementing the recommendations accepted by the EU.

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WYBRANE ASPEKTY ZRÓWNOWAŻONEGO ROZWOJU KRAKOWA

Pojęcie zrównoważonego rozwoju wywodzi się z potrzeby ochrony przyrody rozszerzonej następnie na ochronę środowiska. Jedną z pierwszych definicji przyjętych przez World Commission on Environment and Development, tzw. Brundtland Commission (1987), definiuje ten termin jako „rozwój dla obecnych i przyszłych generacji”. W artykule próbowano wyjaśnić historię i złożoność istoty zrównoważonego rozwoju, który powinien zapewnić dalszy rozwój ludzkości w warunkach gwałtownego wzrostu populacji i wyczerpywania się tradycyjnych źródeł energii. Podkreślono, że te problemy w szczególnym stopniu dotyczą dużych miast, gdzie dodatkowo mamy do czynienia z ważnymi elementami ochrony dziedzictwa kulturowego. Pracę zilustrowano przykładami działalności ekologicznej w Krakowie.