

Role of Social Science in Global Environmental Change: The Case of Urbanisation

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INTRODUCTION

Global environmental change is about the irreversible (self-regulating physical, chemical, biological and human components) changes of the earth's system. This system behaves as a single, dynamic system that is interconnected. Abrupt changes in one region have impacts on other regions of the earth, showing that a strong connectivity between places and processes exists.

Human activities are influencing the Earth's environment in diverse and complex ways. At the same time, transformation of the Earth System has multiple impacts on peoples' lives. The global, regional and local dimensions of environmental change are increasingly interlinked. Globalisation, like global environmental change, comprises accelerated interconnections and interdependencies fuelled by communication technologies.

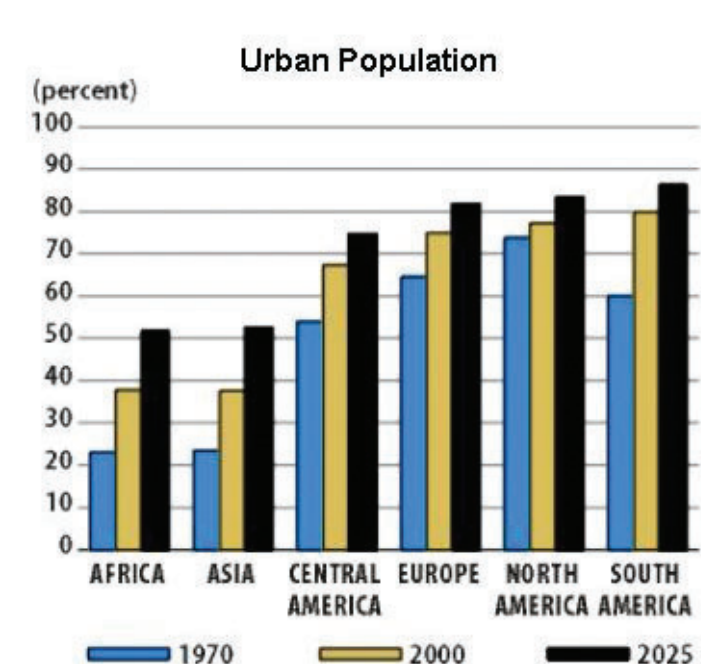
Natural scientists (climatologists, oceanographers, ecologists and others) have dominated studies and possible responses to global environmental change without designing effective management strategies. In this poster we argue that a social scientist's perspective is needed in order to understand, translate, explain and communicate scientific knowledge on global environmental change in order to achieve feasible management strategies.

This is demonstrated by examining urbanisation and global environmental change as suggested by the International Human Dimensions Programme on Global Environmental Change (¹IHDP 2005).



URBANISATION AND GLOBAL ENVIRONMENTAL CHANGE

Urbanisation is one of the most powerful, irreversible and visible anthropogenic forces on earth. About 3.3 billion people are estimated to live in urban areas (²UNCHS 2002). Urban areas are complex and dynamic systems that interact with socio-economic, geo-political and environmental processes resulting in dramatic environmental changes. There are positive impacts of urbanisation that relate to economic growth, technical innovation, access to information, efficient land, water and energy use, better living conditions, provision of clean water and better access to health. Urban areas are a nexus of commerce and gateways to the world's economy (¹Beall 2002).



In Africa, cities exhibit negative growth characteristics such as unequal access to resources, employment, insecure communities, deficiencies in service provision, deteriorating infrastructure, lack of amenities (water, energy and housing), lack of access to key resources, crime and violence.

Growth in urban areas has created fragmented spaces with spatial segregation that aggravates social exclusion. In most cities, there is clear division between the rich and the poor as well as the formal and informal economy (³Coy and Poehler 2002 Pirez 2002).

INTERACTION BETWEEN URBAN CENTRES AND THE GLOBAL ENVIRONMENTAL CHANGE

Interactions between urban areas and the global environmental change have created a diversity of impacts that group as:

- Those originating from urban areas and have negative effects on the environment; and
- Environmental changes that have negative impacts on urban areas.

Contributions of urban processes to global environmental change are as follows:

- Lifestyles and consumption patterns that contribute to global environmental change. The declining role of the state-led development and the emerging market and individualised decision-making has transformed urban life. For example there is no fierce control over the emission of greenhouse gases and the heat island that affect the environment (⁶Ravertz 2000).
- Economic growth in urban areas is associated with rising incomes and the associated increase in consumption patterns. These result in increased demand for and pressure on natural resources. This results in land degradation, deforestation and loss of biodiversity. Urban water demand, for example, negatively impacts on fresh water resources and catchment areas.
- Urban land use at times leads to loss of land cover, mainly because of lack of adaptation of architecture and urban design to local climatic conditions (⁴Gibbs and Jonas 2000, Redcliff 1994).



Ways through which global environmental change affects urban systems are:

- The increased frequency and magnitude of climate related natural disasters such as flooding; drought and storms are drivers of demographics in urban areas.
- Changes in biodiversity, land-use, and land cover, water cycle and climate have the potential to impact on urban life. For example, concentration of population where there are deficiencies in supply and operation of public services, infrastructure, and sanitation and health services, aggravates environmental problems.
- Changes in climate variability (temperature and precipitation) more often lead to vector-borne diseases such as malaria, yellow fever, and elephantiasis (²Bryant and Wilson 1998).



CONCLUSION

Clearly both natural and social sciences have contributed to a great understanding of urbanisation and global environmental change. Urban studies have a long tradition in urban studies e.g. urban economics, urban sociology, urban anthropology, urban politics, urban geography and urban development. Natural sciences have, on the other hand, contributed knowledge of engineering, architecture, infrastructure design, planning, urban climate, urban metabolism, urban habitat conservation, geology, hydrology and ecology. For better understanding between the complex interactions between global environmental change and urban processes it is essential to formulate and implement appropriate policies to address the diverse array of consequences created by those interactions. There is a need to strengthen the existing foundations and create an innovative social science integrated approach. The Science plan, suggested by the International Human Dimensions Programme on Global Environmental Change, provides a blue print (⁵IHDP 2005).

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