Bridging Knowledge Gaps in Urban Climate Research to Inform the IPCC Special Report on Cities and Climate Change

Karen C. Seto

Frederick C. Hixon Professor of Geography & Urbanization Science
Co-Director, Yale Center for Geospatial Solutions
Director, Yale Hixon Center for Urban Sustainability

Coordinating Lead Author, IPCC 6th Assessment Report (2022)
Coordinating Lead Author, IPCC 5th Assessment Report (2014)

Yale

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SIXTY-FIRST SESSION OF THE
27 JULY - 2 AUGUST 2024

Decision IPCC-LXI- 5. Seventh assessment report (AR7) products – Outline of the Special Report on Climate Change and Cities

Document: IPCC-LXI/Doc. 2, Rev. 1

The Intergovernmental Panel on Climate Change at its Sixty-first Session decides:

(1) to agree on the outline of the Special Report on Climate Change and Cities as contained in Annex 1 to this document.

Decision IPCC-LXI- 5. Seventh assessment report (AR7) products – Outline of the Special Report on Climate Change and Cities

Document: IPCC-LXI/Doc. 2, Rev. 1

The Intergovernmental Panel on Climate Change at its Sixty-first Session decides:

(2) that the time schedule for the production of the Special Report is as follows:

9 August – 20 September 2024	Call for nominations of authors
23 September – 19 December	Selection of authors
10–15 March 2025	First Lead Author Meeting
21–25 July 2025	Second Lead Author Meeting
17 October – 12 December 2025	Expert Review of the First Order Draft
12–16 January 2026	Third Lead Author Meeting
8 May – 3 July 2026	Government and Expert Review of the Second Order Draft
3–7 August 2026	Fourth Lead Author Meeting
11 December 2026 – 5 February 2027	Final Government Distribution of the Final Draft and Government Review of the Summary for Policymakers
15–19 March 2027	Approval of the Summary for Policymakers and acceptance of the Special Report

Established in 1988 by the WMO & UNEP

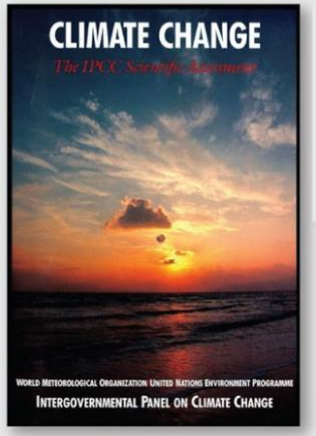
- Assess scientific literature on climate change

Purpose of IPCC Reports

- Provide scientific basis for governments to develop climate-related policies
- Support UN Framework Convention on Climate Change (UNFCCC)
- Inform international climate negotiations

Purpose of IPCC Reports

- Help establish emissions reductions targets and temperature limits for international climate negotiations

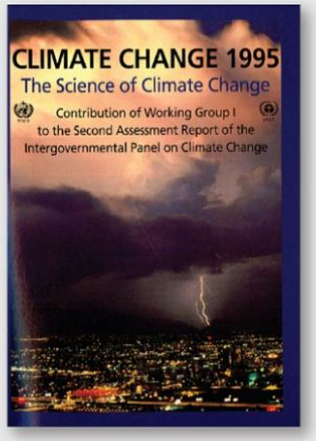


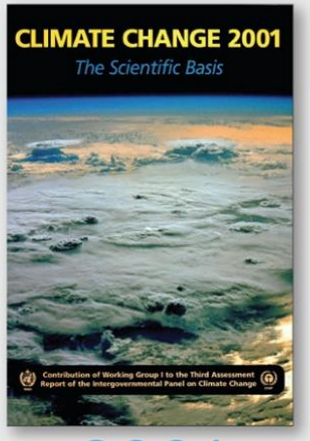
1990

AR1

AR2

1995



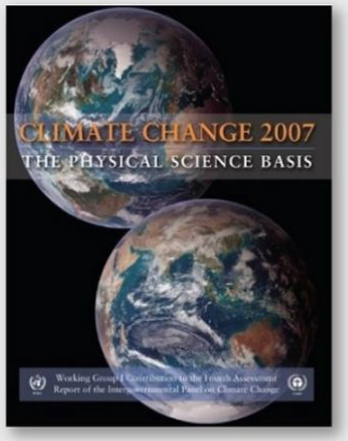


2001

AR3

AR4

2007

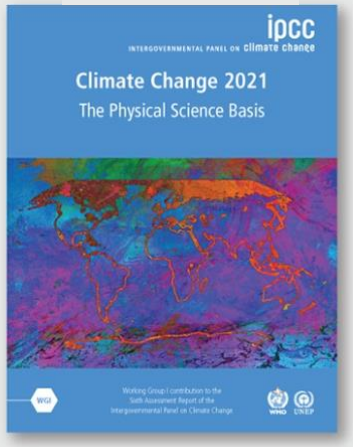


2013-14

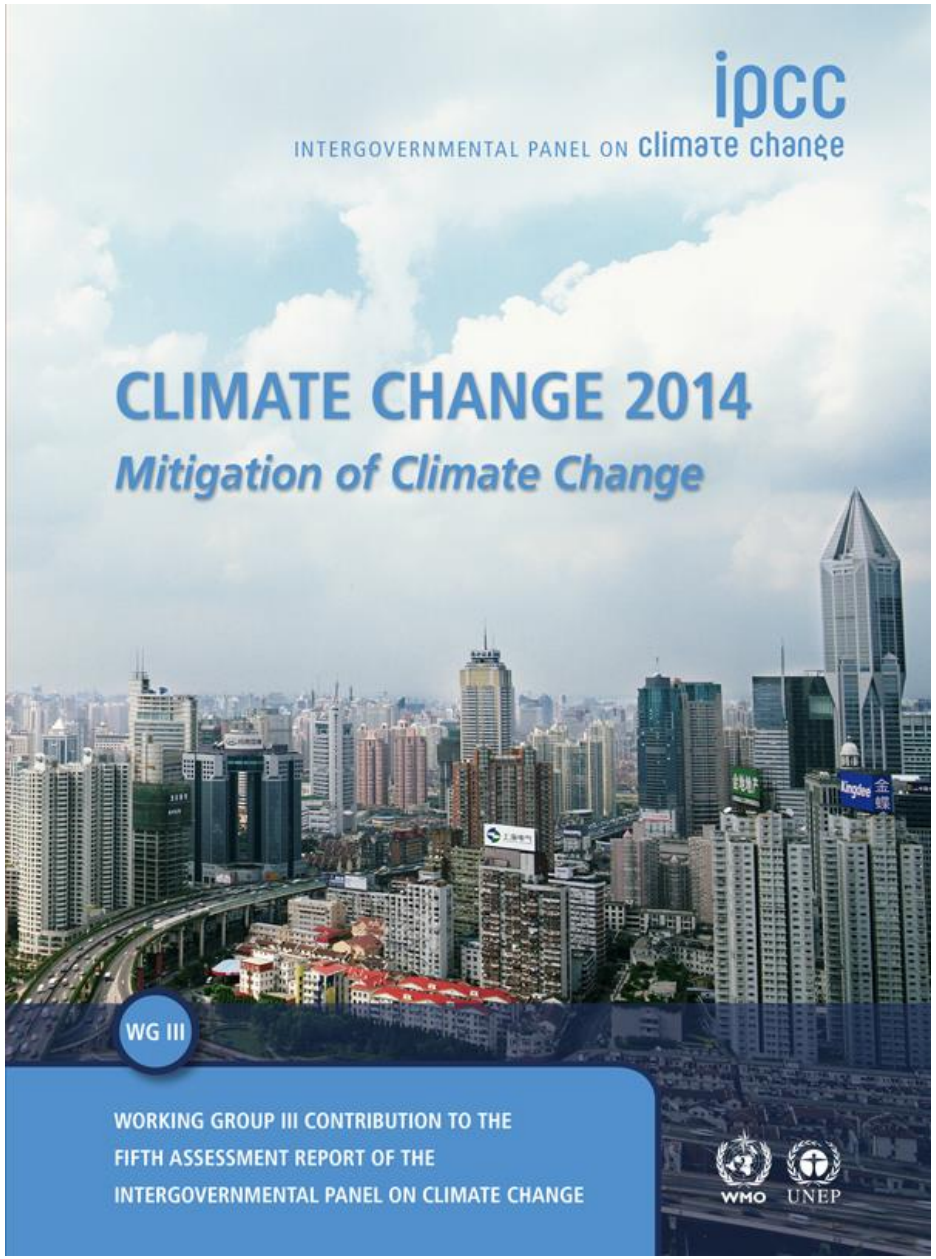
AR5

AR6

2021-22



IPCC AR5 (2014): First standalone chapter on urban mitigation



12

Human Settlements, Infrastructure, and Spatial Planning

Coordinating Lead Authors:
Karen C. Seto (USA), Shobhakar Dhakal (Nepal/Thailand)

