

# FINDINGS FROM INNOVATE4CITIES 2021 AND UPDATE TO THE GLOBAL RESEARCH AND ACTION AGENDA

INNOVATE  CITIES

11-15 OCTOBER 2021

#Innovate4Cities  
[www.innovate4cities.org](http://www.innovate4cities.org)



GLOBAL COVENANT  
of MAYORS for  
CLIMATE & ENERGY

## Findings from Innovate4Cities 2021 and Update to the Global Research and Action Agenda

This report has been developed by the Global Covenant of Mayors for Climate & Energy (GCoM) and UN-Habitat based on the outcomes of 2021 Innovate4Cities Conference co-sponsored by UN-Habitat, GCoM and the Intergovernmental Panel on Climate Change. It is intended to inform research, policy and public discussions on the global research and action agenda for cities and climate change science. The authors have sought to ensure the accuracy of the material in this document, but they will not be liable for any ramifications incurred through the use of this report.

Published by Global Covenant of Mayors for Climate & Energy (GCoM) and UN-Habitat, 2022.

**Coordinating Lead Authors:** Brenna Walsh and Julie Greenwalt

**Authors:** Brenna Walsh, Julie Greenwalt, Cathy Oke, Paris Hadfield, Ariana Dickey, Marlies Craig, Michelle North, Nina Hunter, Andrew Okem, Steven Bland, Jorn Verbeeck, Bernhard Barth, Andy Deacon, Hedda Roberts, Jasdeep Randhawa, Sai Joshi, Diana Carrillo Silva, Margot Lootens, Meredith Adler, Kyra Appleby, Silvia Assalini, Aditya Bahadur, Xuemei Bai, Aliyu Barau, Pandora Batra, Paolo Bertoldi, Sanjaya Bhatia, Edgardo Bilsky, Natalia Bonilla, Harriet Bulkeley, Oscar Chamat, Winston Chow, Maria Cortes-Puch, Elena Crete, Ivana Del Rio, Gian Carlo Delgado Ramos, Maria Dombrov, David Dodman, Aklilu Fikresilassie, Rich Freeh, Curt Garrigan, Nick Godfrey, Leo Horn-Phathanothai, Rachel Huxley, Nicola Iezza, Arne Janssen, Indy Johar, Ghislaine Kieffer, Merlin Lao, Elsa Lefevre, Eugenia Mansutti, Augustin Maria, Joanna Masic, Wanjira Mathai, Tadashi Matsumoto, Rodrigo Messias, Dhanashri Miraijkar, Arnoud Molenaar, Greg Munro, Youssef Nassef, Thomas Osdoba, Martina Otto, Firdaous Oussidhoum, Sheela Patel, Alfredo Redondo, Aromar Revi, Debra C. Roberts, Mauricio Rodas, Cynthia Rosenzweig, Pourya Salehi, Simone Sandholz, Aniessa Sari, Dewi Sari, Derya Sasmaz, Seth Schultz, Himanshu Shekhar, Giles Sioen, Marco Silvestri, Richard Sliuzas, Raísa Soares, William Solecki, Meggan Spires, Maryke van Staden, Bruce Stiftel, Kate Strachan, Sandra Swanson, Diana Üрге-Vorsatz, Octavia de la Varga Mas, Jon Walton, Helen Watts, Panmao Zhai & Shu Zhu.

