INNOVATE CITIES

GLOBAL COVENANT of MAYORS for CLIMATE & ENERGY

Bloomberg Philanthropies

Co-funded by the European Union

Powering urban net-zero transitions through research and innovation: Innovate4Cities and the Urban Transitions Mission

Benjamin Jance IV
Director, Climate Action Innovation, Research, & Impact, GCoM

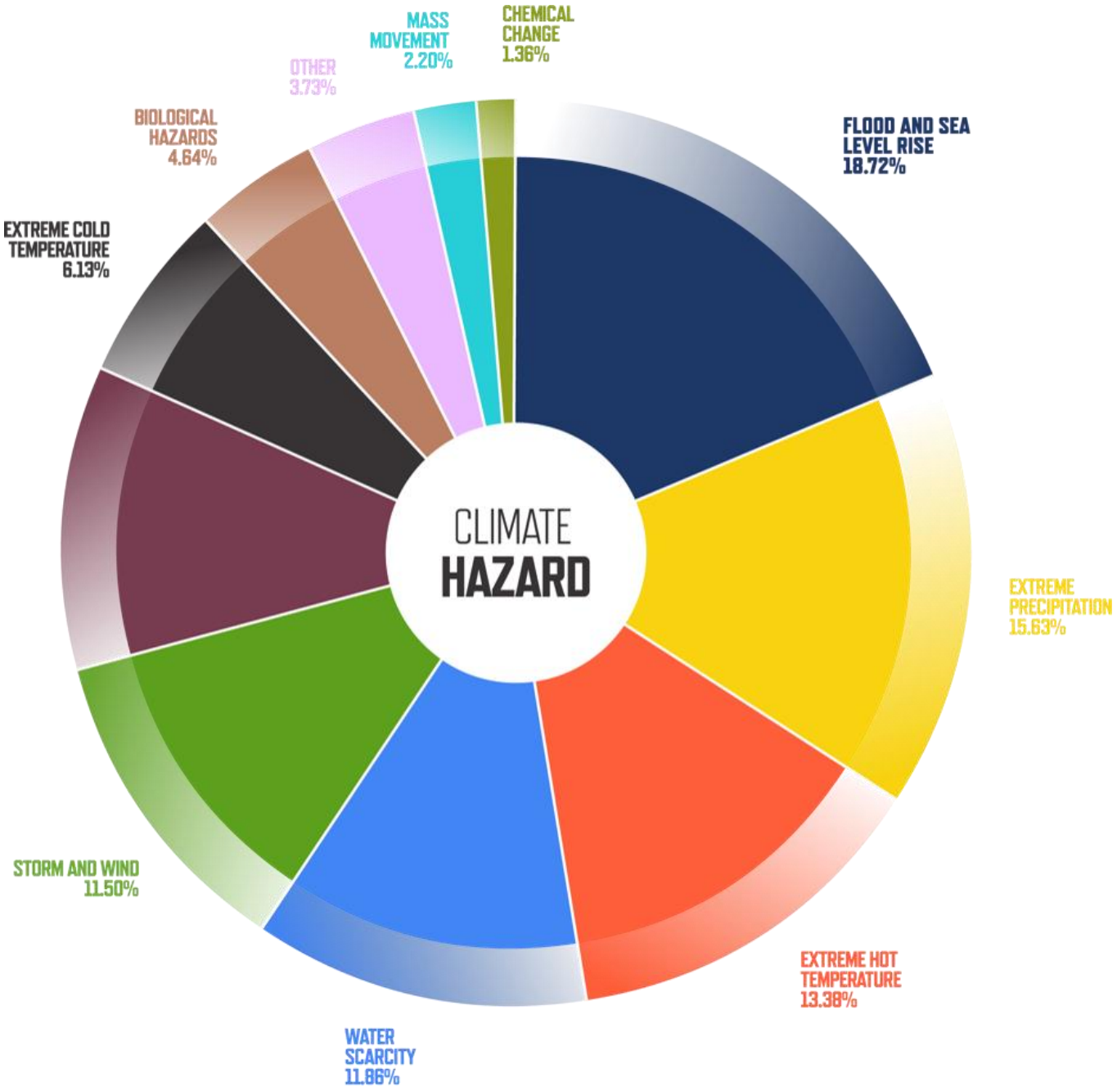
IEA EGRD Workshop on Technologies and Innovations for the Climate-Neutral City