Lead Authors:
Anthony Bigio (Italy/USA), Hilda Blanco (USA), Gian Carlo Delgado (Mexico), David Dewar (South Africa), Luxin Huang (China), Atsushi Inaba (Japan), Arun Kansal (India), Shuaib Lwasa (Uganda), James McMahon (USA), Daniel B. Müller (Switzerland/Norway), Jin Murakami (Japan/China), Harini Nagendra (India), Anu Ramaswami (USA)

Contributing Authors:
Antonio Bento (Portugal/USA), Michele Betsill (USA), Harriet Bulkeley (UK), Abel Chavez (USA/Germany), Peter Christensen (USA), Felix Creutzig (Germany), Michail Fragkias (Greece/USA), Burak Güneralp (Turkey/USA), Leiwen Jiang (China/USA), Peter Marcotullio (USA), David McCollum (IIASA/USA), Adam Millard-Ball (UK/USA), Paul Pichler (Germany), Serge Salat (France), Cecilia Tacoli (UK/Italy), Helga Weisz (Germany), Timm Zwickel (Germany)

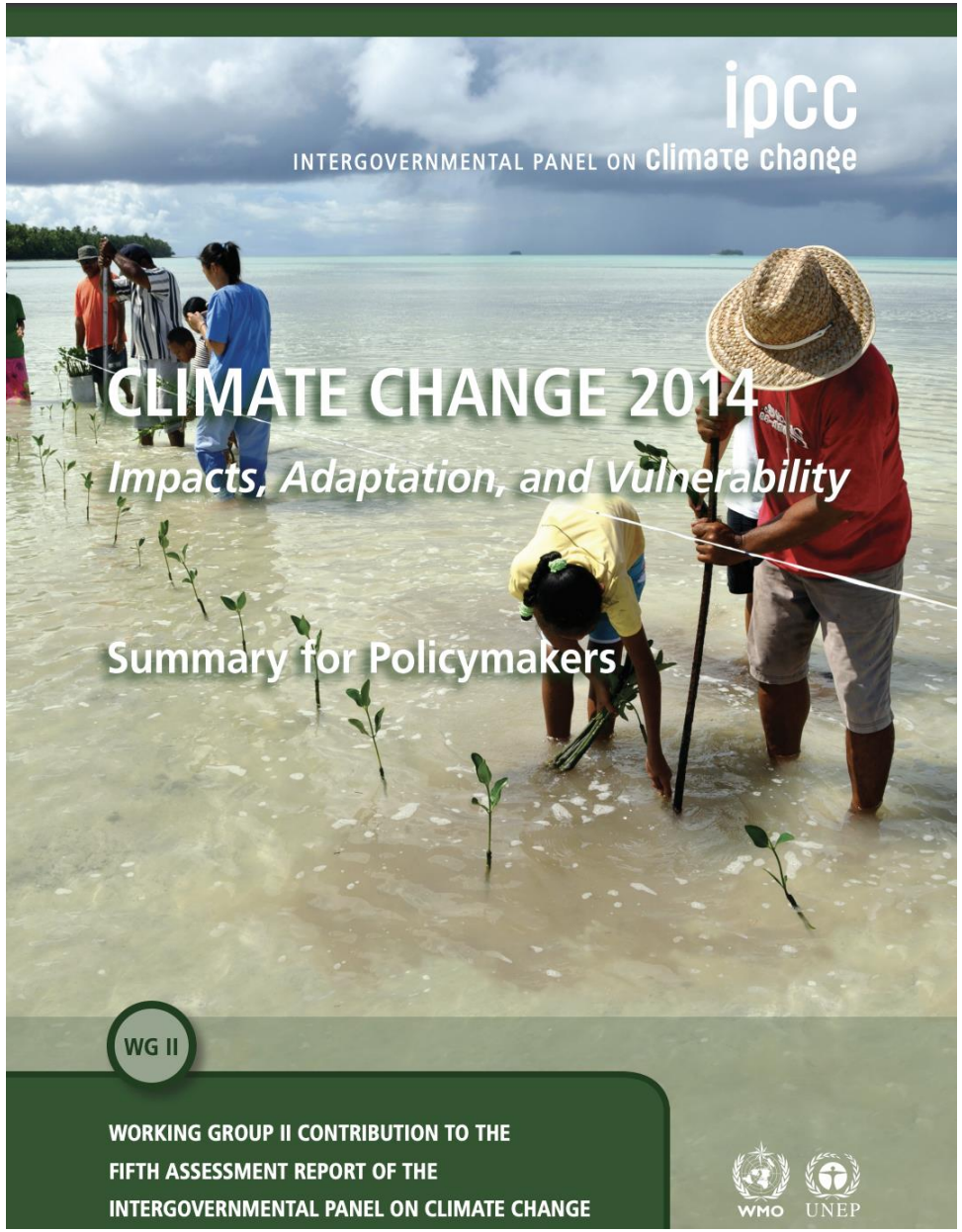
Review Editors:
Robert Cervero (USA), Julio Torres Martinez (Cuba)

Chapter Science Assistants:
Peter Christensen (USA), Cary Simmons (USA)

This chapter should be cited as:

Seto K.C., S. Dhakal, A. Bigio, H. Blanco, G.C. Delgado, D. Dewar, L. Huang, A. Inaba, A. Kansal, S. Lwasa, J.E. McMahon, D.B. Müller, J. Murakami, H. Nagendra, and A. Ramaswami, 2014: Human Settlements, Infrastructure and Spatial Planning. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

…and standalone chapter on urban adaptation



8

Urban Areas

Coordinating Lead Authors:
Aromar Revi (India), David E. Satterthwaite (UK)

Lead Authors:
Fernando Aragón-Durand (Mexico), Jan Corfee-Morlot (USA/OECD), Robert B.R. Kiunsi (United Republic of Tanzania), Mark Pelling (UK), Debra C. Roberts (South Africa), William Solecki (USA)