**To cite this report:** Global Covenant of Mayors for Climate and Energy & UN-Habitat. (2022) *Discussions and Findings from the 2021 Innovate4Cities conference: new insights for the 2018 Global Research and Action Agenda on Cities and Climate Change Science*. Walsh, B. (ed) and Greenwalt, J. (ed). Oke, C., Hadfield, P., Dickey, A., Craig, M., North, M., Hunter, N., Okem, A., Bland, S., Verbeeck, J., Barth, B., Deacon, A., Roberts, H., Randhawa, J., Joshi S., Carrillo Silva, D., Lootens, M., Adler, M., Appleby, K., Assalini S., Bahadur, A., Bai, X., Barau, A., Batra P., Bertoldi, P., Bhatia, S., Bilsky, E., Bonilla, N., Bulkeley, H., Chamat, O., Chow, W., Cortes-Puch, M., Crete, E., Del Rio, I., Delgado Ramos, G.C., Dombrov, M., Dodman, D., Fikresilassie, A., Freeh, R., Garrigan, C., Godfrey, N., Horn-Phathanothai, L., Huxley, R., Iezza, N., Janssen, A., Johar, I., Kieffer, G., Lao, M., Lefevre, E., Mansutti, E., Maria, A., Masic, J., Mathai, W., Matsumoto, T., Messias, R., Miraijkar, D., Molenaar, A., Munro, G., Nassef, Y., Osdoba, T., Otto, M., Oussidhoum, F., Patel, S., Redondo, A., Revi A., Roberts, D. C., Rodas, M., Rosenzweig, C., Salehi, P., Sandholz, S., Sari, A., Sari D., Sasmaz, D., Schultz, S., Shekhar, H., Sioen, G., Silvestri, M., Sliuzas, R., Soares, R., Solecki, W., Spires, M., van Staden, M., Stiftel B., Strachan, K., Swanson, S., Üрге-Vorsatz, D., de la Varga Mas, O., Walton, J., Watts, H., Zhai, P., & Zhu, S. <https://doi.org/10.26188/19624029>

This report is under a Creative Commons license (Attribution-Non-Commercial 4.0 International). <https://doi.org/10.26188/19624029>

HS Number: HS/003/22E

### Disclaimer

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the secretariat of the United Nations concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries regarding its economic system or degree of development. Excerpts may be reproduced without authorization, on condition that the source is indicated.

Views expressed in this publication do not necessarily reflect those of the United Nations Human Settlements Programme, the United Nations and its Member States.

IPCC co-sponsorship does not imply IPCC endorsement or approval of this report or any recommendations or conclusions contained herein. Neither the papers presented at the workshop nor the report have been subjected to IPCC review.



# TABLE OF CONTENTS

<b>Executive Summary</b>	<b>5</b>
<b>Context and Purpose</b>	<b>8</b>
<b>Section 1: Catalyzing Action and Implementation</b>	<b>11</b>
<b>Changing the Mindset: Integrated, people centered visions for the future of cities</b>	<b>13</b>
<b>Transformative Processes to Close the Implementation Gap</b>	<b>13</b>
Diverse local participation and co-creation	13
Finance	15
Capacity	16
Partnerships	17
Research	18
<b>Recognizing and overcoming constraints to climate action in cities</b>	<b>18</b>
<b>Section 2: Research Gaps by GRAA topic</b>	<b>20</b>
<b>Key Topical Research Areas</b>	<b>21</b>
Built and Blue and Green Infrastructure	21
Urban Planning and Design	21
Informality	24
Finance	25
Uncertainty	26
Sustainable Consumption and Production	27
History and Cultural Heritage	28
<b>Cross Cutting Issues</b>	<b>29</b>

Systems Approach	29
Health	30
Scale	31
Governance and Institutions	32
Digitalisation and Smart Cities	33
Observations, Data and Modelling at the City Scale	34
Justice and Equity	35
<b>Section 3: Regional insights</b>	<b>37</b>
<b>Key Topical Research Areas</b>	<b>37</b>
Built and Blue and Green Infrastructure	37
Urban Planning and Design	38
Informality	39
Sustainable Consumption and Production	39
Finance	39
History and Cultural Heritage	40
<b>Cross Cutting Issues</b>	<b>40</b>
Health	40
Governance and Institutions	40
Digitalisation and Smart Cities	41
Observations, Data and Modelling at the City Scale	41
Justice and Equity	42
<b>Methodology</b>	<b>43</b>
<b>Acknowledgements</b>	<b>44</b>
<b>References</b>	<b>45</b>

