



Urbanization and Global Environmental Change
AN IHDP CORE PROJECT

2nd International UGEC Conference

Urban transitions & transformations: science, synthesis and policy

Our global environment is changing and humanity is at the center of these changes. With more than half of the world's population living in cities - a trend expected to continue - we've moved into the Century of the City where urbanization will continue to be a defining social, economic, and environmental characteristic of this new centennial. Despite the fact that cities have been loci for a number of environmental problems such as air pollution, greenhouse gas emissions, clean water accessibility, etc., cities are also centers of innovation, education and offer better accessibility to services such as health care and economic opportunities. With the majority of future growth expected to take place in smaller to medium-sized cities, particularly in the developing world, a central question is: *How can we capture the benefits and opportunities of urbanization, whilst mitigating the negative effects, in order to sustainably transform our urban future?*

Moreover, it has become increasingly clear that successful solutions to today's grand sustainability challenges require collaborative approaches from a diverse group of researchers, funders, practitioners, policy-makers and other stakeholders. This is precisely the impetus for the Science and Technology Alliance for Global Sustainability-led restructuring of the research framework and organization of the Global Environmental Change Programmes and Projects. Underpinned by three overarching themes, research under 'Future Earth' (<http://www.icsu.org/future-earth>) will continue to focus on the dynamics of the Earth system, sustaining our planet's resources, and understanding processes of transformation and developing strategies for sustainability.

Cities are a critical component in this process towards global sustainability, the agenda of 'Future Earth' and international policy communities. Over the last ten years, research in the field of urbanization and global environmental change (UGEC) has expanded our knowledge and understanding of the interactions and feedbacks between urbanization processes and global environmental change at local to global scales.

The aim of the 2nd International UGEC Conference on 'Urban transitions and transformations: Science, synthesis and policy' is two-fold:



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- 1.) Synthesize our knowledge of the bidirectional interactions between urbanization and global environmental changes, and to reflect on the key lessons learned.
- 2.) Identify transformative pathways for a future urban world that is increasingly complex and uncertain.

The study and understanding of current urban transitions and transformations requires multidimensional approaches that explore human behavior including lifestyle changes, political and economic agendas, and the adequacy of governance structures to deliver urban sustainability - particularly in a time of uncertainty where biophysical tipping points and thresholds have the potential to curb human progress and well-being. In order to facilitate this analysis, the conference has been divided into four integrative themes that are intended to bring together perspectives from across the social and natural sciences, and humanities to better understand urban environmental issues in a more integrated, interdisciplinary and transdisciplinary way.

Theme 1: Urbanization patterns and processes

Cities have undergone unprecedented social, cultural, economic, environmental and institutional transformations as their sizes, structures and functions change over time. We now have a better understanding of the tele-connected nature of urbanization and globalization processes which blur the distinction between urban and hinterland areas, i.e., the distal flows and connections of people, economic goods and services, and land use change processes that drive and respond to urbanization. In this sense, cities and their regions are connected to and dependent on other regions, even in other continents as well as being connected across different spatial and temporal scales. Furthermore, global environmental changes affect these local and regional human processes and well-being, and shape the construction, form and function of the built environment.

This theme explores the driving forces responsible for transformation patterns and processes in cities - how and why urbanization today differs from urban processes in the past (i.e., as an outcome of decisions, actors and institutions), and the pathways through which specific types of global environmental change affect local and regional human processes and well-being (e.g., economic activities, livelihoods, urban life, migration patterns, social well-being and human health).



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Theme 2: Urban responses to climate change: adaptation, mitigation and transformation

Cities are now at the forefront of climate change adaptation and mitigation responses. Local actions to address climate change are moving faster than our capacity to understand the effectiveness, benefits, and unintended negative consequences of those actions. There is a critical need to go beyond descriptive case studies or calls for further urban responses to climate change, and to take a more analytical approach to understanding the diversity of responses that exist, the lessons to be learned from them and the implications for city-level policies and development. This implies looking critically at governance structures and institutions by investigating the motivations behind the efforts to govern climate change, strategies, and differing institutional capacities amongst cities.

This theme will explore questions such as: What are the linkages that exist between adaptation, disaster risk reduction and resilience? What factors influence policies for urban climate change adaptation (e.g., differences between the North and South, cities of varying levels of development, political contexts, etc.)?; What makes effective strategies, effective, i.e., are there certain institutional/governance structures which need to be in place that are key for transformation? Contributions from the physical sciences are equally important here, for example, the understanding of urban footprints (increasing or decreasing emissions) and cities' actual effectiveness to reduce health impacts from heat waves and air pollution.

Theme 3: Global environmental change, urban health and well-being

Global environmental changes (including climate change and biodiversity loss) as well as urbanization pressures on the environment, e.g., air and water pollution, have multiple implications for societies. An important component of this theme will be a focus on how urban areas will transition to become more resilient, connecting research on poverty, food security and ecosystem services. Global environmental change affects the pool of natural resources and ecosystem services upon which urban systems rely, and urban areas depend on vast resources for the supply of critical ecological services. These include: provisioning services, such as food, water, medicinal plants and other resources; regulating services that enhance the quality of air and soil, or that provide flood, storm and disease control; habitat or supporting services, which underpin almost all other services; and also cultural and



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aesthetic services. However, urbanization destroys fragile wetlands, fragments ecosystems, endangers species and threatens biodiversity, and has severe impacts on the carbon cycle through changes in the net primary productivity of affected ecosystems.

This theme aims to synthesize the bi-directional interactions between global environmental changes and urban processes, and the effects these have on urban dwellers with respect to health and wellbeing. What have we learned in terms of how to understand, quantify and value urban ecosystem services and incorporate this knowledge into urban planning and management? What approaches currently exist for urban biodiversity conservation? How does urban design and form contribute to building healthy communities? Even more broadly, what progress has been made with respect to understanding climate change impacts on human health and vulnerability at the city scale and preparing cities against future GEC-related risks and uncertainties?

Theme 4: Equity and environmental justice in urban areas

Sustainability is founded on principles of equity for present and future generations. Worldwide, more than 900 million people, approximately one out of three urban dwellers, live in informal settlements, with most living under life- and health-threatening conditions. This ratio is expected to increase in the future. In light of their importance locally and regionally, and considering their size globally, the discussion of sustainability must incorporate approaches that include informal settlements. Furthermore, just as the concept of climate justice addresses the uneven negative impacts of global climate change especially on poor countries that, for example, contribute only a small portion to global greenhouse gas emissions, an environmental justice perspective that examines the fairness of services and disservices provided by the environment brings us closer to the goal of urban sustainability.

This theme will explore what we have learned in terms of the interactions between global environmental change and human security, vulnerability and coping mechanisms of the global poor. How can we best influence growth and development policies for urban areas in both rich and poor countries alike and assist them to better adapt to the potential negative consequences of global environmental change? What advances can be made in terms of woman and gender equality with respect to climate change mitigation and adaptation policies?