IAI Institute on Urbanization and Global Environmental Change in Latin America

Mexico City, Mexico, September 27-October 8, 2004

Theme Description and Structure of the Program:

Urban areas are complex systems created by social processes and their interactions with the landscape. Urban growth, form, function and life are the end result of a broad range of economic, cultural, social, political and technological processes that interact dynamically among themselves and which ultimately modify the biophysical environment. Land use patterns, the reshaping of the landscape, and the form of the built environment are the physical manifestations of the interaction of those processes. In Latin America, about seventy five percent of the population, approximately 330 million people, is estimated to live in urban areas (UNCHS 2002). Poverty in Latin America is increasingly urbanized due to the continent's fast rate of urbanization and the overall increase in poverty and inequality there (World Bank 2001). The World Bank estimates that five out of every six additional poor people between 1986 and 1998 in that region were based mainly in urban areas (World Bank 2002).

Urban areas are also driving economic growth. Urbanization in the twentieth century established a network of competitive centers that set the physical reference points for today's globalization. Urban centers are the nexus of commerce and the gateways to the world's economy. The World Bank estimates that in poor countries as much as 80 percent of future economic growth will occur in urban areas (World Bank 2002). In some countries, a single city generates a large percentage of the national GDP: São Paulo produces nearly 36 percent in Brazil, and Lima 43 percent in Peru.

However, urban areas are also burdened with many problems associated with growth and subject to dramatic crises. Unemployment, environmental degradation, deficiencies in urban services and adequate housing, deterioration of existing infrastructure, lack of access to key resources, and violence are among the main areas of concern. This is especially true in Latin America where economic and financial crises, together with fast and unbalanced growth of urban areas, have created fragmented spaces with high spatial segregation that aggravates the social exclusion characteristic of those societies.

The aforementioned problems play an important role in the interactions between urban areas and global environmental change. These interactions create a diversity of impacts that can be grouped in two broad categories: those originating in urban areas that have a negative effect on global environmental change, and global environmental changes that have negative effects on urban areas. Studies in global environmental change have not considered the full extent of interactions between urban areas and biophysical processes, with a majority of the emphasis on the impacts of urban areas on global environmental change. Research efforts focus particularly on the contributions of emissions of greenhouse gases and the heat island effect in global climate change. Much less attention has been devoted to the study of the impacts of global environmental change on urban areas and the people who live in them. Particularly critical is the combined impact of global geopolitical and socio-economic processes (structural adjustment programs, economic,

social, and political crises) and global environmental change. These combined impacts have severe consequences on urban areas.

The increasing frequency and magnitude of climate-related natural disasters in urban areas during the last decade are some of the clearest indicators of the importance of those impacts.[1] However, climate change is only one of a number of global environmental changes affecting urban areas. Research oriented to study these issues requires multidimensional and integrative perspectives capable of overcoming the limitations of current approaches focusing on environmental problems isolated from their social, political, economical, and cultural. Critical in this regard is a better understanding of the interactions among social, cultural, economic, political, and biophysical dimensions and how they shape the urbanization process, and how this process shape and is shaped by global environmental change.

Topics

The structure of the Institute is designed to reflect the complex and dynamic range of societal and environmental interactions that take place in urban areas, from the global to the local level. The structure is divided in three sections:
I. Global and Regional Issues
II. Urban Issues
III. Cross Cutting Topics

Global and regional Issues

1. **The social dimension of global environmental issues.** Urban issues and their interaction with environmental systems need to be understood within the framework of global, regional and local geopolitical, socioeconomic and environmental processes. These processes influence and shape the driving forces behind urban growth, the level and characteristics of the urbanization process, and the type of interactions between urban areas and the environment. They also shape the driving forces of global environmental change. This lecture focuses on the driving forces for urban growth. It seeks to provide the general framework within which the interactions between urban and global environmental change takes place.

2. **Global Environmental Change**. The lecture will provide an overview of key aspects of global environmental change from the point of view of biophysical processes. The intention is to help the participants in the workshop to become familiar with the major aspects of global environmental change, particularly those issues with a direct interaction with urban areas: climate change and land use and land cover change.

3. **Regional urbanization patterns**. This section focuses on urbanization patterns in Latin America. The lecture will discuss the driving forces for urbanization and their main characteristics in the region (mega cities, middle and small cities).

Urban Issues

There are five lectures addressing different aspects of urban areas.