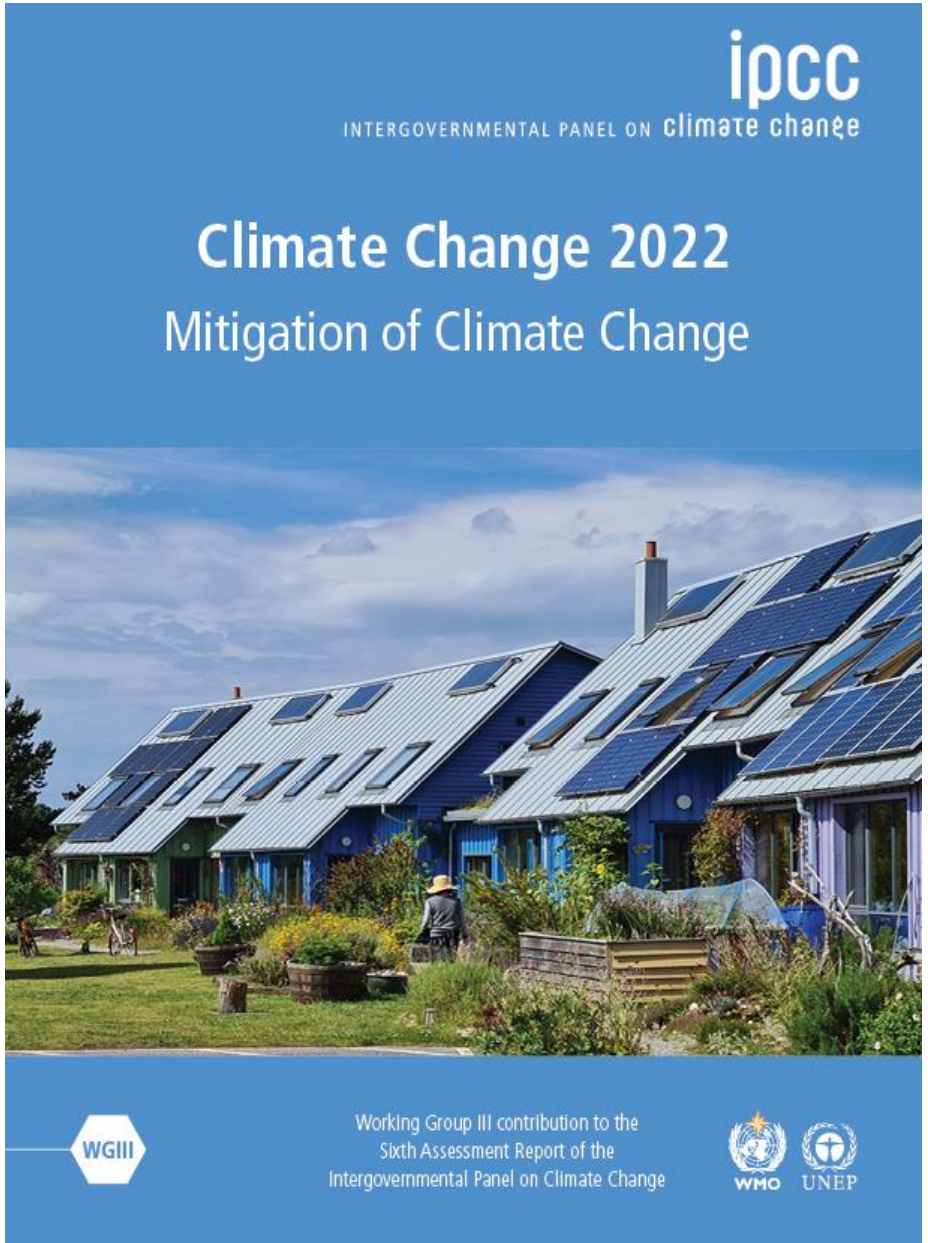
Contributing Authors:
Jo da Silva (UK), David Dodman (Jamaica), Andrew Maskrey (UK), Sumetee Pahwa Gajjar (India), Raf Tuts (Belgium)

Review Editors:
John Balbus (USA), Omar-Dario Cardona (Colombia)

Volunteer Chapter Scientist:
Alice Sverdlik (USA)

This chapter should be cited as:
Revi, A., D.E. Satterthwaite, F. Aragón-Durand, J. Corfee-Morlot, R.B.R. Kiunsi, M. Pelling, D.C. Roberts, and W. Solecki, 2014: Urban areas. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 535-612.

IPCC AR6 (2022): More focus on urban in all 3 WGs



8

Urban Systems and Other Settlements

Coordinating Lead Authors:
Shuaib Lwasa (Uganda), Karen C. Seto (the United States of America)

Lead Authors:
Xuemei Bai (Australia), Hilda Blanco (the United States of America), Kevin R. Gurney (the United States of America), Şiir Kılkış (Turkey), Oswaldo Lucon (Brazil), Jin Murakami (Japan), Jiahua Pan (China), Ayyoob Sharifi (Japan/Iran), Yoshiki Yamagata (Japan)

Contributing Authors:
Vanesa Castán Broto (United Kingdom/Spain), Winston Chow (Singapore), Galina Churkina (the Russian Federation/Germany), Felix Creutzig (Germany), David Dodman (Jamaica/United Kingdom), Burak Güneralp (Turkey/the United States of America), Rafiq Hamdi (Belgium), Bronwyn Hayward (New Zealand), Angel Hsu (the United States of America/Singapore), Lucy Hutyra (the United States of America), Nadja Kabisch (Germany), Meredith Keller (the United States of America), Timon McPhearson (the United States of America), Peter Newman (Australia), David Nowak (the United States of America), Alan Organschi (the United States of America), Minal Pathak (India), Mark Pelling (United Kingdom), Clara Pregitzer (the United States of America), Anu Ramaswami (the United States of America), Mia Reback (the United States of America), Diana Reckien (Germany), Jen Shin (the United States of America), Michael Westphal (the United States of America), Lee White (Australia)

Review Editors:
Carolina Burle Schmidt Dubeux (Brazil), Diana Ürge-Vorsatz (Hungary)

Chapter Scientists:
Meredith Keller (the United States of America), Enock Ssekuubwa (Uganda)

This chapter should be cited as:
Lwasa, S., K.C. Seto, X. Bai, H. Blanco, K.R. Gurney, Ş. Kılkış, O. Lucon, J. Murakami, J. Pan, A. Sharifi, Y. Yamagata, 2022: Urban systems and other settlements. In IPCC, 2022: *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926.010

Approved Outline

Chapter 1: Cities in the context of climate change

Chapter 2: Cities in a changing climate: trends, challenges and opportunities

Chapter 3: Actions and solutions to reduce urban risks and emissions

Chapter 4: How to facilitate and accelerate change

Chapter 5: Solutions by city types and regions

Major knowledge gaps

Knowledge that is comparable across spatial scales and regions while remaining meaningful at the local scale

The Physical Science Basis

Climate Change

Urban Climate

Urban Areas

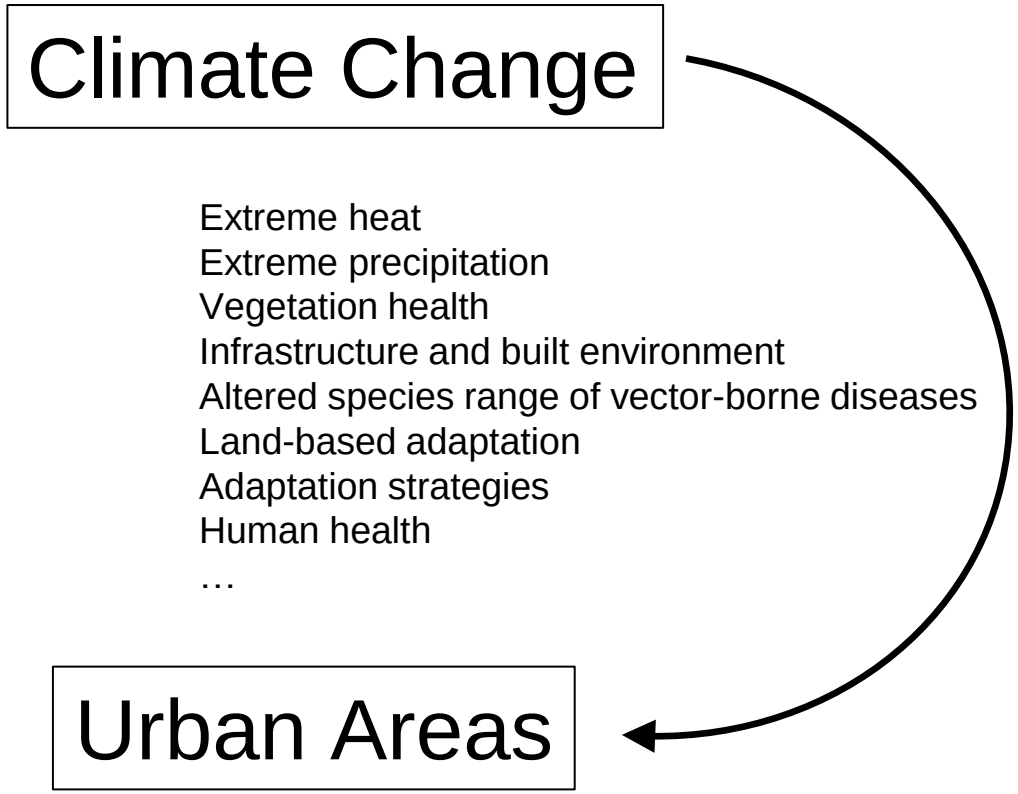
The Physical Science Basis

Climate Change

- **How urban and atmospheric processes link and interact across scales**
- **Feedbacks between urbanization and regional and global climate**
- **How do built-up infrastructure, construction materials and design principles affect urban climate?**