15/04/2025

By 2050, some 70% of all people on Earth will live in urban areas

Source: UN DESA

Thousands of cities face significant climate risks and hazards *today*

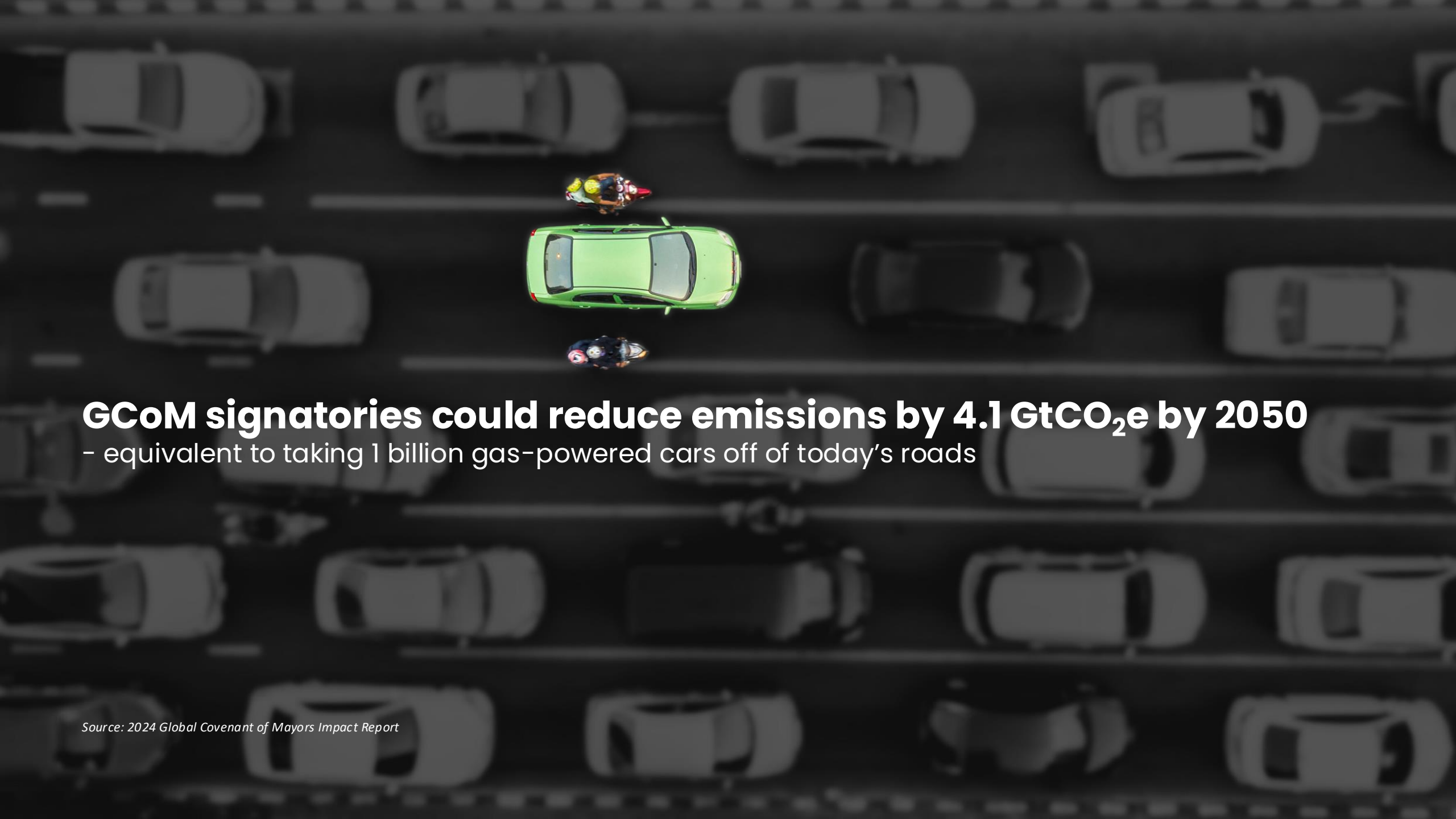


Source: 2024 Global Covenant of Mayors Impact Report

And while a significant proportion of GHG emissions can be attributed to cities...

Source: Coalition for Urban Transitions, 2019

they are our greatest opportunity to overcome the climate emergency.



GCoM signatories could reduce emissions by 4.1 $GtCO_2e$ by 2050

- equivalent to taking 1 billion gas-powered cars off of today's roads

Source: 2024 Global Covenant of Mayors Impact Report

GLOBAL COVENANT of MAYORS for CLIMATE & ENERGY

Bloomberg Philanthropies

Co-funded by the European Union

Cities globally are showing unprecedented ambition for climate & energy action

MITIGATION

	INVENTORY	TARGET	PLAN
	7,963 PREVIOUS IMPACT REPORT: 6,722	8,946 PREVIOUS IMPACT REPORT: 8,570	6,882 PREVIOUS IMPACT REPORT: 6,541
GROWTH	+ 18.46%	+ 4.39%	+ 5.21%

ADAPTATION

	ASSESSMENT	GOAL	PLAN
	2,518 PREVIOUS IMPACT REPORT: 2,044	3,209 PREVIOUS IMPACT REPORT: 2,780	2,005 PREVIOUS IMPACT REPORT: 1,567
GROWTH	+ 23.19%	+ 15.43%	+ 27.95%

