GLOBAL COVENANT of MAYORS for CLIMATE & ENERGY

IMPLEMENTING CLIMATE AMBITION

Global Covenant of Mayors 2018 Global Aggregation Report

As countries consider how to increase their ambition in the lead-up to implementing their Nationally Determined Contributions (NDCs) under the Paris Climate Agreement in 2020, this analysis shows that city commitments already made through the GCoM exceed the ambition of NDCs as currently defined - clearly showing that alignment across levels of government can pave the way for greater ambition - and action.

9,149
Cities[1]

780+
Million
Total Population

1.4
Billion Tons
CO_2e Avoided in 2030

2.8
Billion Tons
CO_2e Avoided in 2050

QUANTIFYING THE COLLECTIVE POTENTIAL

Building upon an initial 6000+ cities committed to GCoM at the time of the signing of the Paris Agreement[2], cities continue to make significant and ambitious commitments to meet the climate challenge. An additional 1,600+ cities have committed to the initiative in 2018, continuing momentum and joining the thousands of cities that are stepping up to act, register and measure their progress. See Figure 1 for growth in commitments by region.

Figure 1: GCoM Commitment Growth by Region, 2015-2018

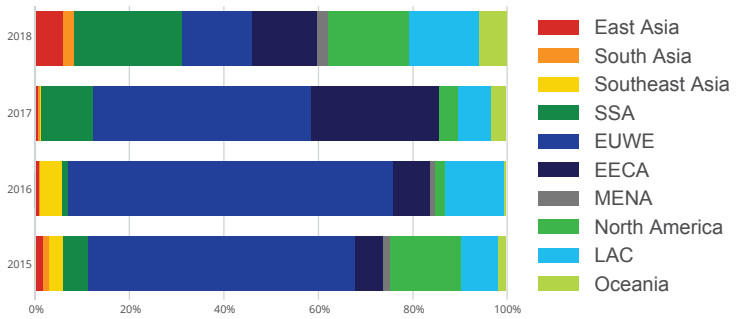
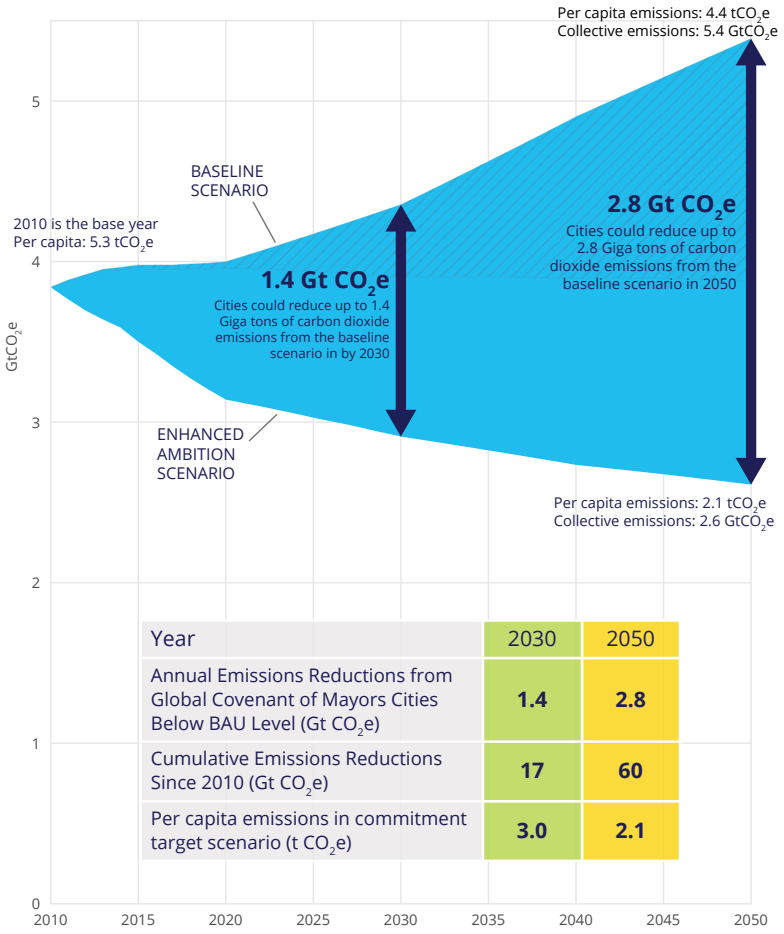