Urban Areas

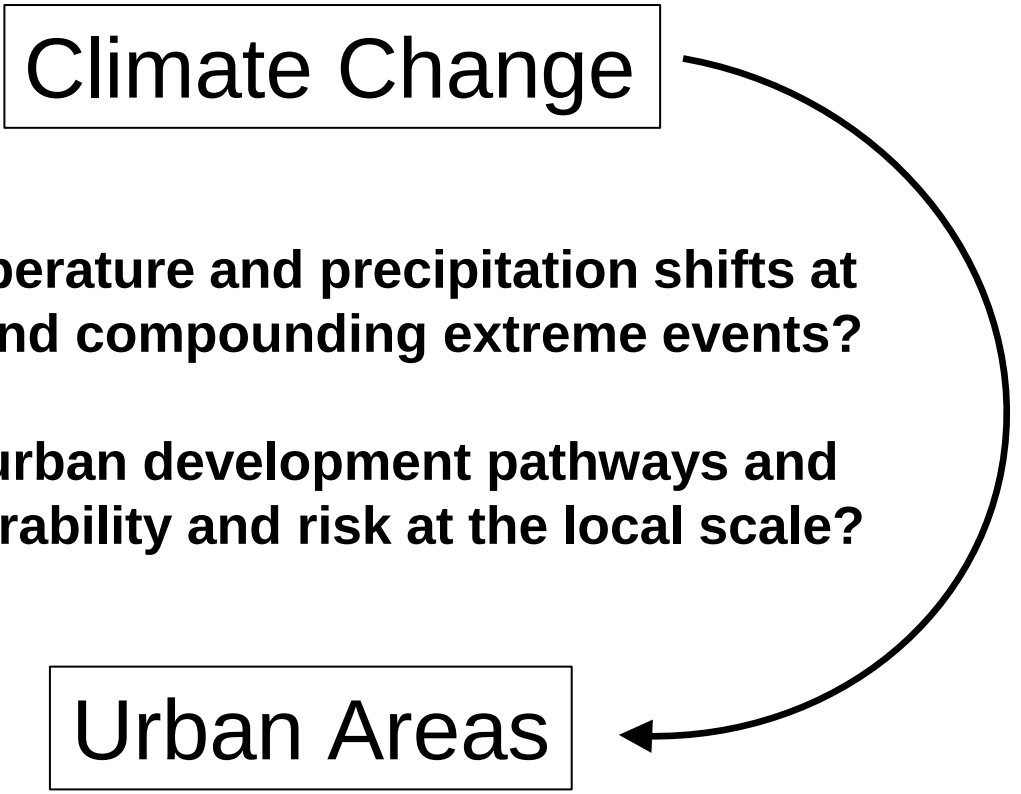
Impacts, Adaptation, and Vulnerability



Impacts and Risks, including

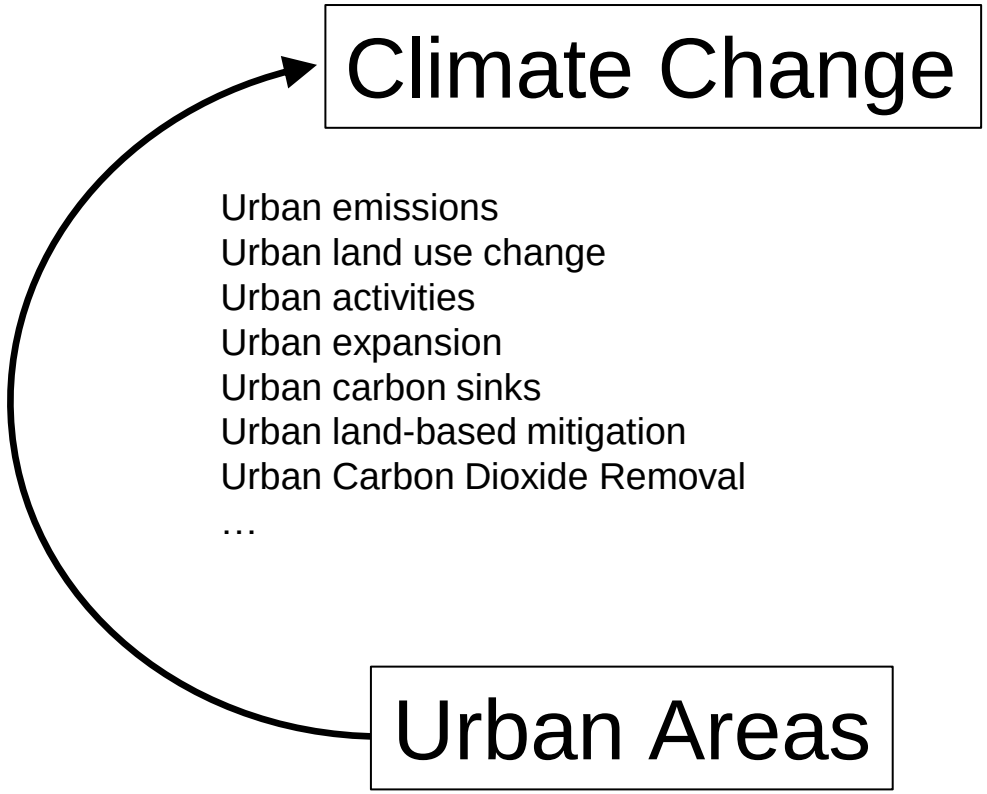
1. **Economic and Non-Economic Losses and Damages**
2. **Compounding and Cascading Aspects**

Impacts, Adaptation, and Vulnerability



- **How will future climate affect temperature and precipitation shifts at local scale, including cascading and compounding extreme events?**
- **What are the combined effects of urban development pathways and climate scenarios on human vulnerability and risk at the local scale?**

Mitigation of Climate Change



Urban Energy and Emissions, Mitigation Options

How do urban form and urban function interact and affect urban climate?

