

is AIT [#raisingambition](#) to [#actnow](#) for

**CLIMATE CHANGE**

*resilience in cities & communities*



15 August 2019  
14:00-16:00  
AIT Library, Wall of Fame

*Location: AIT Library, Wall of Fame Lounge*

*Time: 14:00-16:00h*

World is rapidly urbanizing ..... **there is an urgent need for knowledge and action for building low carbon and climate resilient cities**



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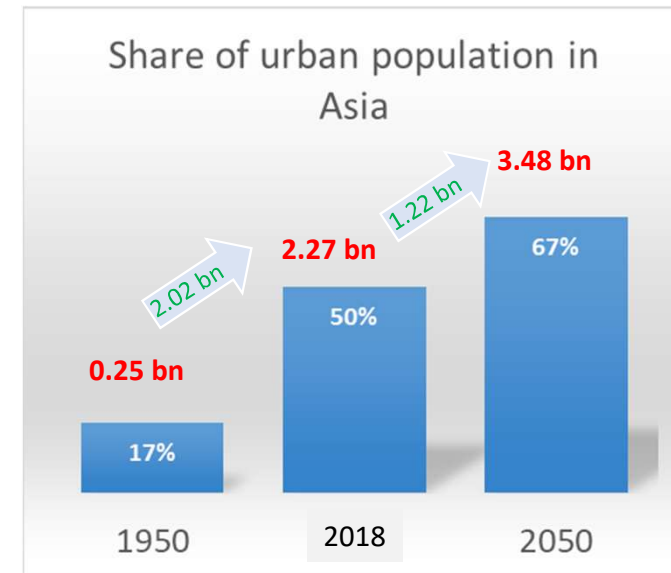
# Headline statistics

Globally, 4.2 out of 7.6 bn population live in urban areas in 2018 (55.3%) → 1950(30%), 2050 (68%)

Within Asia, roughly 50% (2.27 bn) of population (4.56 bn) now living in cities (17% in 1950) → over 67% by 2050 → This means 1.22 bn new additions in 2019-50 in Asia (UN-DESA, WUP 2018 revision).

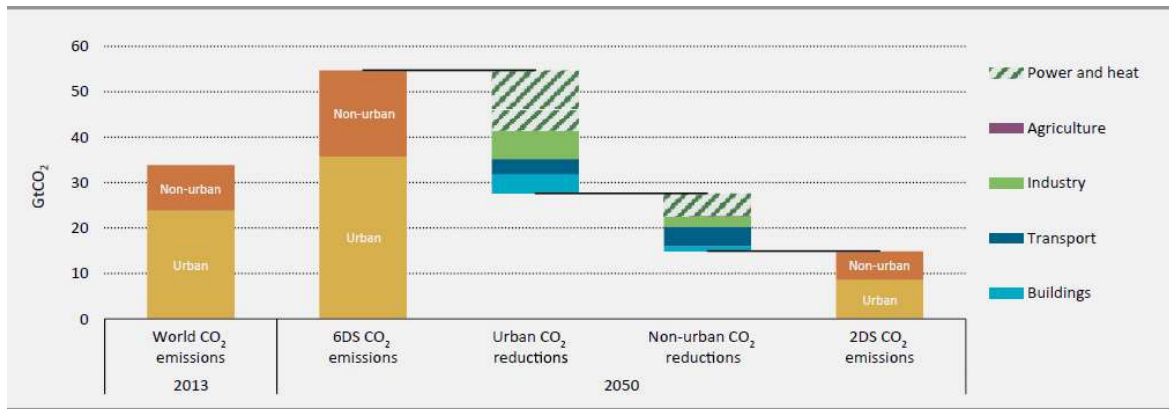
Rapid population growth expected in small (<300,000), 1-5 mn city, and the mega-cities (>10 mn)  
(UN-DESA, WUP 2018 revision).

If left un-checked, slum dwellers globally from 1 to 3 bn by 2030 (about 65% of them in Asia)



# Cities contribution to GHG emissions and mitigation potentials

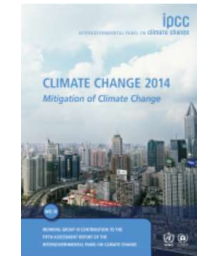
- Paris Agreement – for 1.5°C CO2 emissions must fall by about 45% by 2030 (from 2010 levels) or “net zero’ by 2050
- Over 70% of global energy related CO2 emissions from cities (Seto et al, 2014) → Asian cities play a key part (IEA, 2008, 2016)



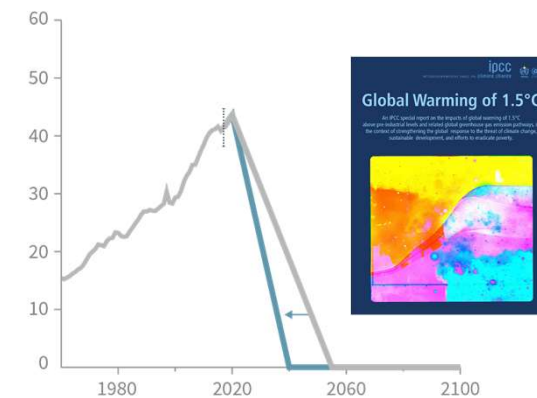
Under the 2DS, global urban CO2 emissions can be reduced by around 75% in 2050 compared with the 6DS.

