LAND-USE CHANGES AFFECTED BY URBAN AND INDUSTRIAL DEVELOPMENT

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Summary

In 1995, the urban population in the world was estimated at 2.4 billion people and is expected to double by 2025. Then, for the first time in history, the urban population will be larger than the rural one. Urbanization and industrialization developed in different stages during history. Different models of urbanization and industrialization and related land-use change can be recognized in the world. The changing relationship between urban–industrial core regions and the rural countryside are important issues for future sustainable development.

The actual situation of urban and industrial land use can only be estimated indirectly from population and economic statistics. As the definitions and delineation of urban places vary a lot and data about built-up land are rare, large uncertainty exists about the real land-use patterns. The percentage of the population living in urban places, gives a very general estimation.

The present trends indicate that the major growth of the world's population will occur in urban areas, in megacities in less developed regions. Simultaneously, the rural population will continue to decline in all regions in the world. Levels of urbanization between 80 and 90% are likely. In densely inhabited areas, the intensification and upscaling of the agricultural production will cause increasing environmental stress. Continuing urban sprawl and growth of infrastructures will cause increasing fragmentation and demand multifunctional land use. Specific tourist and recreational forms of land use still develop at an accelerating speed in coastal and mountainous

regions, affecting valuable natural areas, and demand more appropriate sustainable management. Remote rural areas with less favorable and declining social and economic conditions and poor accessibility will face depopulation, marginalization and land abandonment.
New methods are needed to monitor and evaluate changes induced by urbanization and industrial development. Remote sensing and geographical information systmes (GIS) can offer important new possibilities.

1. Introduction

In 1995, the urban population in the world was estimated at 2.4 billion people, and a further doubling is expected by the year 2025. Then, for the first time in history, the urban population will overpass the rural one. Urbanization, industrialization, and economic growth are closely related, and these affect directly and indirectly the rural countryside and natural landscapes over increasingly vast areas. Natural and traditional rural landscapes are profoundly modified and disappear, while new highly dynamic ones are created.

Land use is changing accordingly, and landscapes become multifunctional. Urbanization and industrialization emerged and developed very differently according to geographical localization and environmental conditions. Also, their unique history resulted in different spatial patterns and land zoning. Processes of urbanization and industrialization became highly dynamic and complex. Consequently, keeping track of all these changes becomes an important but increasingly difficult task.

Reliable and up-to-date information on urban and industrial land use is rare or, in many cases, missing. Comparison of these data between countries is extremely difficult and uncertainty becomes an important aspect when using these data in policy making.

2. Stages of Development

Urbanization is characteristic for most human civilizations, where specialized and trade economies were induced in a system, which was originally based on agricultural subsistence. The advantages of agglomerated economies stimulated innovations at these places and attracted industry. The development of urban and industrial areas is intimately linked to their geographical location, in particular their accessibility and situation in the transportation networks. Historically, their initial development was largely based upon their local and regional functions within the context of the national needs. Since the Industrial Revolution at the end of the eighteenth century in rural England, industrial activities required more space and were gradually separated from urban space, also because of growing environmental problems.

At the beginning of the twenty-first century, it is mainly the global economic scale that controls the development of the urban and industrial centers. The result is that land-use changes at the local and regional levels become more and more dependent on international decisions and global processes.

Generally, the initial stage of urbanization consists in the development of one primary

city that dominates the whole country. With shifting core areas of political and economic power, cities have grown and declined afterwards. The way a city is networked with other cities is an important factor in this evolution. Initially, urban networks are materialized by transportation infrastructure. Land roads, rivers, and coastal sea routes became important factors for the site selection of settlements and for their potential growth and different development. After the Industrial Revolution of the eighteenth century, canals and railways were superimposed upon the existing transportation network, and, since the 1960s, new networks of motorways and high-speed railways came on top of these. Also, many other kinds of networks were developed, such as power lines, pipe lines, and communication lines. More and more land is needed for all these infrastructures connecting urban and industrial cores. These areas are not real living spaces, but are referred to as nonplaces.

Early stages of industrialization are characterized by the rapid development of natural resources near exploitation areas. These sites attract labor and, thus, initiate the creation of new transport infrastructures as well as a totally new urban development. Manufacturing industries, on the contrary, searched primarily for cheap and abundant labor and have, therefore, been developing near or even within existing urban settlements.

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Biographical Sketch

Marc Antrop (1946) is geographer specializing in landscapes sciences, remote sensing, GIS, and planning. He is a professor lecturing at the University of Ghent (Belgium, Flanders) and head of the Department of Geography. His interest in the landscape is broad and holistic, covering and integrating aspects of landscape genesis (in particular focusing upon the natural and cultural aspects of the European landscapes), landscape perception, landscape evaluation and land assessment, landscape ecology, and landscape architecture. Practical application of this knowledge is achieved in planning and environmental impact assessment and monitoring land degradation. His main work areas are Belgium, France, the Mediterranean, Egypt, and Central Europe.

He is member of the Royal Committee for Protection of Monuments and Landscapes in Flanders and vice-president for the division of landscape protection. He is a consultant for the Flemish and Belgian Governments in the field of environmental impact assessment and the implementation of GIS in administration, environmental policy, and planning, and is member of the Scientific GIS Committee.

His main research fields are the elaboration of the survey of the relicts of traditional landscapes of Flanders, the elaboration of methods for strategic environmental impact assessment (SEA), and the development of new structural spatial planning.