## EXECUTIVE SUMMARY

According to the most recent UN estimates approximately 56% of the world's 7.9 billion inhabitants live in cities and their extended urbanised regions (UN DESA, 2019). It has become clear that cities represent both a significant challenge and opportunity for those focused on addressing the climate change crisis. Small and medium sized cities in the Global South, for example, have high levels of vulnerable populations and limited response capacity. Additionally, cities, their stakeholders and leaders are very innovative with respect to climate change adaptation and mitigation

After a proposal for a Special Report was put forward by the government of South Africa during the 6th assessment cycle (AR6), at the 43rd Session, the Intergovernmental Panel on Climate Change (IPCC), committed to a Special Report on Climate Change and Cities as part of the AR7. To stimulate knowledge exchange, and the production of evidence-based reports and peer-reviewed publications on cities and climate change, at its 44th meeting, the IPCC approved a co-sponsorship proposal for an international Cities and Climate Change Science conference, held in Edmonton, Canada in March 2018. Urban policymakers, urban practitioners, researchers and other societal actors came together to. The primary output of this conference was the Global Research and Action Agenda on Cities and Climate Change Science (GRAA) (World Climate Research Programme, 2019) which emphasized the research needs for increased action on climate change in cities.

In the months following the conference, the Global Covenant of Mayors for Climate and Energy (GCoM) launched the Innovate4Cities initiative to support and expand the research and action called for within the 2018 Cities and Climate Change Science conference's GRAA. The first Innovate4Cities conference (Innovate4Cities 2021) was held virtually in October 2021 by GCoM and UN-Habitat, and co-sponsored by the IPCC, bringing together representatives from academia, the private sector, NGOs, local governments, national governments, city networks, youth, international organisations and other stakeholders engaged in addressing climate change in cities. Building on the Global Research and Action Agenda, the Innovate4Cities 2021 conference was centred on the nexus between science, practice and innovation vital to realizing ambitious climate change action in cities across the globe, with a strong focus on local and regional voices. The Innovate4Cities 2021 conference had 6901 registered participants from 159 countries and featured 886 speakers across 191 sessions.

The Innovate4Cities 2021 conference was an important stocktaking of progress in the production of evidence-based reports and peer-reviewed publications on cities and climate change, and emerging research gaps which have come about since the Cities and Climate Change Science conference, and which can contribute to the preparation of the AR7 Special Report on Climate Change and Cities.

## CATALYSING ACTION AND IMPLEMENTATION

While the 2018 Cities and Climate Change Science Conference discussions focused on bringing together the scientific community, practitioners and policymakers to discuss the next frontier of research on cities and climate change, Innovate4Cities 2021 focused on research and innovation as well as closing the gap between ambition and implementation. To catalyse action to close the implementation gap, new research and knowledge on methods to change the mindset of urban stakeholders around addressing climate change

and the tools and processes to do so, as illustrated in figure 1 came through very strongly as needs throughout the Innovate4Cities 2021 conference. This initial section in this Findings report is a new addition to the research and action agenda. It is an important framing from which to view the new and updated research gaps identified during Innovate4Cities 2021 to support urgent and widespread uptake of climate change mitigation and adaptation actions, and important factors to consider in filling many of these gaps.