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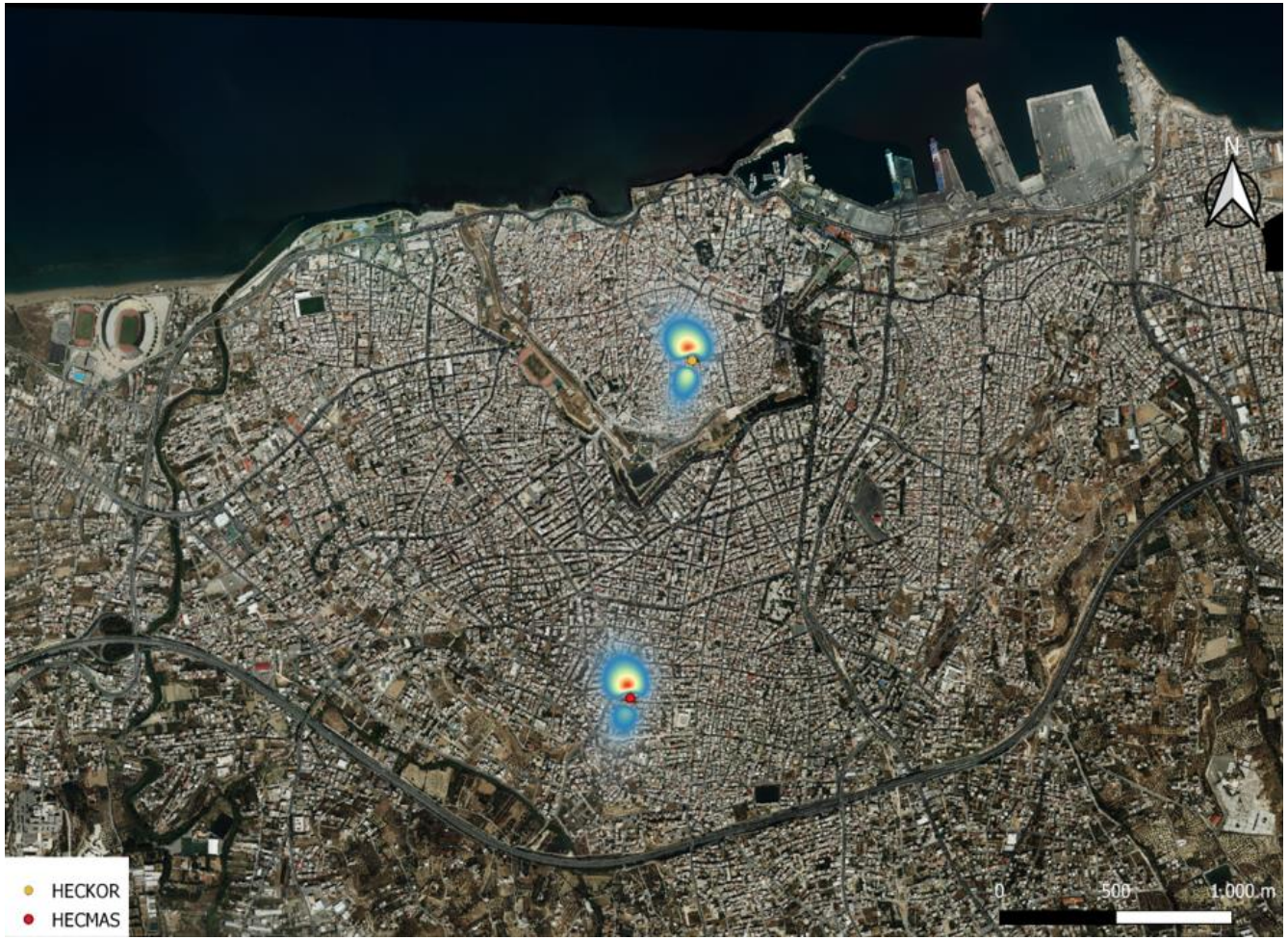
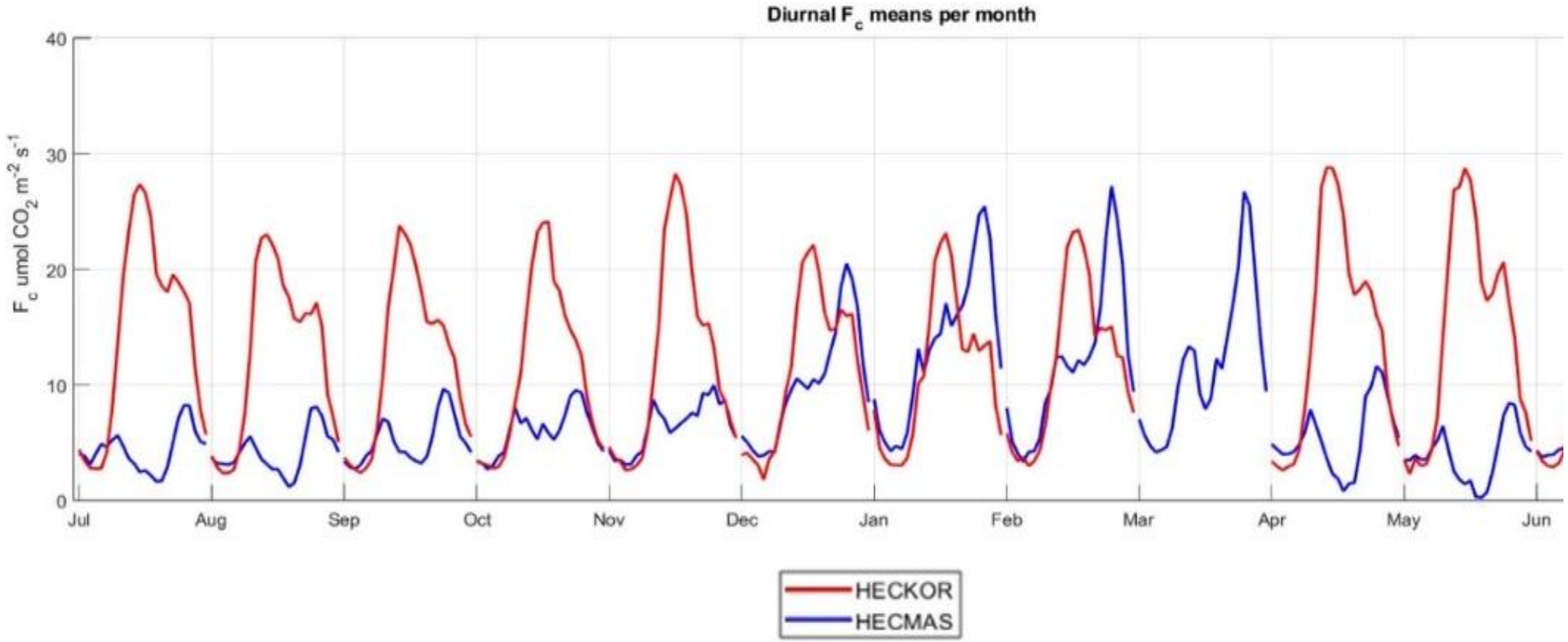


Source: Nektarios Chrysoulakis, FORTH, Crete

How do urban form and urban function interact and affect urban climate?



Source: Nektarios Chrysoulakis, FORTH, Crete

What are the cumulative effects of emerging technologies and solutions for climate change mitigation and adaptation on urban climate?

USDA Forest Service
U.S. DEPARTMENT OF AGRICULTURE

URBAN AND COMMUNITY FORESTRY GRANTS

USDA is an equal opportunity provider, employer, and lender.

$1.5 Billion to Expand Tree Canopy and Access to Nature

100% of Benefits Will Flow to Communities in Greatest Need

Urban and Community Forestry Grants, authorized under the Inflation Reduction Act, provide funding to community-based organizations, Tribes, State and local agencies, public colleges and universities, and non-profits working to provide equitable access to trees and nature and the benefits they provide to urban communities.

Investing in a Healthier Future for America

385 grants were awarded to 50 states, 2 territories, 3 U.S.-affiliated Pacific Islands, and multiple Tribal communities with 100% of benefits flowing to those in greatest need.

Expanding Tree Canopy in our Communities

Benefiting cities, towns, villages, non-profit organizations, Tribes, community and faith-based organizations, and minority serving institutions.