Figure 2: Aggregate GCoM City Emissions Scenarios 2010-2050



Year	2030	2050
Annual Emissions Reductions from Global Covenant of Mayors Cities Below BAU Level (Gt CO_2e)	1.4	2.8
Cumulative Emissions Reductions Since 2010 (Gt CO_2e)	17	60
Per capita emissions in commitment target scenario (t CO_2e)	3.0	2.1

Baseline Scenario: Emission trajectories based on current policies, which ranges from business-as-usual scenario without NDC policies (top of the shaded area) to NDC scenario that considers full implementation of current NDCs (bottom of the shaded area)

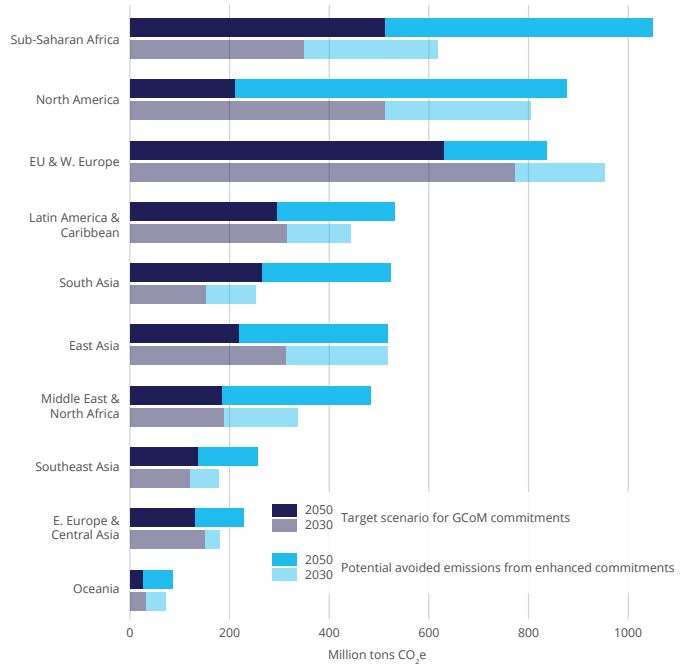
Enhanced Ambition Scenario: Emission trajectories if both the NDCs and city-driven commitments are complimentary and fully implemented.

Reporting on a voluntary basis, with, and in many cases without, solid national government support, these cities have already made commitments that, if fully implemented, could achieve annual reductions of 1.4 Gt CO2e in 2030 and 2.8 Gt CO2e in 2050 from BAU (business-as-usual level, based on population growth). The reductions in 2030 would be equivalent to taking all the cars in the United States off the road for one year[3]. As countries consider how to increase their ambition in the lead-up to implementing their Nationally Determined Contributions (NDCs) under the Paris Climate Agreement in 2020, this analysis shows that city commitments already made through the GCoM exceed the ambition of NDCs as currently defined - clearly showing that alignment across levels of government can pave the way for greater ambition - and action (See Figure 2).

More cities from the Global South, particularly in Africa, Latin America and South Asia, have accelerated their commitments to tackle climate change in the last two years. Urban communities across these regions are rapidly growing, with Sub-Saharan Africa quadrupling and South Asia doubling their urban populations between 2015 and 2050, to a projected 1.2 billion inhabitants each.[4]

As seen in Figure 3, the commitments that cities in these growing economies are already making are significant, and will become even more so in the years following 2030.

Figure 3: Potential Avoided Emissions by Region in 2030 and 2050



[1] As of August 31, 2018.

[2] GCoM's precursor initiatives, the Compact of Mayors and the European Covenant of Mayors, now merged in the GCoM.

[3] As reported in 2016.