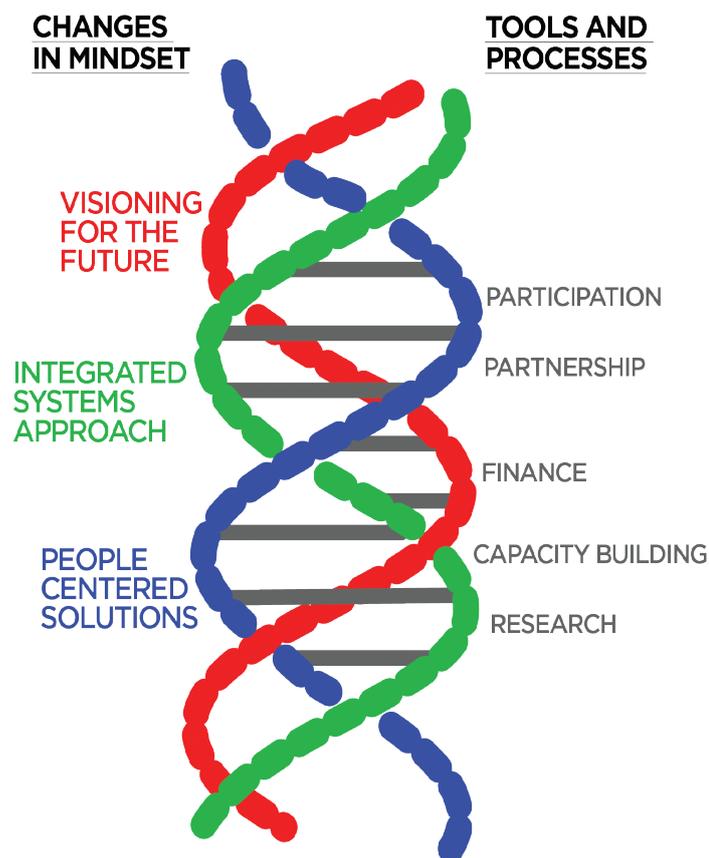


Figure 1: Changes in Mindset and Tools and Processes to catalyse action and implementation.  
Designed by Barbara Summers

## RESEARCH GAPS: TOPICAL RESEARCH AREAS AND CROSS CUTTING ISSUES

The second section focuses on the new and emerging research gaps for the topical areas and cross-cutting issues identified in the Global Research and Action and Agenda and the Innovate4Cities process, including the addition of a new topical research area on History and Cultural Heritage (see Figure 2).

The research gaps identified within each topical and cross-cutting issue reflect a wide array of challenges and efforts in addressing climate change that face the diversity of stakeholders in cities across the world. The research gaps also demonstrate the synergies and interconnectedness of many of these problems and solutions. The full list of new research gaps, with their synergies to other topical and cross-cutting issues as well as the gaps identified under these topics in the Global and Research Action Agenda for Cities and Climate Change are provided in Section 2 of the report.

The final section is another new addition which covers the regional insights on the topical and cross-cutting areas to highlight how research and implementation gaps vary with regional and local context across the ten regions of Latin America and the Caribbean, European Union and Western Europe, South Asia, North America, Africa, Southeast Asia, East Asia, Oceania, Middle East and West Asia, Eastern Europe and Central Asia.