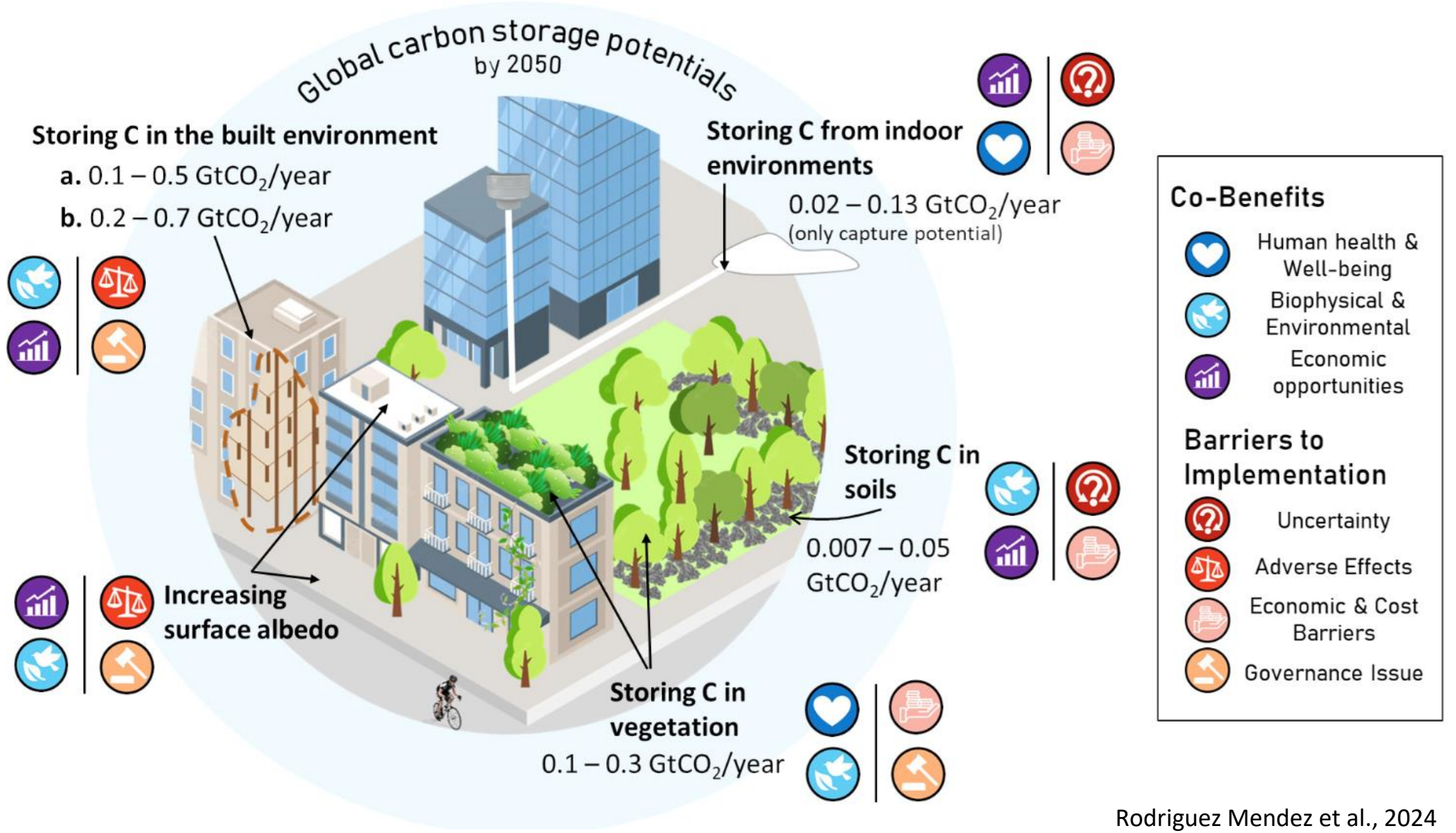
The Benefits of Trees in our Communities

Trees mitigate extreme heat, conserve energy, provide shade, absorb storm water, create wildlife habitat, and filter air and water. An urban tree canopy leads to better health outcomes, economic opportunities and jobs, and increased property values.

Confronting the Growing Threat of Extreme Heat and Climate Change

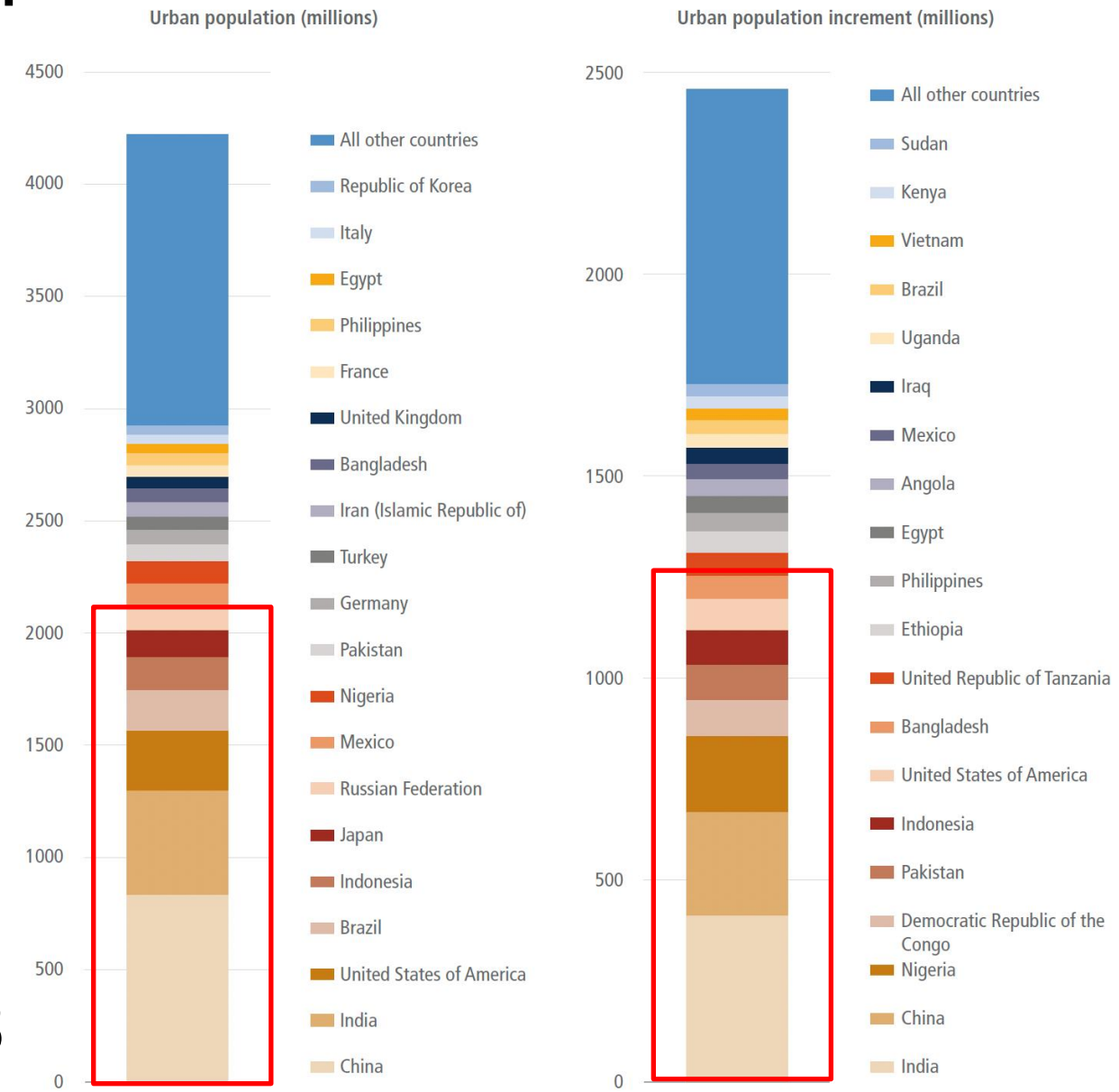
July 2023 was the hottest month on record in communities around the country. Research has shown tree canopy cover reduces temperatures 11–19 °F compared to communities with no tree cover.