ENERGY ACCESS & POVERTY

	ASSESSMENT	TARGET	PLAN
	140 PREVIOUS IMPACT REPORT: 30	393 PREVIOUS IMPACT REPORT: 189	1,249 PREVIOUS IMPACT REPORT: 1,002
GROWTH	+ 366.67%	+ 107.94%	+ 24.65%

Source: 2024 Global Covenant of Mayors Impact Report

GLOBAL COVENANT of MAYORS for CLIMATE & ENERGY

Bloomberg Philanthropies

Co-funded by the European Union

city climate
AMBITION

THE GAPS

funding and financing
capacity
data & tools

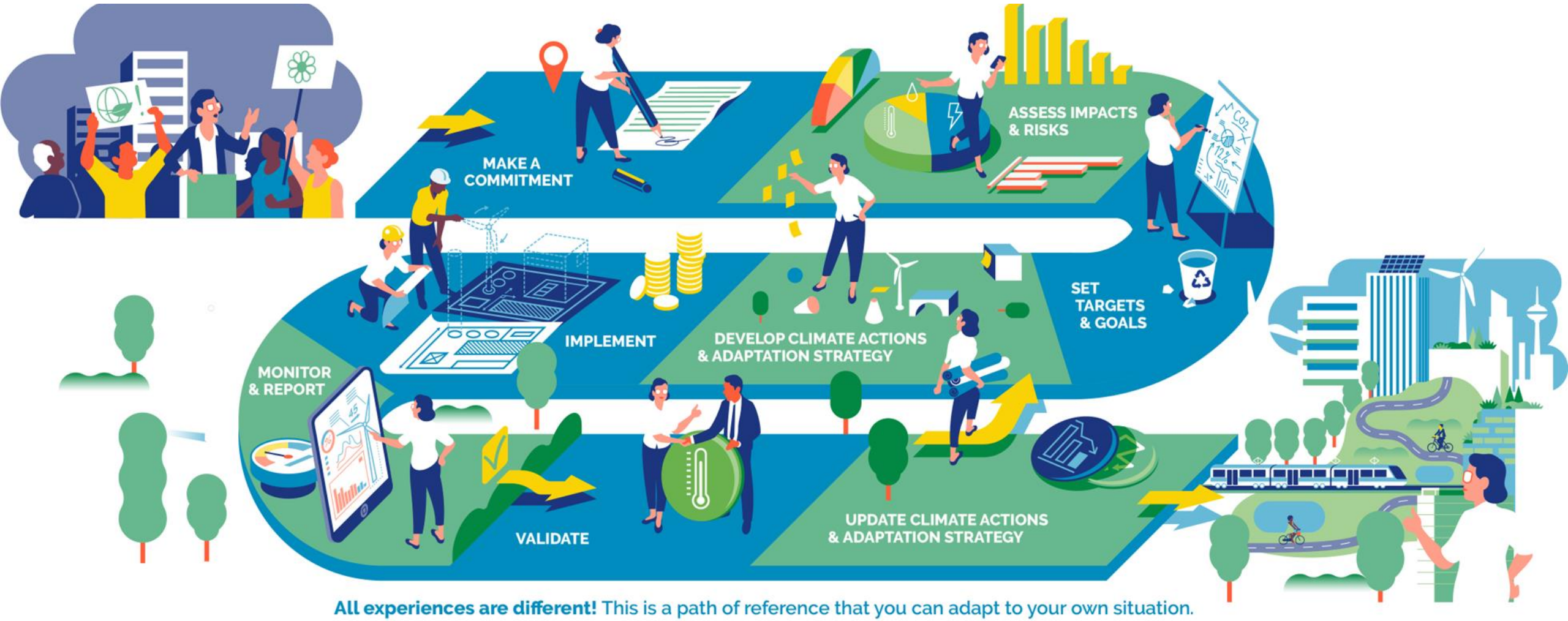
city climate action
IMPLEMENTATION

INNOVATE CITIES 4

The GCoM initiative to accelerate city climate action through research, knowledge and innovation

Setting the scene

The city journey: a compass for urban climate action



All experiences are different! This is a path of reference that you can adapt to your own situation.

INNOVATE CITIES

Global Research and Action Agenda for Cities and Climate Change Science (GRAA)

A systems approach to research & innovation in urban planning & design utilizing city-level models to deliver just & equitable action in climate resilient development

What's new? 160 knowledge gaps | 259 action priorities

Four levels, all interlinked. Delivery approaches, pillars of justice and equity, systems approach levels, and city-level models, data, and knowledge

Everyone is a co-generator. Improved structure for the knowledge and innovation outputs from academia, business, civil society, and government

Doubling down on justice and equity. Informality, access, conflict & crisis, and sufficiency (among others) are in-focus

Why?