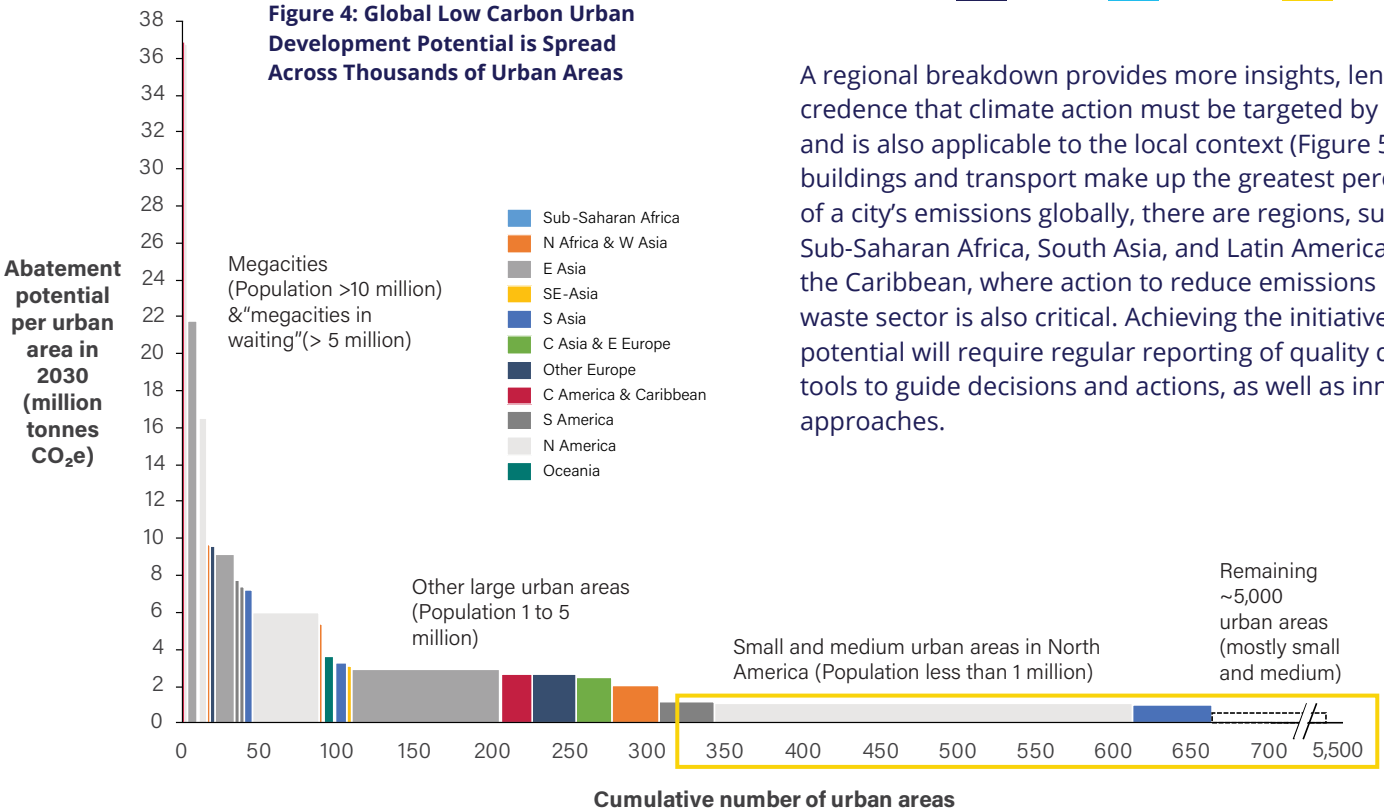
[4] United Nations World Urbanization Prospects: The 2018 Revision.

THE 50 PERCENT

More than 50% of the world's population live in cities today and it is projected that more than 66% of the global population will live in cities by 2050. The population of intermediary cities, defined as those between 50,000 and 1,000,000 inhabitants, is projected to increase by 30% to over 1.4 billion inhabitants by 2030.[5]

It is estimated that half of all urban emissions' reduction potential in 2030 will be from these intermediary cities (Figure 4).[6] Similar to their mega- and larger city counterparts, these cities that have a great potential to impact change but require greatest need for partnership and support from all levels of government, as well as the global research, business and finance communities to lead the paradigm shift.