Urban Carbon Dioxide Removal (CDR)



Rodriguez Mendez et al., 2024

Information for cities across income levels and sizes especially in the Global South

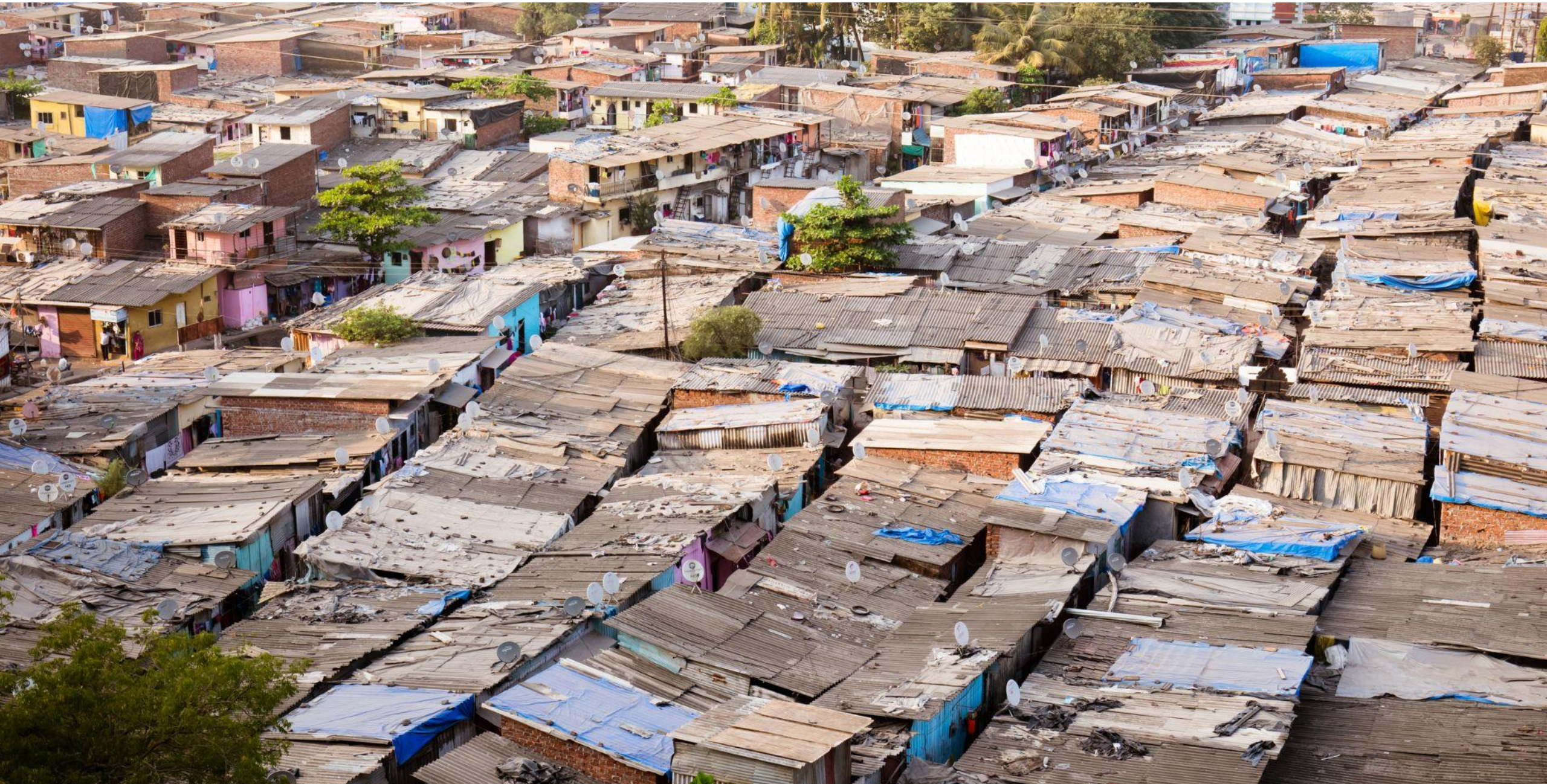


2018

2050

IPCC AR6, 2022

Informality



October, 2026

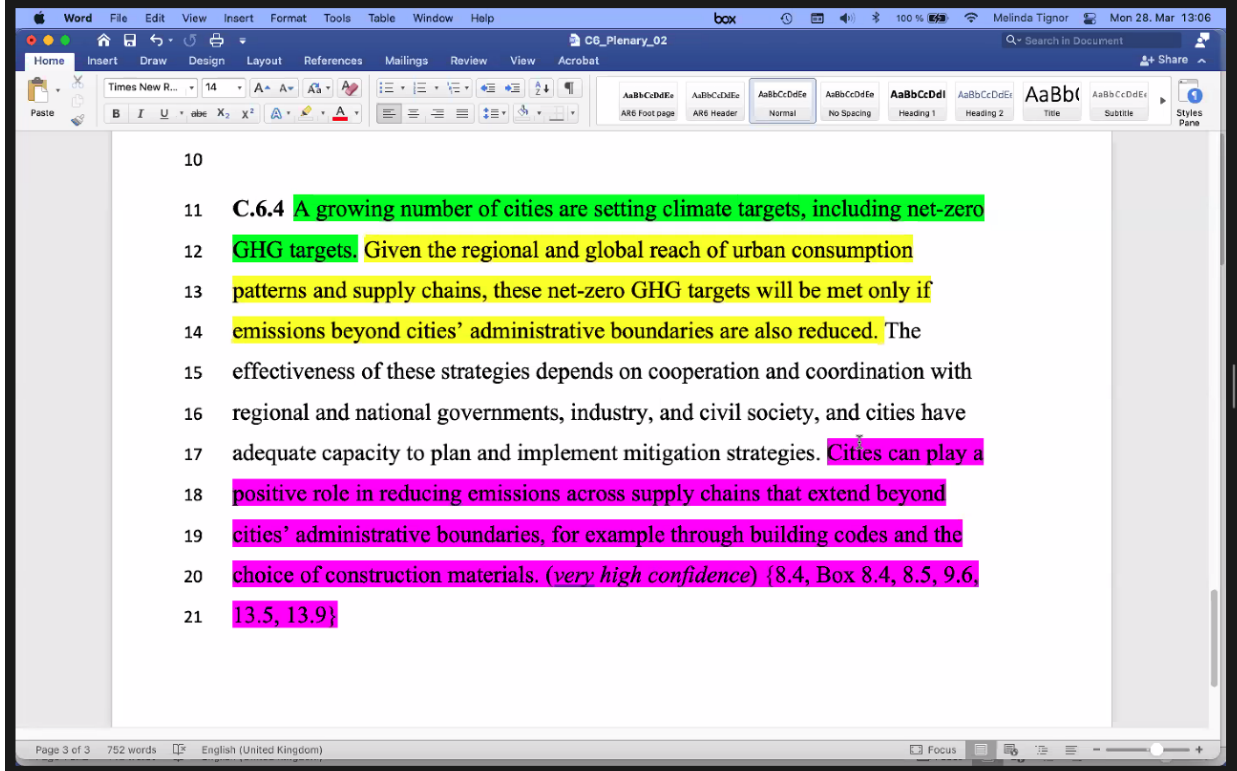
IPCC 5th Assessment Report Approval Plenary (2014)

IPCC 5th Assessment Report Approval Plenary (2014)

IPCC 5th Assessment Report Approval Plenary (2014)