IEA (2016)

We can cut emissions in half by 2040 if we build smarter cities...



b) Stylized net global CO<sub>2</sub> emission pathways Billion tonnes CO<sub>2</sub> per year (GtCO<sub>2</sub>/yr)



**nature climate change**

Commentary | Published: 24 November 2016

### Urban infrastructure choices structure climate solutions

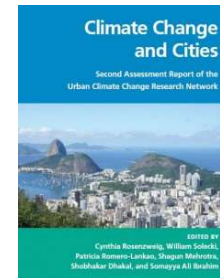
Felix Creutzig, Peter Agoston, Jan C. Minx, Josep G. Canadell, Robbie M. Andrew, Corinne Le Quéré, Glen P. Peters, Aysoob Sharifi, Yoshiki Yamagata & Shobhakar Dhakal

*Nature Climate Change* 6, 1054–1056 (2016) | [Download Citation](#)

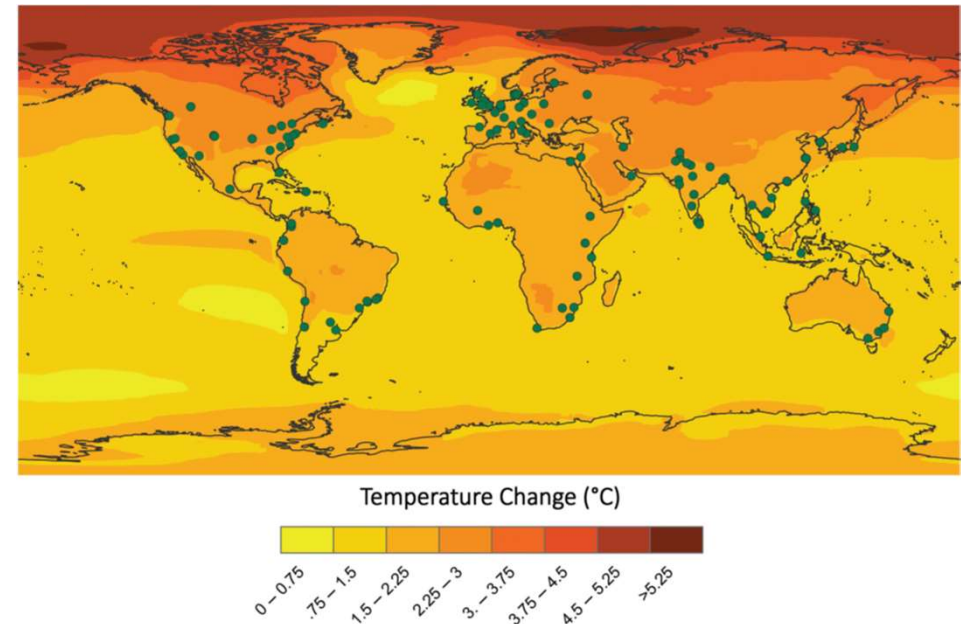
Cities are becoming increasingly important in combatting climate change, but their overall role in global solution pathways remains unclear. Here we suggest structuring urban climate solutions along the use of existing and newly built infrastructures, providing estimates of the mitigation potential.

# .. Cities are vulnerable to impacts of climate change

- Elevated UHI, air pollution, exacerbated climate extremes, increase in frequency and intensity of heat waves, droughts, heavy downpours, and urban and coastal flooding etc.
- The urban poor is expected to be especially affected



Rosenzweig et al. 2018, *Climate Change and Cities Second Assessment Report of the Urban Climate Change Research Network*, Cambridge University Press.



100 cities and 2050s temperature change projections for the mean of 35 global climate models (GCMs) and one representative concentration pathway (RCP4.5). Colors represent mean annual temperature changes for a mid-range scenario (RCP4.5), from CMIP5 models (2040–2069 average minus 1971–2000 average).