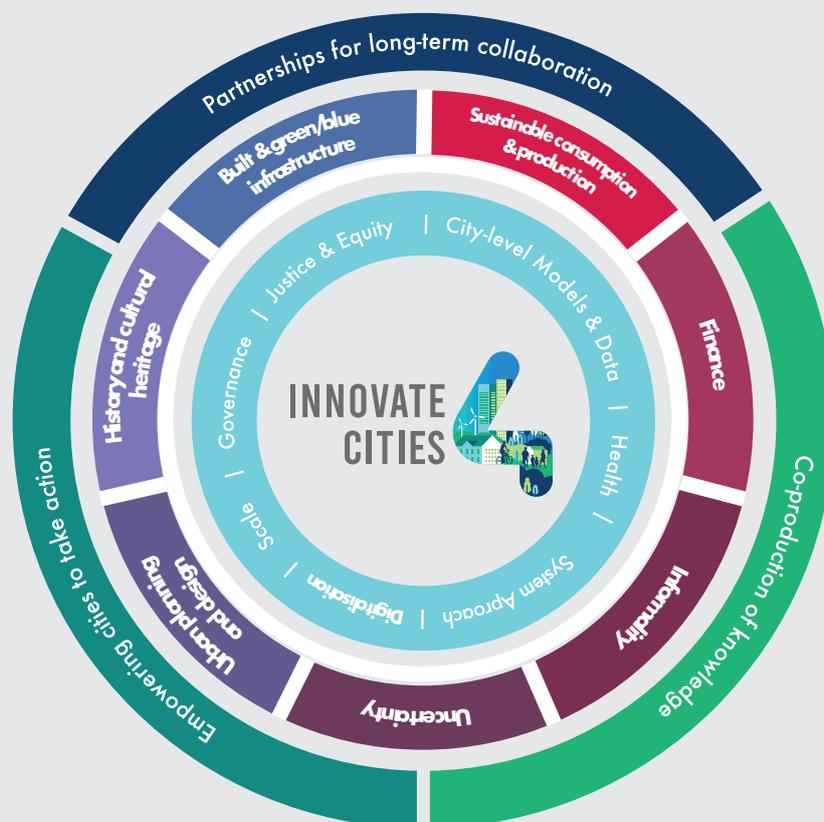


Figure 2: Updated Topical Research Areas and Cross cutting themes (inner ring), Topical themes (middle ring) and Delivery Approaches (outer ring). Modified from original GRAA graphic design by Amanali Cornejo V, World Climate Research Programme (2019).

## CONTEXT AND PURPOSE

The world continues to experience rapid urbanisation. According to the most recent UN estimates approximately 55% of the world's 7.9 billion inhabitants lived in cities and their extended urbanised regions in 2018 (UN DESA, 2019). By the year 2050, it is projected that more than two-thirds of the population will live in these places and much of the population growth over the next 30 years will occur in cities (predominantly those of the Global South). As a well-recognized global mega-trend, it has become clear that cities and their expected growth represent both a significant challenge and opportunity for those focused on addressing the climate change crisis. Small and medium sized cities in the Global South, for example, have high levels of vulnerable populations and limited response capacity. At the same time, cities and their stakeholders and leaders have been well documented as being very innovative with respect to climate change adaptation and mitigation. It is in this multi-faceted and dynamic context that cities and their residents emerge as important actors in the global climate change response.

After a proposal for a Special Report was put forward by the government of South Africa during the 6<sup>th</sup> assessment cycle (AR6), at the 43rd Session of the Intergovernmental Panel on Climate Change (IPCC) in 2016, the IPCC committed to a Special Report on Climate Change and Cities as part of the 7th assessment cycle. To stimulate knowledge exchange, and the production of evidence-based reports and peer-reviewed publications on cities and climate change, at its 44th meeting, the IPCC approved a co-sponsorship proposal for an international Cities and Climate Change Science conference, to be held in 2018. The Cities and Climate

Research Programme, 2019), which identified four cross cutting areas and six topical areas where research and knowledge were needed.

In the months following the conference, the Global Covenant of Mayors for Climate and Energy (GCoM) launched the Innovate4Cities initiative to support and expand the research and action called for within the 2018 Cities and Climate Change Science conference's GRAA. The Innovate4Cities initiative looks to define and address cities' knowledge and innovation opportunities and create partnerships between the scientific and academic community, businesses, and governments to overcome the challenges local governments face between their publicly reported ambition and full-scale implementation.

The first Innovate4Cities conference (Innovate4Cities 2021) was held virtually in October 2021 by GCoM and United Nations Human Settlement Programme (UN-Habitat), and co-sponsored by the IPCC, bringing together representatives from academia, the private sector, NGOs, local governments, national governments, city networks, youth, international organisations and other stakeholders engaged in addressing climate change in cities. Building on the 2018 Cities and Climate Change Science conference and the resultant Global Research and Action Agenda for Cities and Climate Change Science, the Innovate4Cities 2021 conference was centred on the nexus between science, practice and innovation vital to realizing ambitious climate change action in cities across the globe. The conference also examined local challenges and priorities, with a strong focus on local and regional priorities and voices,

预览已结束，完整报告链接和二维码如下：

[https://www.yunbaogao.cn/report/index/report?reportId=5\\_31113](https://www.yunbaogao.cn/report/index/report?reportId=5_31113)