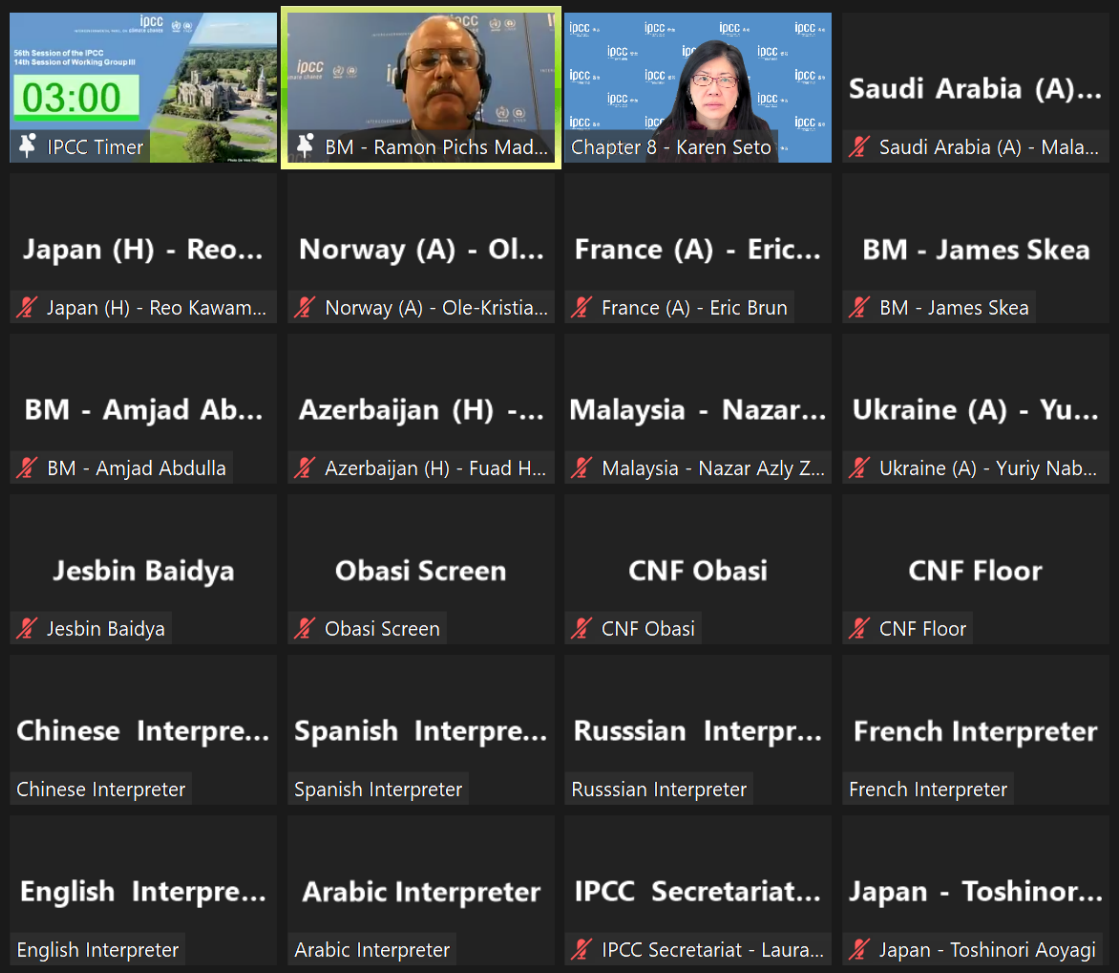

SAUDI ARABIA

IPCC 6th Assessment Report Approval Plenary (2022)

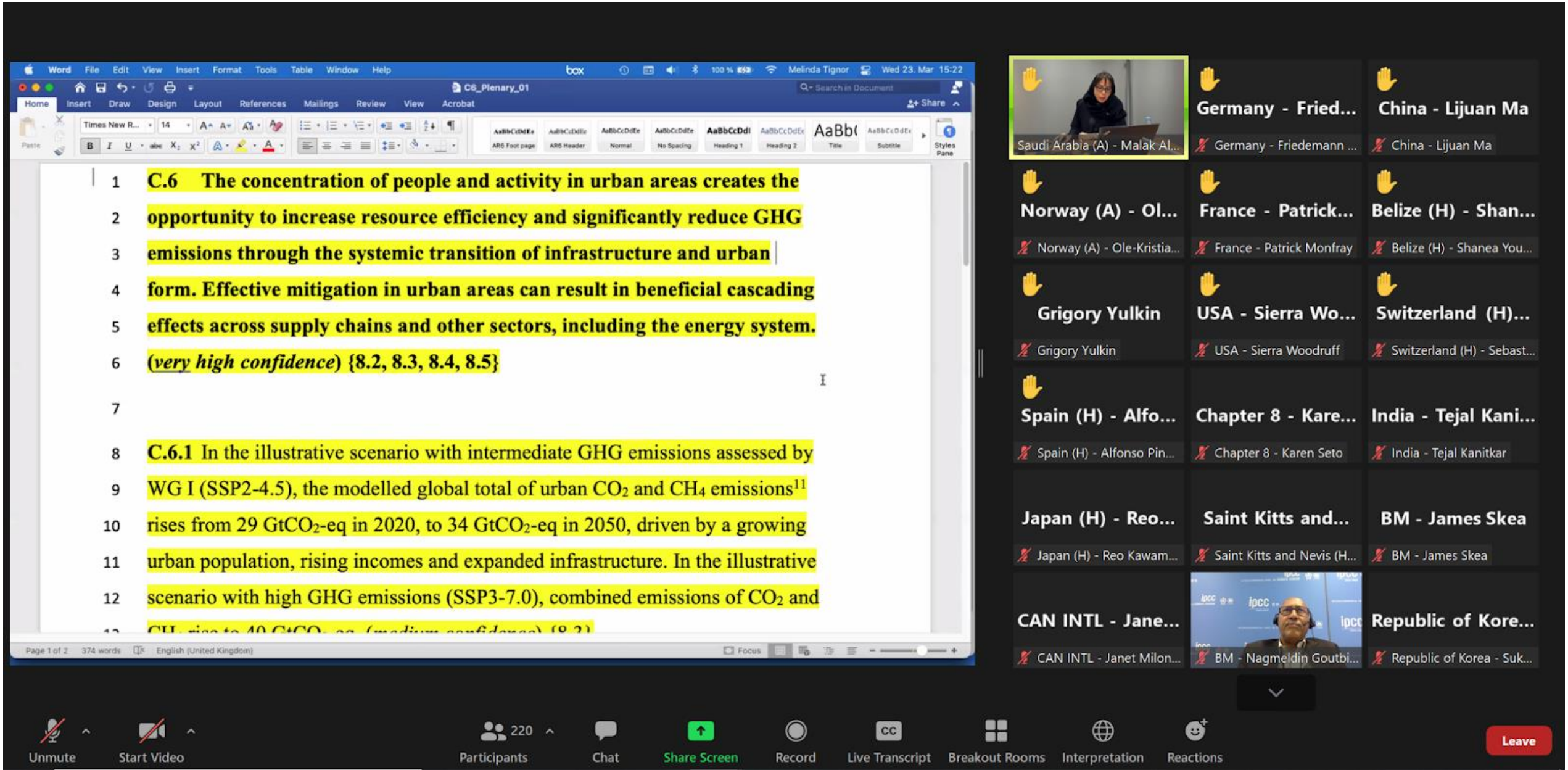


10

11 **C.6.4** A growing number of cities are setting climate targets, including net-zero
12 GHG targets. Given the regional and global reach of urban consumption
13 patterns and supply chains, these net-zero GHG targets will be met only if
14 emissions beyond cities' administrative boundaries are also reduced. The
15 effectiveness of these strategies depends on cooperation and coordination with
16 regional and national governments, industry, and civil society, and cities have
17 adequate capacity to plan and implement mitigation strategies. Cities can play a
18 positive role in reducing emissions across supply chains that extend beyond
19 cities' administrative boundaries, for example through building codes and the
20 choice of construction materials. (*very high confidence*) {8.4, Box 8.4, 8.5, 9.6,
21 13.5, 13.9}



IPCC 6th Assessment Report Approval Plenary (2022)



Thank you for your attention

Karen C. Seto
Frederick C. Hixon Professor of Geography & Urbanization Science
Co-Director, Yale Center for Geospatial Solutions
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