Inform the IPCC Special Report on Climate Change and Cities. Robust structure to house peer-reviewed and grey knowledge matching report outline

Empower city climate action. Bridging gaps through knowledge to spur local (and multi-level) progress

- **Populate floors to** identify priority areas for action
- **Cultivate a directory** for knowledge co-generation
- **Crowdsource knowledge** where it doesn't exist/needs to grow further

Marketplaces

Share space for connecting cities and local governments with

cities **business** **academia**

to identify opportunities for collaboration across the climate action journey

Conferences

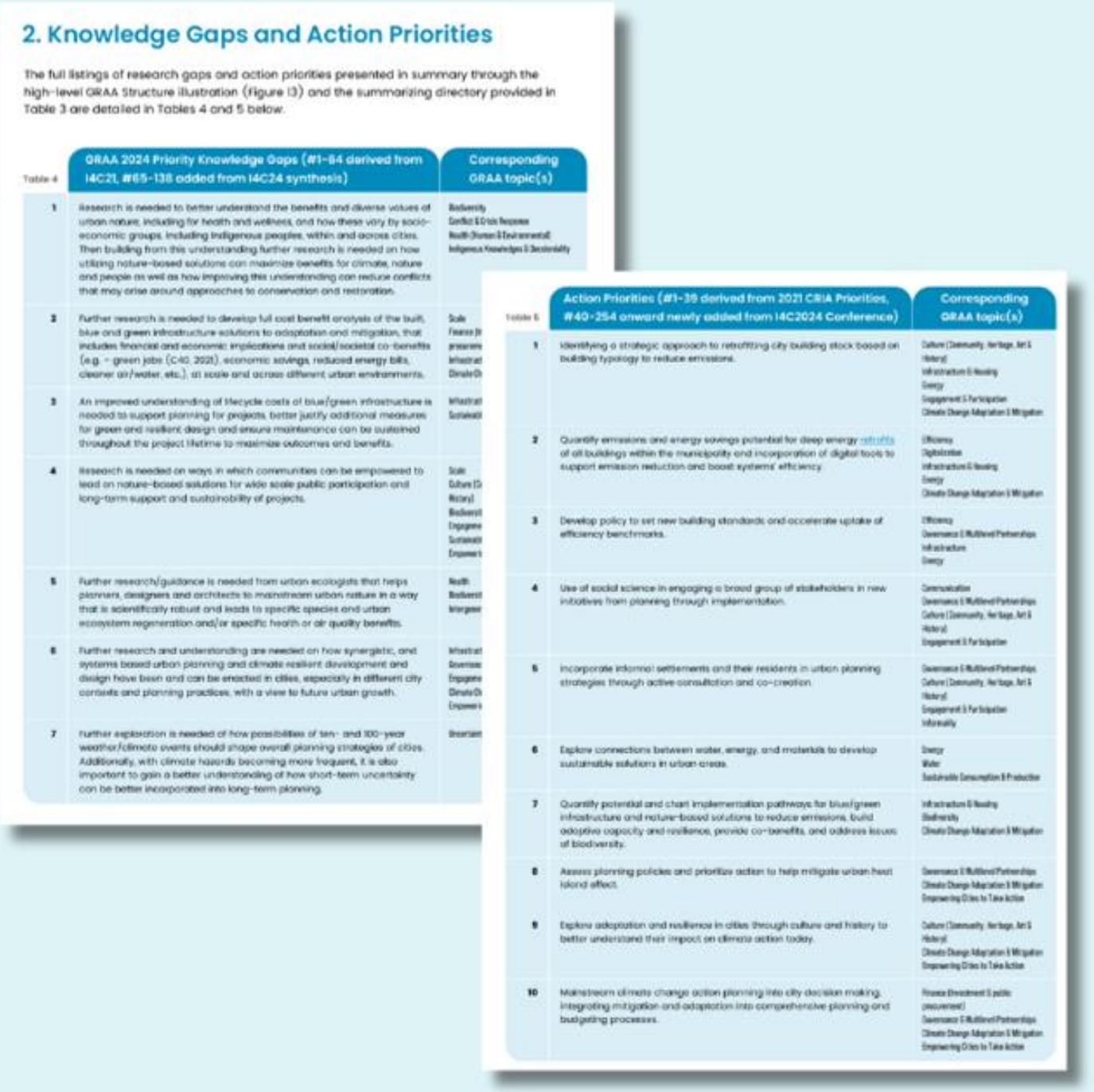
The premier convening at the nexus of cities, climate change science and policy innovation

INNOVATE CITIES

2024 GRAA

Priority Knowledge Gaps
Action Priorities

- 160 research gaps & 259 action priorities identified
- Builds on 2018-2021 GRAA & 2021 CRIA findings
- Requires investment from academia, business, government & city stakeholders
- **The full listings of research gaps and action priorities presented in summary through the high-level GRAA Structure illustration and the summarizing directory provided in Table 3 are detailed in Tables 4 and 5 to the right.**



2. Knowledge Gaps and Action Priorities

The full listings of research gaps and action priorities presented in summary through the high-level GRAA Structure illustration (Figure 13) and the summarizing directory provided in Table 3 are detailed in Tables 4 and 5 below.

