URBANIZATION AND THE CARBON CYCLE
REFLECTIONS FOR A RESEARCH AGENDA
AND THE SCIENCE –PRACTICE INTERFACE

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Reflection for a Research Agenda

• Large tradition of urban studies covering a broad range of issues
  Contributions from diverse disciplines

• Global Environmental Change
  Carbon Cycle

• Fragmented perspectives of complex realities
  Management approaches

• Emphasis on emissions (mitigation) neglecting impacts
  (vulnerability and adaptation)

• The science-practice divide
A Multidimensional Approach for Urban Areas

Theory and Methods

Geographical space (local, national, regional, global)

- Cultural
- Economic
- Social
- Political
- Environmental
- Ecological
- Physical and Chemical

Time

Source: Sanchez and Bonilla 2006
SCALE

Intra urban scale

Household → Neighborhood → City

Transnational, Regional, National, Local Processes

Image with cityscape and various images of environmental and urban issues
The interactions between urban areas and global environmental change. A conceptual framework

Source: Sánchez et al. 2005
Urban System → Earth System

Focus on emissions (mitigation)
monitoring and inventories
Heat Island effect

Few integrated studies
urban growth
land use land cover change
urban ecology
urban metabolism
ecological services

Science – practice interface
Earth System → Urban System

1. Natural Disasters
2. Urban structure and urban functions
3. Urban – peri-urban- rural relationships
4. Local and national consequences
5. Science- practice interface
The Impact of Climate Variability and Climate Change on Health

Incomplete urbanization and deficiencies in sanitary conditions

Reproduction of diseases organisms and vectors

Aggravating factors
- Deficiencies in public services
  - Solid waste
  - Waste water
  - Drinking water
- Urban growth in risk-prone areas

Temperature and Precipitation Changes

Vector-borne diseases

Heat related Mortality and Morbidity

Weather related Disasters

Air Pollution

Malaria
Dengue
Yellow fever
Encephalitis

Cardiovascular and respiratory illness

Vector-borne diseases and infectious diarrhea

Asthma and ARI

Urban and Housing Conditions

Source: After Patz and Balbus 1996
THE SCIENCE – PRACTICE INTERFACE

• Need to transcend disciplinary boundaries, reductionist and positivist approaches to science

• A new role in the generation of knowledge that includes a balanced and dynamic participation of stakeholders

• Construct a body of knowledge that will reflect the pluralistic and pragmatic context of its use

• Maintain the rigor and accountability of scientific knowledge

• Facilitate understanding and communication between scientists and practitioners (bidirectional knowledge)
  - Shared space
  - Leadership (transdisciplinary skills)
  - Other actors
  - Research questions relevant for local communities
UNFCC
Stage II Adaptation Studies
ICSU
Sustainable Development
UNCHS, UNDP, and UNEP
World Bank
Metropolis
UCLG
United Cities and Local Governments
ICLEI
International Council of Local Env. Ini.
AUCC
American Union of Capital Cities
ISFCAP
Inter. Solidarity Fund of Cities against Poverty
INUI
International Network of Urban Initiatives
GCD
Global Cities Dialogue
IHDP National Committees
Regional networks (START, APN, IAI)
IGU
“All too often, experts forget that problems of society do not come in discipline-shaped blocks” (Roy 1979; 165).

“The power and majesty of nature in all its aspects is lost on him who contemplates it merely in the detail of its parts, and not as a whole” (Pliny 1977; 581).