Figure 4: Global Low Carbon Urban Development Potential is Spread Across Thousands of Urban Areas

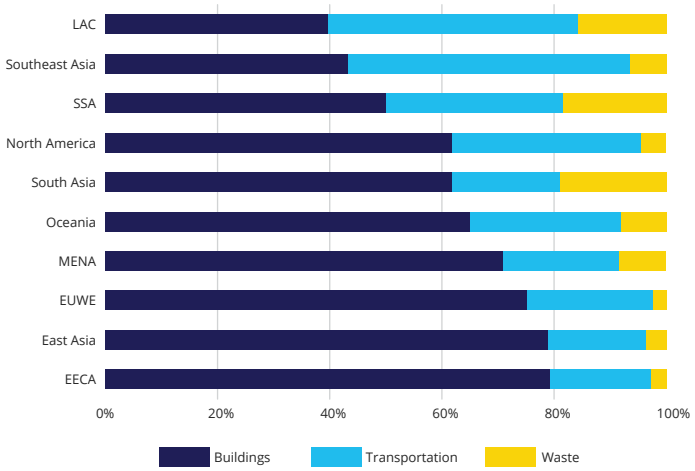


Source: Authors' analysis and classification of data from Erickson and Tempest (2014). The height of each bar represents GHG abatement potential per urban area in 2030, the width indicates number of urban areas within different population classes and world regions (as indicated by labels and shading, respectively). Nearly half of all 2030 urban abatement potential is in the approximately 5,000 small and medium urban areas that lie to the right edge of the graph.

BUILDING CAPACITY FOR ACTION

Of the 9100+ GCoM committed cities, over 6000 have already established a strategic climate action plan for their communities defining their approach to meet their commitment. Collectively through overall commitment to the GCoM initiative, reported data shows that 1,818 cities have reduced emissions by **20%** (or **0.43 Gt**) from their highest points of reported emissions.

Figure 5: Sectoral Breakdown of Reported Emissions by Region



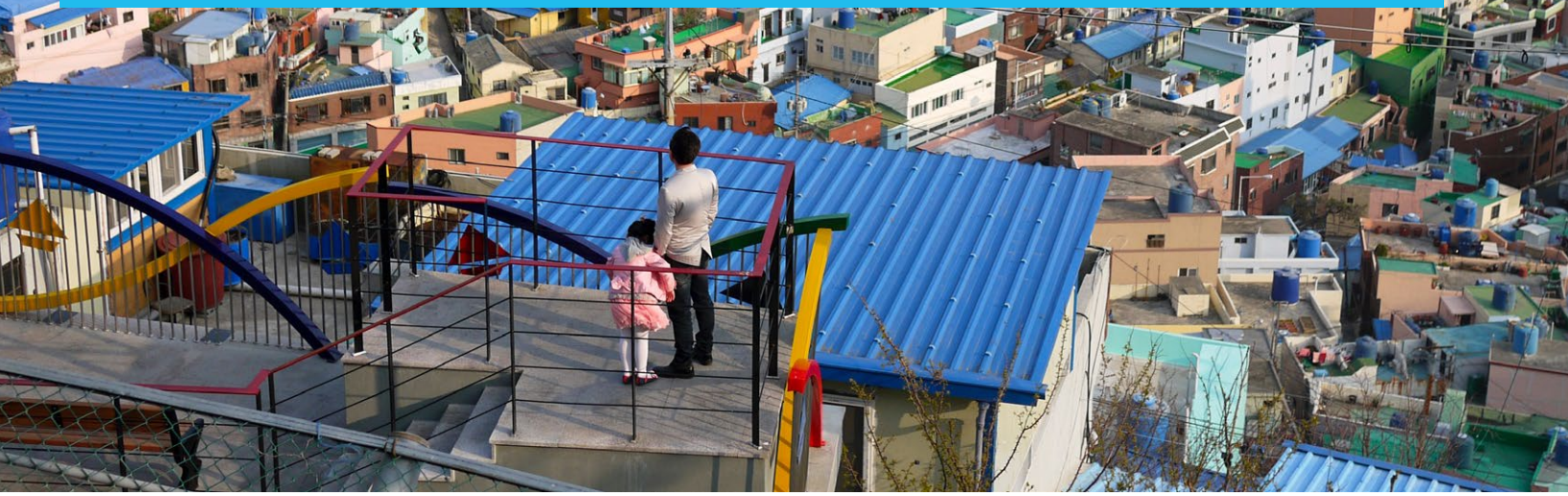
A regional breakdown provides more insights, lending credence that climate action must be targeted by region and is also applicable to the local context (Figure 5). While buildings and transport make up the greatest percentage of a city's emissions globally, there are regions, such as Sub-Saharan Africa, South Asia, and Latin America & the Caribbean, where action to reduce emissions in the waste sector is also critical. Achieving the initiative's 2050 potential will require regular reporting of quality data, tools to guide decisions and actions, as well as innovative approaches.