# Remember.... Climate change battles will be fought in cities

- **Role of cities in meeting Paris Agreement is key:** Cities and climate change has emerged as key topic in both science, policy and practitioner communities
- **Science:** IPCC attach great importance to cities agenda, IPCC special report, UCCRN ARC3.2; citiesIPCC conf and research and action agenda.
- **Global Policy:** Other global key initiatives such as New Urban Agenda, SDGs and Sendai Framework on DDR all link cities strongly.
- **Actions:** Cities are ambitiously pledging, developing response plans and implementing actions with support from research, policy and practitioner communities.
- **The knowledge gaps are critical and the knowledge-based capacity building are crucial** for action - thousands of cities in Asia needs solutions and capacity building.

My interest  
domain-  
**Climate Smart  
Cities**



Quantifying emission and comparative analysis;  
showcasing opportunities for low carbon cities;  
urban data issues



Mitigation-adaptation synergies and trade-offs



Governance and institutional arrangements for low  
carbon and climate resilient cities



Leading international scientific assessments and  
research initiatives



Closely working with policy and practice  
communities to co-design research agenda and  
framing actions



Capacity building of city decision makers

# Key international leadership

- **Global Energy Assessment:** Urban System
- Led city chapter of IPCC's Fifth Assessment Report (2010-2014) and shaped Sixth Assessment Report (2017-2021)
- Led UCCRN's Second Assessment Report on Climate Change in Cities (published 2017) – global synthesis for city policy makers involving over 500 scientists- a major global publication
- Outlined priority global research agenda in “*Nature*”
- Co-authoring/developing global research and action agenda with worlds’ top scientists and policy institutions (2018)

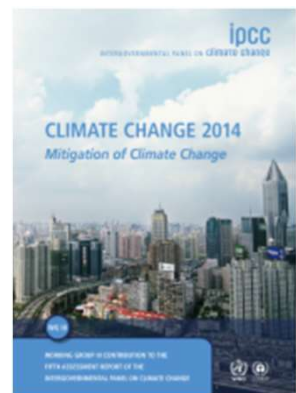
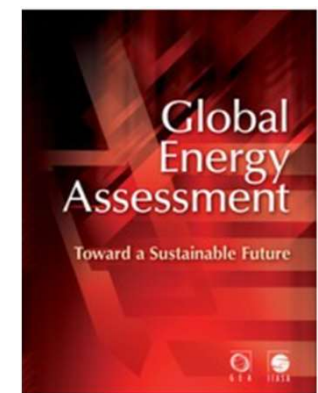
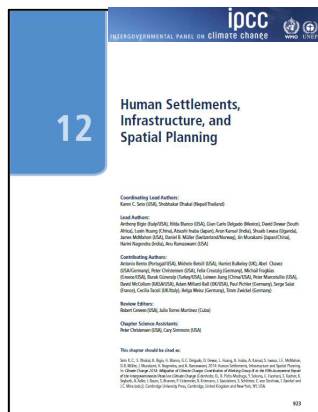
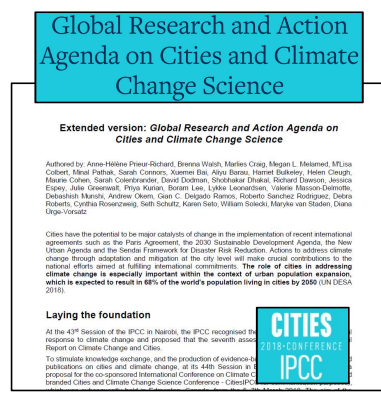
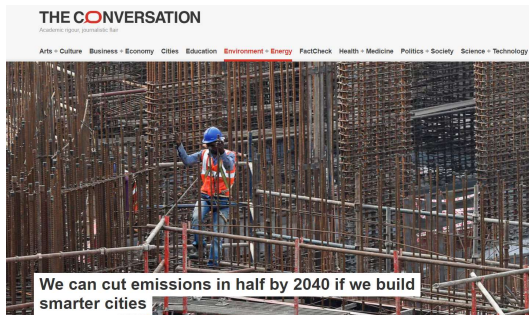
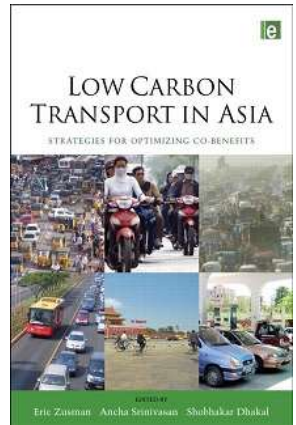
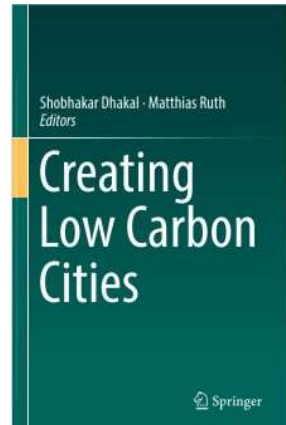
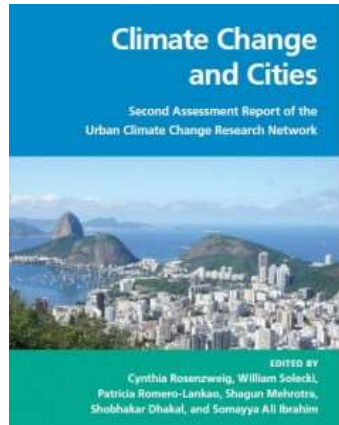


