Chapter 30
Recommendations for Natural Resources Conservation in the Influence Areas of Cities: A Case Study of Bucharest, Romania

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ABSTRACT

As urban development has become an increasing problem, urban planning is required to integrate social and economical needs with the sustainable use of natural resources. Since the urban development is favoured by the amount and diversity of the natural resources (land, mineral resources, green areas, aquatic surfaces) available in the area of influence of the cities and its negative externalities aren't limited inside the urban limits the conservation of those resources became an important issue in the scientific circles. Lately planners have been using GIS techniques and remote sensing, based on international and local databases, in finding the most probable scenarios and the best available solutions in order to promote a sustainable development of urban areas. Four models of natural resources conservation have proved effective in the influence areas of cities: protected areas, yellow-green belts, regional parks and oxygen generating surfaces. The establishment and management of these can be better realised by GIS techniques, because of their efficiency and ease of use, the suitability and general availability of data.

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INTRODUCTION

Natural capital is defined by (Costanza et al., 1997) as a physical form of the capital stock consisting of all environmental components (lithosphere, atmosphere, hydrosphere, and biosphere) and their interactions materialized in natural ecosystems that represent the basis for human welfare. In other approaches, natural capital includes three components: the actual land, our natural resources – the physical amounts of renewable and non-renewable resources, as well as ecosystems sustaining life and providing goods and services to the population (Olewiler, 2006). Natural resources can be divided according to their usage in two main categories (Figure 1). Renewable resources, are either unconditionally renewable (in the case of abiotic resources flows: solar energy, wind, geothermal energy etc.) or conditioned by a certain period of renewing time and an adequate degree of exploitation (the main cycles of elements, vegetation, fauna, ecosystems, soils). Minerals (metallic and non-metallic) and fossil fuels (oil, coal, and natural gas) are among the non-renewable resources.

Ecosystems are being continually aggressed by urbanization, which affects in the same time habitat structure and quality, as well as processes that control its functionality (Alberti, 2008). De facto, cities are considered by ecologists to be heterotrophic ecosystems (Odum, 1971), strongly dependent on external inputs of energy and materials, and requiring spaces which will absorb their emissions and wastes. Urban ecosystems (Duvigneaud, 1974) modify their periphery land uses and concentrate, on limited territory, human communities with different cultural levels and with a spatially variable demographical and ethnical structure.

The area of influence or sphere of influence is referring to the territory polarized by an urban centre on the basis of a set or category of relations (economical, cultural and/or commercial relations, population mobility and/or environmental externalities) (Pumain & Saint-Julien, 1997). The specific area of influence of a city varies accordingly with the importance of the urban centre and the relations taken

Figure 1. Natural resources classification
(Adapted from Cogălniceanu (1999)).