[5] UCLG – United Cities and Local Governments (https://www.uclg.org/en/agenda/intermediary-cities).

[6] From Broekhoff, Piggot, and Erickson (2018), based on analysis from Erikson and Tempest (2014).

ADAPTING TO CLIMATE CHANGE

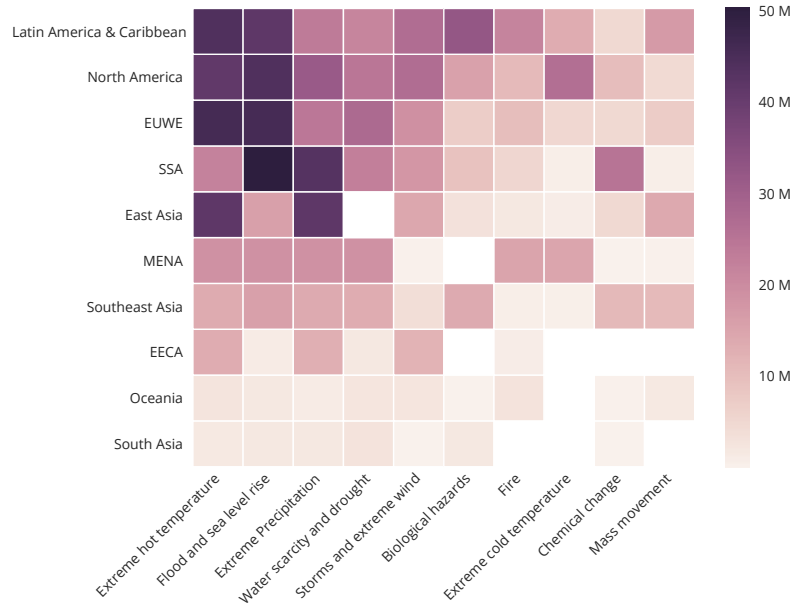
Cities and local governments today are already experiencing the effects of a changing climate and their exposure and vulnerability to climate-related hazards. The subsequent impacts affecting urban sectors and people in surrounding residential areas is only expected to increase. When addressing climate change, building resilience of urban infrastructure is crucial to guarantee the continuity of services to the population. GCoM cities are not only working on significantly reducing emissions, but are also responding to climate change impacts and preparing themselves for the future. By making adaptation an urban development priority, citizens in GCoM cities have an opportunity for a more resilient future.



City commitments to GCoM have moved beyond mitigation to provide a holistic view of local climate action, coupling analysis on collective impact with an assessment of how cities are identifying and addressing climate risks. More than 300 GCoM cities have already assessed local hazards and reported the integration of climate change impacts into their urban development planning.

Figure 6 presents the distribution of the reported hazards identified by GCoM cities across the different regions.

Figure 6. Distribution of Hazards Identified by Reporting Cities Across GCoM Regions[7]



Climate projections highlight that even in a world limited to 2°C of warming compared to pre-industrial levels, many cities would still likely experience an increase in weather-related hazards such as heatwaves, river floods, coastal surges and other serious hazards. The expected magnitude of change and impact will differ across regions and sectors: each city's exposure and vulnerability is unique and must be assessed locally to ensure adequate preparation and resilience. This requires compiling regular risk and vulnerability assessments to help identify priority action areas and science that is scaled for application at the city level.