## Six research priorities for cities and climate change

Xuemei Bai, Richard J. Dawson, Diana Ürge-Vorsatz, Gian C. Delgado, Aliyu Salisu Barau, Shobhakar Dhakal, David Dodman, Lykke Leonardsen, Valérie Masson-Delmotte, Debra C. Roberts & Seth Schultz



# Publications in scientific journals, books, reports and journalistic contributions





Thank you



## Contributions to Scientific Assessments and Policy Stocktakes

- IPCC, UCCRN, Edmonton 2018 Research and Action Agenda, Asian Cities and Climate Change Assessment

## Web-based Knowledge and Data Portal Development

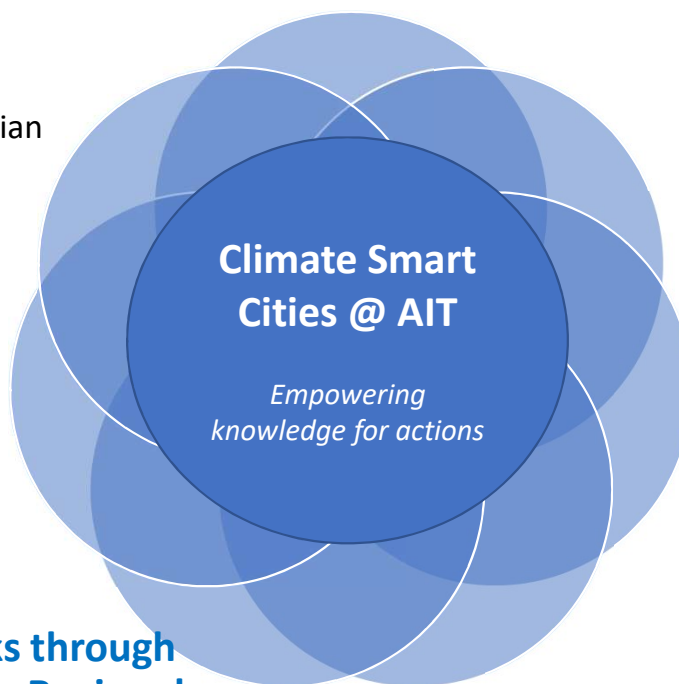
- Urban emission data and analysis
- Analysis of city climate actions
- Repository of key research papers, policy report and analysis
- Policy Briefs

## Building Research-networks through Conferences and Mobilizing Regional Expertise

- Asian Cities and Climate Change Conference Series

## Practitioner-oriented Formal Degree Programs

- Certificate Program (one semester)
- One year Professional Masters Program with minimum residency requirement on campus



## Professional Programs

- Summer Program (2 weeks intensive): June-July
- Tailor made Training Programs for urban decision makers (Local and national government)
- Tailor made Training Programs for enablers in developing countries (NGOs, municipal associations, donors and others)

## Strategic Research

- Role of disruptive technologies
- Integrated urban infrastructure
- City GHG mitigation options analysis for deep decarbonization
- City vulnerability and risk assessment
- Financing for local climate change actions
- SDG and climate change synergies/tradeoffs
- Urban governance and capacities
- Tracking cities' targets and actions

## Research-policy-practitioner Dialogues

- Mayors' Forum
- Research-Policy-Practitioners Dialogues

# Our portfolio

## 1. The Role of Cities in Climate Change Resilience

- Q1: Role of Cities in contrast to National Governments
- Q2: Merits and demerits of Cities vs. National government
- Q3: Potential contradictions between city approaches

## 2. The role of Developed and Developing Cities in Climate Change Resilience

- Q1: Difference in the role of cities between developed vs. developing countries?
- Q2: About city-to-city cooperation between global south and north

## 3. The Role of Mitigation and Adaptation in the Climate Change debate

- Q1: Balance between mitigation and adaptation actions
- Q2: Can mitigation contribute to adaptation and vice-versa?

## 4. Our role in AIT in building Climate Change Resilience

- What can we do as individuals and in our roles as AIT-an professors, staff, students, schools, and resource centres in contributing to build resilience to Climate Change in cities and communities?