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Urban environmental futures: Vulnerability and improvement

Eco-integrity of fast urbanization: Strategies and practices to meet the threats to human wellbeing and the environment—A new UNESCO–SCOPE initiative

Urban areas exist in all the world's great biomes and modify natural conditions to provide shelter and livelihoods. They are the habitat of most of the world's people, and the dynamics of urban ecosystems affect us all.

Eco-integrity of fast urbanization aims to review, assess, and evaluate the principal research approaches to, and techniques of, urban ecosystem study over the past 40 years since the start of UNESCO's urban ecosystem project. It follows on from SCOPE's urban environmental investigations and assessments in the 1990s that examined experiences and lessons in urban planning and construction and management practices.

The project will concentrate on ecosystem-based cross-cutting issues such as global environmental change, regional biodiversity, water, landscape ecology and stability, poverty, security, ecosystem services and threats to human health arising from local environmental conditions with particular attention to cities that are growing rapidly, with all the problems of in-migration and keeping pace with the needs of an expanding population. It will, however, not neglect the problems of urban decline and will consider the way both growing and declining cities can use adaptive co-management strategies.

This collaboration between *SCOPE* and *UNESCO* will also engage with intergovernmental agencies, organizations linking cities and mayors, business and industry associations, and other bodies concerned with urban ecology, urban landscape and city planning. Scientists concerned with urban ecosystem studies from both the South and North will participate in the project, but it will focus primarily on areas undergoing rapid transition such as Brazil, India, Russia, China, South Africa and Viet Nam. It will also summarize the urban ecosystem development experiences, and lessons learned, of industrialized countries and countries/regions whose economies and industries grew rapidly after World War II.

Although cities and their hinterlands presently occupy just 2% of the world's land area, the needs of urban people affect nearly every part of the world, either through direct harvesting or extraction, or through emissions and wastes. Living conditions however vary greatly within and between cities: human well-being and health in towns and cities can range from excellent to degradation; urban areas can support great biodiversity or lead to the extinction of many local species. Their constant modification by population growth, energy consumption and the manufacture and use of new

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chemical compounds and pharmaceuticals both increases opportunities for well-being and enhances risks to human health and biodiversity.

The project will focus on cities of less than 1 million, where over 60% of the world's urban population lives today, and how they address issues that bear on the environment. Small and medium sized cities may often lack the resources and political independence of megacities but need to be able to cope with complex social and environmental problems. There will be variation in responses to environmental problems. These varying interpretations of the environment within local authorities reflect environmental and economic development perspectives. In some cities we see strong leadership on environmental issues, in others a distinct avoidance of action. Political leadership on environmental issues may be a necessary but not sufficient condition for localizing global climate change.

The SCOPE–UNESCO project will assess the prospects for urban ecosystems and human well-being in towns and cities with a special emphasis on urban areas of less than 1 million inhabitants. Urban biodiversity and ecosystem services will be given particular attention, especially those of wetlands, soil communities, urban woodlands, and urban nature reserves, as well as to their relationship between nature in urban areas and human mental and physical well-being. The ecological services provided by eco-factors and eco-infrastructure (wetland, green land, constructed surfaces, wastes conduits and discharge points, and transportation networks) form the core of any strategy for urban eco-quality improvement. Key concerns within this are urban–rural relationships and peri-urban strategies; the production–consumption metabolism and the circular economy; eco-building and eco-settlement; eco-management and eco-civilization; participation and education.