Urban Futures within Future Earth: to champion science that supports and challenges action, reflecting the centrality of the urban in the transforming pathways to sustainable development

Background

The 'Science and Technology Alliance for Global Sustainability-led' international research initiative Future Earth seeks to, 'develop the knowledge for responding effectively to the risks and opportunities of global environmental change and for supporting transformation towards global sustainability in the coming decades'. Its research and governance principles are underscored by the following: *Scientific Excellence*; *Interdisciplinarity; Co-design and Co-production.*

In February 2014 a Scoping Meeting was held to share and discuss ideas for shaping and moving forward a new urban initiative(s) that would incorporate these same principles and fit within the Future Earth framework. The meeting included participants representing a variety of regions and perspectives with diverse experiential knowledge and research expertize.

Rationale: Why urban?

The majority of the Earth's population is now urban. Over the last half-century the pace and scale of urbanization has been unprecedented with significant growth in the developing world, predominantly in Asia and Africa. As both a key driver and outcome of environmental change, urbanization processes are uniquely affecting the planet and at multiple scales through modifications to the natural resource base, climate, water and other biogeochemical cycles - all of which impacts our social and economic systems and functioning. Given anticipated changes in the global environment, climate change in particular, along with the projected increasing trends of urbanization, there is a fundamental need and window of opportunity before irreversibility and lock-in set in to approach global sustainability challenges in the context of an urbanizing world.

> *What can science and knowledge building for decision-making in the urban context accomplish in the next 15 years to effectuate change before the window of opportunity for change closes and irreversibility and lock-in sets in?*

Key components/characteristics of a successful urban initiative(s)

Urbanization and interconnected processes: Understanding that multi-scale interactions (local, regional and global) exist between urbanization and environmental change (GEC) and other ecological, bio-physical and socio-economic processes (e.g., rural-urban migration)

Urban resilience and adaptive capacity: Understanding urban change conditions and tipping points**;** reconciling growth and sustainability contradictions

Emerging data and data that is 'everywhere': Linking this with participatory research and practice; and understanding the influence of technology, e.g., 'cyber cities', real and virtual

Holistic governance, policy and planning responses: a.) Horizontal and vertical integration in governance and implementation; b.) Transparency in governance structures; c.) Capitalizing on urban co-benefits (multiple outcomes from a single policy); d.) Creating typologies for policy; e.) Creative urban forms and ecologically-based solutions; f.) Stronger connections between knowledge, practice and policy integration; g.) Post-scholar urbanism, e.g., activists' engagement

Key characteristics and/or outcomes, which would indicate success

a.) Relevance in broader frameworks/ initiatives, e.g., Future Earth, IPCC AR5, SDGs; b.) Sustainable/livable cities High quality of life (happiness): health, ecosystem health, equity, economics; c.) Transparency of governance; d.) City carbon accounting based on emissions from city and for city, and cities fitting into global carbon footprint/value chain; e.) Create the feedback loops f.) Observable metrics; g.) Evaluative frameworks; h.) Less catastrophe; i.) Appropriately including risk into decisions; j.) Decisions informed by knowledge (gaps, timing, etc.); h.) Finding what can be comparative in cities (data hierarchies and clusters)

Major programmatic objectives, which would be likely to produce that success

Communication and knowledge exchange: New mechanisms for dialogue and collaboration with stakeholder communities; Active linkage with decision-makers and 'citizens'; Remove barriers between research/policy/practice by co-design/development of research; Research on research; Networks of observatories (multiple dimensions)

*Research objectives***:** Greater understanding of carbon and other environmental drivers**;** Impacts of 'green cities' on other environments (positive and negative); Local solutions focus, not just global**;** Emphasis on medium-sized cities and low income countries**;** Urban ecology focus **;** 'Mastering' of the water cycle (quality, quantity and soil)**;** Demonstrable change in ability to collect, understand key metrics, e.g., energetics and carbon**;** Develop new metrics for urban areas on happiness, i.e., well-being

*Solutions***:** Increasing prescriptive measures**;** Designing for real benefits, e.g., minimizing negative metrics, maximizing the positive (quantifying benefits and costs – financing flows)**;** Understanding scale (temporal and geographical) and trade offs

What should the new urban initiative(s) in Future Earth aim to achieve?

Urban science and knowledge-building: Co-production of knowledge, research, solutions; Take stock of existing knowledge including traditional knowledge; Find synergies between knowledge systems and expand pool of science (knowledge) in terms of number and plurality/diversity; Build and integrate 'urban science' on the Future Earth platform; Interdisciplinarity, transformative – not just the sum of the parts; Detail bidirectional, transboundary and cross-scale interactions, e.g., physical-social processes (feedbacks); Global positioning of science (ethics and ontology), including global themes with local context and the global implications (social and biophysical); New methods, approaches/mixtures/data interpretation; Promote innovative and robust ideas, methods, data and ethics; New frameworks for teleconnections for cross scale processes/viewpoints to help define research questions and methods; Create a dedicated work stream on the 'urban future' that works across place, time, scale and worldview (only way to ensure the density of 'urban' is addressed); Issue-based research

Stakeholder/Societal relevance: Connect science with action; Drawing upon other urban constituencies will be critical, but need to define this in order to best move the content forward*;* Create platform for collective engagement on urban complexity (across: objectives, disciplines, knowledge domains, expertise)*;* Build and integrate an urban network, from which to create new science, e.g., 'innovation'*;* Enhance capacity/relevance and coverage by strengthening connections up and down value chain (scale)*;* Identify the key levers of intervention*;* Identify the key stakeholders for co-design and production - national and international, global to local; Recognize and respond to power and agenda setting, including funding; Build effective, long term collaboration across nations and languages; Prioritize funding for experimentation and innovation for new mechanisms for knowledge creation; Evaluative framework for impact – not just for funding but for broader purposes

What organizational structures would enable the new initiative to achieve the vision?

Structure could be organized by problem orientation, theme/concept, or geography

- Structure is dictated by funding (form follows function) – need innovative funding structures, i.e., think out the box
- Traditional hub and spoke method is not conducive to cross-cutting research
- Network of different themes
- Various offices may not be realistic given: funding constraints, people, information, information processing
- Meta-network – nodes could be data collection points (e.g., social observatories), offices (admin), or operational (projects), e.g., can there be networks of observatories of urban areas across the world?
- Regional nodes would have to be very strong and capable
- Inclusiveness of stakeholder(s) including partnerships with existing practitioner networks

- Nodes akin to urban extension offices could be transformative and requires no central hub

- Future Earth as a service provider, broker of knowledge
- Important to have a volunteer-based network
- Use existing networks, not all are research based
- Rotating practitioner framework

a. What is the mission of an urban research initiative(s)?

- Define the boundaries/new directions for research
- Focus on what is new intellectually that wasn't there five years ago and put this at the forefront for thinking about the next 15 years
- Results focused
- Need a dynamic mission and must take co-design and co-production seriously
- Measuring success - metrics will determine the goals and will require key input from end users
- Take stock of knowledge – knowledge acquisition for the future
- Platform for knowledge sharing and collaboration / innovative collaboration – mechanism for meaningful collaboration, not just workshops (includes policy, public domain)
- Center for Advanced Studies model – advanced studies centers where people can come for a longer timeframe to learn
- Branch out existing community of practice to include other communities - space for continued discussion – relationship is needed to be built
- Provide services to non-traditional communities of practice
- Entry points for researchers to break through windows of opportunity
- Capacity building at all levels

List of Scoping Meeting Participants

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