Table 4

	GRAA 2024 Priority Knowledge Gaps (#1-84 derived from I4C21, #85-138 added from I4C24 synthesis)	Corresponding GRAA topic(s)
1	Research is needed to better understand the benefits and diverse values of urban nature, including for health and wellness, and how these vary by socio-economic groups, including Indigenous peoples, within and across cities. Then building from this understanding further research is needed on how utilizing nature-based solutions can maximize benefits for climate, nature and people as well as how improving this understanding can reduce conflicts that may arise around approaches to conservation and restoration.	Biodiversity Conflict & Crisis Response Health (Human & Environmental) Indigenous Knowledges & Decoloniality
2	Further research is needed to develop full cost benefit analysis of the built, blue and green infrastructure solutions to adaptation and mitigation, that includes financial and economic implications and social/societal co-benefits (e.g. – green jobs (C40, 2021), economic savings, reduced energy bills, cleaner air/water, etc.), at scale and across different urban environments.	Scale Finance &
3	An improved understanding of lifecycle costs of blue/green infrastructure is needed to support planning for projects, better justify additional measures for green and resilient design and ensure maintenance can be sustained throughout the project lifetime to maximize outcomes and benefits.	Infrastruc Sustainabi
4	Research is needed on ways in which communities can be empowered to lead on nature-based solutions for wide scale public participation and long-term support and sustainability of projects.	Scale Culture (D History) Biodiversit Engagem Sustainabi Empower
5	Further research/guidance is needed from urban ecologists that helps planners, designers and architects to mainstream urban nature in a way that is scientifically robust and leads to specific species and urban ecosystem regeneration and/or specific health or air quality benefits.	Health Biodiversit Intergen
6	Further research and understanding are needed on how synergistic, and systems based urban planning and climate resilient development and design have been and can be enacted in cities, especially in different city contexts and planning practices, with a view to future urban growth.	Infrastruc Governan Engagem Climate Ch Empower
7	Further exploration is needed of how possibilities of ten- and 100-year weather/climate events should shape overall planning strategies of cities. Additionally, with climate hazards becoming more frequent, it is also important to gain a better understanding of how short-term uncertainty can be better incorporated into long-term planning.	Uncertain