4. **Urban processes**. This lecture will discuss issues related to industrialization, transportation, and consumption in the shaping of urban structure, function, form, and life. The concepts and

[1] 10, 000 people died in floods and mudslides associated with Hurricane Mitch 1998 in Honduras and Nicaragua; 30,000 died in floods and mudslides in 1999 in Venezuela; 1,500 people died in mudslides in 2001 in El Salvador.

ideas discussed in this lecture will illustrate the dynamic relationship between the urban economy and structure with the environment.

5. **The social shaping and governance of the urban space**. The urban space is socially determined and it is the outcome of conflicts between different social classes. The lecture will address issues defining the social construction and governance of the urban space. It will also help illustrate the social dimension of local and global environmental problems in cities.

6. **Environmental problems in cities**. The diverse and often interacting environmental problems in cities will be discussed by this lecture: air pollution, sewage, drinking water, solid and hazardous waste, and environmental emergencies. The lecture will make an effort to illustrate the importance of different levels in the study of these issues, from the household, to the neighborhood and city level.

7. **Urban metabolism and ecological services**. Urban metabolism and urban ecosystems approaches address the issue of natural resources upon which urban areas rely. Ecological services in urban areas contribute to improve certain urban functions, and to reduce peoples and cities vulnerability to natural disasters. Ecological services provide a useful framework for the discussion of urban sustainability, environmental quality and social well being in urban areas. The lecture will introduce the notion of urban metabolism and ecological services in urban areas and provide an overview of some of the potential benefits in Latin America.

8. **Urban climate**. Studies documenting the creation of microclimates within urban areas and their association with certain urban functions and forms are helpful in understanding the interactions between urban areas and biophysical processes. The discussion on this topic will address the heat island effect, the creation of microclimate, the role of vegetation in the generation of index of comfort to climate, and the importance of urban form and architectural and urban design in the adaptation of urban areas to climate change.

Cross-Cutting topics

These are topics that represent the linkages between the human and the natural dimensions of global environmental change in cities. The topics selected illustrate the dynamic interactions among the topics discussed before in the workshop at different levels of analysis: from the global and regional to the city, neighborhood and household level. Cross-cutting topics also facilitate the debate of policies, and actions to control the negative consequences associated with global environmental change in urban areas.

9. **Health.** Urban living conditions make urban residents in Latin America sensitive to problems related to severe deficiencies in the supply and operation of public services, infrastructure, and sanitation. Many of these urban areas already face environmental problems and a significant number of their inhabitants suffer malnutrition, poor housing conditions and other problems associated with poverty and inequity. All these conditions play a role in aggravating the negative consequences of changes in biophysical processes in urban areas. This lecture will focus on the impact of climate on health. It will address the potential health effects of climate variability and climate change through heat related mortality and morbidity, infectious vector-borne diseases, tropospheric ozone pollution, and water-borne diseases.

10. **Peri-urban areas in the context of Urban- Region Interactions.** Peri-urbanization refers to a highly dynamic process where rural areas, both close to but increasingly also distant from, city centers become enveloped by, or transformed into, extended metropolitan regions. This lecture presents an overview of the interactions between peri-urban areas and urban areas, from the supply of inputs (e.g., food, energy, water, building materials) and the provision of ecological services (e.g., wildlife corridors), to the negative consequences of urban areas (e.g., pollution, urbanization pressures and land use changes, degradation of natural resources).

11. **Vulnerability, resilience, and adaptation**. The divergent rates and patterns of urbanization and the increase in poverty in urban areas of Latin America play an important role in the rising vulnerability of urban areas to the negative consequences of global environmental change (Cross 2002, Hamza and Zetter 1998, Jimenez 1992). The outcome is an urban space highly segregated with extended urbanization in risk prone areas and strong deficiencies in the provision of public services. All of these are key elements in the vulnerability of urban areas to the negative consequences of global environmental change. This lecture discusses social (individuals and groups) and urban (the built environment) vulnerability to natural disasters associated with climate variability and climate change and the role of socio-ecological resilience in the design of adaptation to the negative consequences of climate change.

12. **The Influence and Impact of Global Environmental Change in Shaping the Built Environment in Urban areas**. The broad range of impacts from global environmental change on urban areas triggers responses of adaptation and resistance. Those responses and actions depend on the local conditions and resources in each urban area, and they often end up modifying the built environment. There is a long tradition of how the built environment in human settlements has adapted to the environment. Some of the best known examples include the use of traditional and current knowledge to adapt architecture and urban design to climate conditions. Other examples show how adaptations to biophysical cycles modify land use within urban areas and define the way a city grows (flood protection in the Netherlands, for example). This lecture provides an overview on the influence and impact of biophysical processes in the built environment of urban areas.