Book review

TECHNOLOGIES FOR SUSTAINABLE URBAN DESIGN AND BIOREGIONALIST REGENERATION

by

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With the aim of maintaining comfort and quality of life for city dwellers, as well as improving necessary standards of living and business activities, this book explores the aspects of urban regeneration within the context of sustainable development. The first part examines main features of bioregionalism as a model of development that fosters preservation of the environment and integral sustainability, while the second part analyses the established methodology through the presentation of case studies (Mediterranean and the Middle East urban areas).

The book manuscript explores in a very comprehensive way the topics through the multidisciplinary research, and encompasses research from multitude of fields: studies on the planning situation, solar radiation path and frequency, wind direction, sound perception, soil quality, quality of air and water, natural light infiltration, renewable energy sources, historical background, geological development of the area and green presence and selection.

The book discusses a vision, concept and finding of solutions for the development of sustainable cities, as well as main levels in bioregionalism approach. Methodologies and research for composite urban spaces and suburban areas are analysed and discussed. It is shown that methodology is complex and that it requires an array of diverse disciplines for successful implementation. The principle of sustainable development drives holistic problem analysis and highlights the need for cooperation between different experts: planners, architects, technical engineers, transportation engineers, sustainability consultants, technologists, botanic and landscape specialists, sociologists, and ecologists. In addition to that, the book allows us to see applications of different technologies that are suitable for implementation in the process of urban regeneration.

As a part of the sustainable urban policy, among all the green movements and approaches in the new economy, the concept of *zero kilometre materials* was presented as one of the main goals which can be achieved. A technological approach to the environmental design, with zero kilometre materials such as timber, wood, limestone, volcanic stones,

porphyry cobbles (extremely hard stone), rammed earth, recycled elements, organic biological polymers, selection lighting system elements that can shade some zones during sunny days and autochthone vegetation are analysed.

In order to include studies in the fields of environmental protection, the impact of climate factors, solar radiation, wind roses, lighting and noise levels, from both historical and cultural standpoint, a new scientific research was necessary and was conducted.

Goals of bioregionalism, that should be established in all human communities, are discussed in details. These include establishment and conservation of natural systems; development of sustainable means for fulfilling all basic human needs, i.e. food, water, energy, resources, waste management, and cultural information; development and support of wide spectre of activities that allow even better integration in the respective place of living.

Eco reconstruction of buildings was presented as an example of urban sustainable regeneration, producing buildings that are more energy efficient, more eco-friendly, structurally more sound, modern and urbanistically adapted. These undertakings encompass usage of eco-friendly materials and technologies, as well as usage of renewable energy sources, in order to reduce the energy required for air-conditioning and ventilation of indoor spaces, cutting down the environmental pollution and CO_2 atmospheric emissions. In the book, the author discusses in details green rehabilitation, green remodelling, ecosolar bioclimatic rehabilitation, i.e. an array of methods used in accordance with the principles of eco-friendly and sustainable development. Historical factors, such as the history of materials and building technologies, are taken into account. The importance of analysed urban and peri-urban cases is that natural materials prevail, expressing their own history. In this book, the presented urban case studies are interested in the questions of modern life, whilst being inspired, at the same time, with history and tradition.

The book is divided into Part I, Part II and Part III, where the Part I introduces the term of sustainability regeneration, which is today accepted as a new development paradigm.

Sustainable development represents contemporary model and concept that deals with improvements in human life quality, implying an all-encompassing approach to the economic development, human and social progress and protection and improvement of the environment.

Part I analyses in details concerns regarding nature and environment, and establishes criteria such as usage of renewable energy sources, energy efficiency, rational exploitation of resources, sustainable construction, recycling and waste management, social issues, economy, and finance, as well as positive impact on the environment and people's health.

This chapter provides insight into economic, sociological and ecological aspects of sustainable development as main components of sustainable development. Economic sustainability consists of maximum possible growth of revenue, at the same time, maintaining and increasing natural resources. It is shown that the component of social sustainability is seen in maintaining the stability of social cultural subsystems and systems, while environmental sustainability is seen in achieving a balance between natural resources and natural systems.

The Part II and Part III present a technological approach to the environmental design and an application in some urban and peri-urban case studies. These parts, as the second section of the book, tries to explain how previously mentioned theoretical and methodological criteria could be practically applied to urban areas. Urban regeneration and sustainability requalification were performed for case studies of urban and peri-urban spaces such as squares, urban and peri-urban parks, small plazas, oblique city, waterfront, outskirts, industrial areas, hyper-commercial areas.

The author concludes that in order to become closer to nature and to reduce the extent of nature exploitation and ecological footprint, the urban environment, at the level of urban planning, has to be seen as a complex system. In addition, it is concluded that the total and specific consumption of building materials has to be reduced; that the consumption of local, indigenous materials should be increased; energy consumption should be reduced and energy efficiency increased; energy-conserving traffic systems should be set up; green surfaces and corridors within and around the inhabited areas should be increased; a portion of the renewable energy sources should be increased in the total energy consumption; and greenhouse gas emissions should be reduced.

Furthermore, the author confirms that the basic element of construction of sustainable cities are green districts in which technologies and designing elements are engaged in order to reduce resource consumption and pollution. In these considerations, the concept of zero kilometre materials is introduced as one of the main objectives that have to be fulfilled in implementing urban policy.

The aims and goals of research methodology in the book "*Technologies for Sustainable Urban Design and Bioregionalist regeneration*" by Dora Francese are:

- Development of creative urban places through sustainable usage of existing social and spatial potentials, with the aim of obtaining environmental protection and resource sustainability.
- Redevelopment of historical urban spaces with the aim of improving the quality of life of inhabitants, development of tourism and improvement of the competitiveness of the city, protection, and presentation of cultural heritage, and better social cohesion.
- Usage of innovative technologies in redevelopment and presentation of native historical structures and ecological revitalization of the existing city's spatial resources.

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