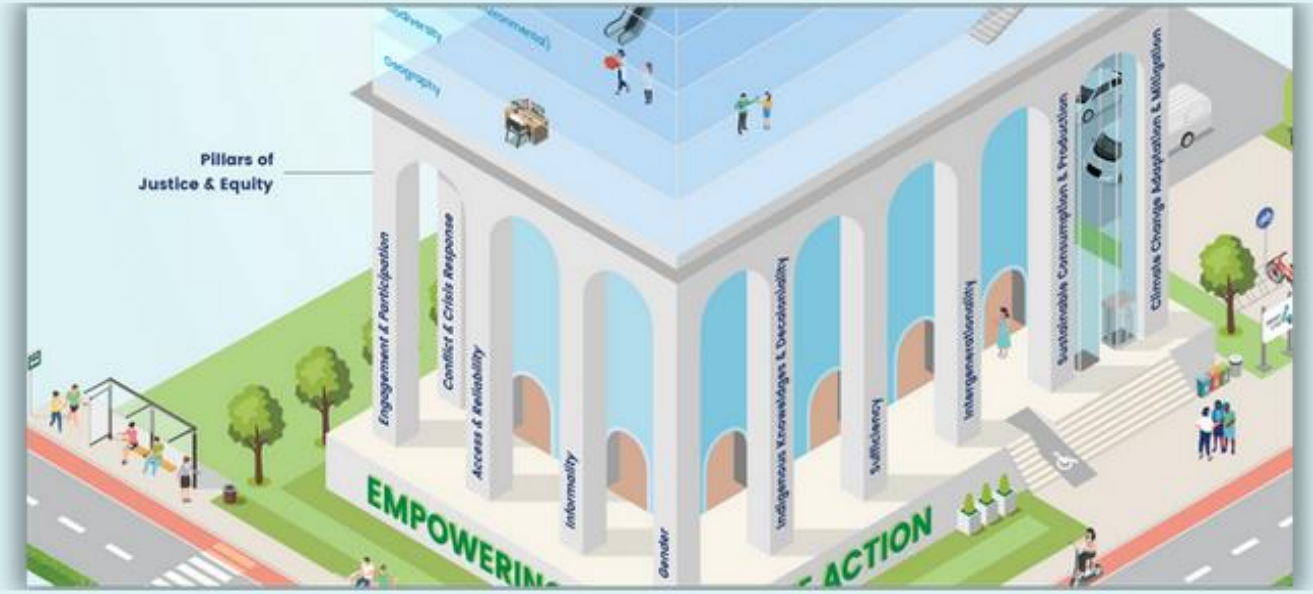
Table 5

	Action Priorities (#1-39 derived from 2021 CRIA Priorities, #40-254 onward newly added from I4C2024 Conference)	Corresponding GRAA topic(s)
1	Identifying a strategic approach to retrofitting city building stock based on building typology to reduce emissions.	Culture (Community, Heritage, Art & History) Infrastructure & Housing Energy Engagement & Participation Climate Change Adaptation & Mitigation
2	Quantify emissions and energy savings potential for deep energy retrofits of all buildings within the municipality and incorporation of digital tools to support emission reduction and boost systems' efficiency.	Efficiency Digitalization Infrastructure & Housing Energy Climate Change Adaptation & Mitigation
3	Develop policy to set new building standards and accelerate uptake of efficiency benchmarks.	Efficiency Governance & Multilateral Partnerships Infrastructure Energy
4	Use of social science in engaging a broad group of stakeholders in new initiatives from planning through implementation.	Communication Governance & Multilateral Partnerships Culture (Community, Heritage, Art & History) Engagement & Participation
5	Incorporate informal settlements and their residents in urban planning strategies through active consultation and co-creation.	Governance & Multilateral Partnerships Culture (Community, Heritage, Art & History) Engagement & Participation Informality
6	Explore connections between water, energy, and materials to develop sustainable solutions in urban areas.	Energy Water Sustainable Consumption & Production
7	Quantify potential and chart implementation pathways for blue/green infrastructure and nature-based solutions to reduce emissions, build adaptive capacity and resilience, provide co-benefits, and address issues of biodiversity.	Infrastructure & Housing Biodiversity Climate Change Adaptation & Mitigation
8	Assess planning policies and prioritize action to help mitigate urban heat island effect.	Governance & Multilateral Partnerships Climate Change Adaptation & Mitigation Empowering Cities to Take Action
9	Explore adaptation and resilience in cities through culture and history to better understand their impact on climate action today.	Culture (Community, Heritage, Art & History) Climate Change Adaptation & Mitigation Empowering Cities to Take Action
10	Mainstream climate change action planning into city decision making, integrating mitigation and adaptation into comprehensive planning and budgeting processes.	Finance (Investment & public procurement) Governance & Multilateral Partnerships Climate Change Adaptation & Mitigation Empowering Cities to Take Action

INNOVATE CITIES

Pillars of Justice & Equity:

Climate Change Adaptation and Mitigation



Climate Change Adaptation and Mitigation

GRAA Heading	Climate Change Adaptation and Mitigation
Description	Included within the Pillars of Justice & Equity in the 2024 GRAA structure, adaptation in response to the effects of climate change and mitigation of the causes of climate change must be considered as a response to prior actions taken without full consideration of justice & equity dimensions.
Reference in previous GRAA	Included as a cross-cutting issue of the 2021 CRIA, but not the 2018 or 2021 GRAA.
Knowledge Gap/ issues described	Achieving climate adaptation and mitigation goals requires the development and implementation of targeted technologies and strategies, addressing specific issues across all systems to reduce GHG emissions. Resolving incongruity between urban development and climate response requires recognition of not only emissions but biodiversity loss across species. Across human populations, the distribution of resources and attention to adaptation and mitigation efforts require increased analysis and evidence-based coordination to integrate interventions where possible and resolve disparities in the equity of response delivered both within cities and across regions.
Knowledge Gaps	2, 8, 10, 15, 17, 21, 24, 27, 35, 41, 42, 45, 54, 55, 73, 74, 75, 101, 102, 155
Action Priorities	1, 2, 7, 8, 9, 10, 12, 13, 14, 36, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 190, 258

155	Much of the focus on innovation has historically been driven by economic or technological factors, but there is limited research on how a human-centered approach can reshape the goals of innovation for sustainability and equity. Research is required to explore how grounding innovation in human needs can lead to more equitable and sustainable outcomes in areas such as health, environment, and climate adaptation.	Climate Adaptation & Mitigation Culture (Community, Heritage, Art & History) Health (Human and Environmental)
258	Local governments should plan all action in accordance with 1.5°C overshoot scenarios expected within the next generation, financing local level development across all sectors at speed and scale exceeding that of the national-level multilateral dialogue.	Climate Change Adaptation & Mitigation Culture (Community, Heritage, Art & History) | Engagement & Participation Empowering Cities for Action Finance (Investment & public procurement) Governance & Multilevel Partnerships Intergenerationality Risk | Sufficiency | Uncertainty

Data Portal for Cities: a free tool to access data and build GHG inventories

GLOBAL COVENANT of MAYORS for CLIMATE & ENERGY

Bloomberg Philanthropies

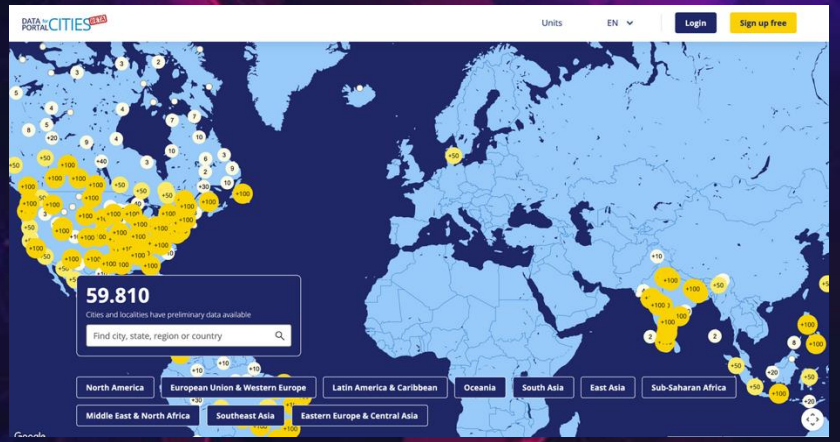
Co-funded by the European Union

Leveraging leading technologies
Transportation data from Google's Environmental Insights Explorer (EIE) has been integrated, providing cities worldwide with insights into activity and emissions

Empowering local leadership
Integrates data from SEEG (Greenhouse Gas Emissions Estimation System) specifically for Brazilian cities, enabling them to access detailed, high-quality local GHG data.

Streamlining global best practice
Being improved with the learnings from the Green Resilient Cities Model supporting Brazil's climate leadership.

Open data and interoperability
The tool is owned by GCoM and seamlessly integrated with reporting platforms such as CDP-ICLEI Track.



dataportalforcities.org

Announcing the
AIx City Climate Action / Hackathon 2025

Two data-driven, action-oriented themes:

1. ***Expand energy access and alleviate energy poverty*** by designing innovative ways to help cities ensure reliable, affordable, and sustainable energy for all, especially in vulnerable communities

2. ***Identify actions and track implementation*** to reduce greenhouse gas emissions and build resilience being led by cities around the world.

KICKOFF
22 May 2025

DEEP DIVE
02 July 2025
Córdoba, Argentina

DEADLINE
01 Sep 2025

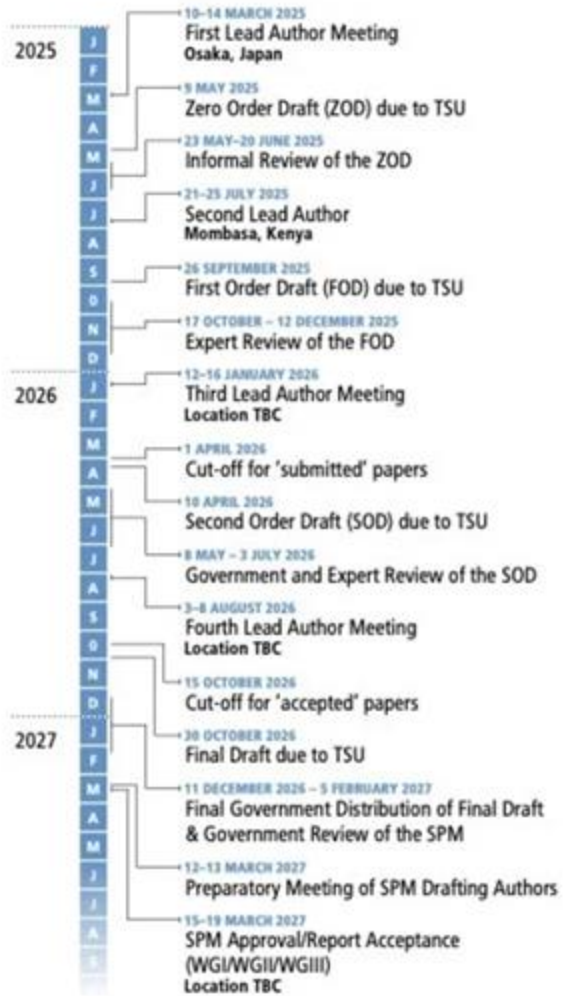
FINALE
NYC Climate Week

PRIZE
city pairing and support for implementation

Co-funded by the European Union

IPCC Special Report on Climate Change and Cities

Timeline



The UTM and GCoM roadmap to informing SR Cities

- **Documenting evidence-based reports** from UTM + GCoM and mapping them to different SR Cities chapters
- **Documenting existing knowledge generated that is not in a report but should be pulled in** as a standalone or specific case study to inform chapters
- **New knowledge products that need to be produced with UTM collaboration**
  - In progress:
    - I4C Book
    - Climate Innovation Readiness Navigator profiles for Oceania / Canada
    - UCCRN case studies
  - To consider:
    - UTM and partners literature review (grey and peer-reviewed) aligned to SR Cities chapters

Linking Innovate4Cities and the Urban Transitions Mission

Linking Innovate4Cities and the Urban Transitions Mission

URBAN TRANSITIONS MISSION

7 UTM Clusters

Data & scenarios	Energy (including renewables)	Governance	Finance	Mobility	Nature-based solutions	Water

10 shared priorities

Governance	Innovative governance	Urban planning and design	Sustainable resource management	Sustainable infrastructure	Health and well-being	City-scale data	Resilience and adaptive capacity	Economy and financing	Digitalization	Systems approach

Grounded in broader agendas

2023–2024: A structure for knowledge generation – UTM priorities, themes and tactics

Shared priorities for the Urban Transitions Mission
Innovative governance
Urban planning and design
Sustainable resource management
Sustainable infrastructure
Health and well-being
City-scale data
Resilience and adaptive capacity
Economy and financing
Digitalization
Systems approach

Positive Energy Districts and Neighbourhoods
transforming the urban energy system

Circular Urban Economies
an integrated approach for urban greening and circularity transitions

15-minute Cities
rethinking the urban mobility system and space

Data & scenarios	Energy (including renewables)	Governance	Finance	Mobility	Nature-based solutions	Water
		☑				
	☑			☑	☑	☑
					☑	☑
	☑			☑	☑	☑
Forthcoming pending further planning and UTM cohort demand						
☑						
					☑	☑
			☑			
	☑			☑		
Forthcoming pending further planning and UTM cohort demand						

Future Clusters to be considered for inclusion based on UTM cohort demand – including waste

Urban Transitions Mission Research Clusters

Convening urban research to accelerate the net-zero urban transition

Link academics, researchers, universities & think tanks with UTM cities around priorities and themes

Identify past, present, and future knowledge generation opportunities to fill priority gaps

Encouraged to **address UTM city-specific priorities** and contribute outputs relevant to the next IPCC Assessment Report cycle

Cities TCP
Decarbonising Cities & Communities

Call open to academics, researchers, universities, and think tanks

Collaboration with Cities-TCP and launch of 3 research action groups on UTMC platform:

- Blended finance
- Energy infrastructures
- Data and scenarios

Reinforcing UTM links with the GRAA *and* SR Cities

Shared priorities for the Urban Transitions Mission	*Data & scenarios*	*Energy (including renewables)*	*Governance*	*Finance*	*Mobility*	*Nature-based solutions*	*Water*
Innovative governance			☑				
Urban planning and design		☑			☑	☑	☑
Sustainable resource management						☑	☑
Sustainable infrastructure		☑			☑	☑	☑
Health and well-being	*Forthcoming pending further planning and UTM cohort demand*						
City-scale data							
Resilience and adaptive capacity	☑					☑	☑
Economy and financing				☑			
Digitalization		☑			☑		
Systems approach	*Forthcoming pending further planning and UTM cohort demand*						

GRAA Gaps and Priorities

City-level models, data, and knowledge
- Digitalization
- Information integrity
- Efficiency
- Centralization
- Uncertainty
- Scale
- Communication
- Risk

Systems approach levels
- Finance
- Multi-level Partnerships
- Culture
- Infrastructure
- Waste
- Mobility
- Energy
- Food
- Water
- Health
- Biodiversity
- Geography

Pillars of Justice and Equity
- Informality
- Indigenous Knowledges & Decoloniality
- Intergenerationality
- Adaptation & Mitigation
- Consumption & Production
- Engagement & Participation
- Conflict & Crisis

Futureproofed UTM priorities, linked with the GRAA and SR Cities

		City-level models, data, and knowledge							
		Digitalization (incl.data)	Information integrity	Efficiency	Centralization	Uncertainty	Scale	Communication	Risk
System approach levels	Governance and Multi-level Partnerships	☑	☑	☑			☑		
	Finance	☑					☑	☑	☑
	Infrastructure (incl. housing)	☑		☑		☑		☑	☑
	Mobility	☑		☑	☑		☑	☑	☑
	Energy	☑		☑	☑		☑	☑	
	Biodiversity			☑					☑
	Water								
	Health (incl.wellbeing)								
	Waste								
	Food								
	Culture								

Pillars of justice & equity
Informality | Indigenous Knowledges & Decoloniality | Intergenerationality | Climate Change Adaptation & Mitigation | Sustainable Consumption & Production | Engagement & Participation | Conflict & Crisis Management

URBAN TRANSITIONS MISSION

INNOVATE CITIES

Q&As

URBAN TRANSITIONS MISSION

GLOBAL COVENANT of MAYORS for CLIMATE & ENERGY

Bloomberg Philanthropies

Co-funded by the European Union

UN-HABITAT

Thank you!