Cities with a combined population of 181 million have reported that they expect to face extremely serious or serious consequences from extreme heat (Figure 7). Additionally, cities with a current population of 193 million inhabitants expect extremely serious or serious consequences from floods and sea level rise (Figure 8). Although not all the inhabitants in a city may be directly exposed to these extreme events, challenges for citizens and city infrastructure will be felt on a community-wide scale.

[7] Color intensity reflects cumulative population of GCoM cities within each region reporting each hazards type, and does not equate hazard exposure.

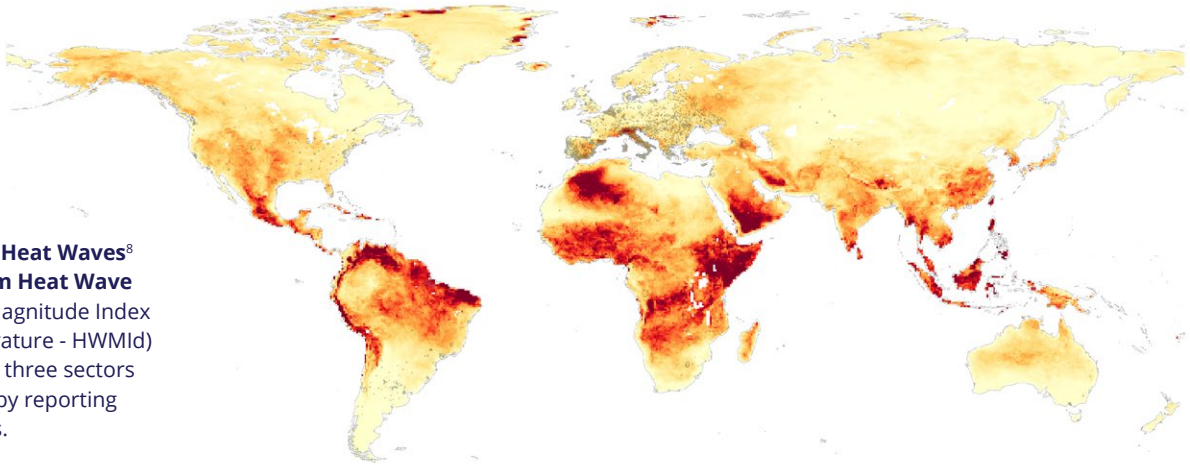
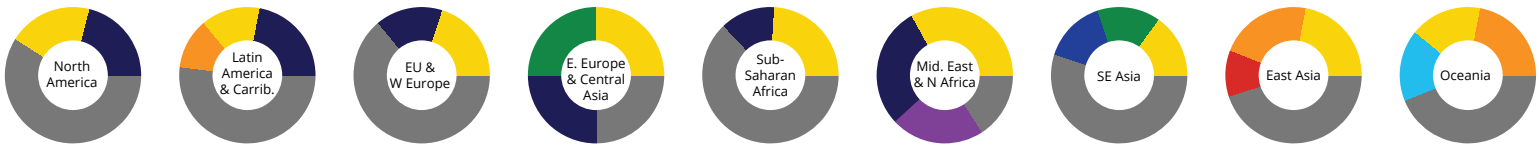


Figure 7: Distribution of Heat Waves[8] with Projected Maximum Heat Wave Magnitude (Heat Wave Magnitude Index daily of maximum temperature - HWMId) in 2°C world scenario; top three sectors expected to be impacted by reporting cities in the GCoM regions.

Globally, GCoM cities report that heatwaves will have the greatest impact on public health. Eastern Europe, Central Asia and Latin America and the Caribbean regions are reported to face the most severe effects to biodiversity. In North America and East Asia, the energy sector is reported to be most at risk from heatwaves. Cities in Latin American and the Caribbean additionally identified that they expect to have challenges with respect to water security.

Many cities are projected to be increasingly exposed to river flooding. Assuming present protection standards, the population of GCoM cities exposed to river floods could increase by 240% in a 2°C warmer world – with the strongest rise in river levels (see Figure 8) within South Asia, Japan and certain parts of Europe. In the absence of climate change adaptation actions, urban infrastructure will be severely affected, especially in Central and Eastern Europe and some parts of Asia and Latin America.



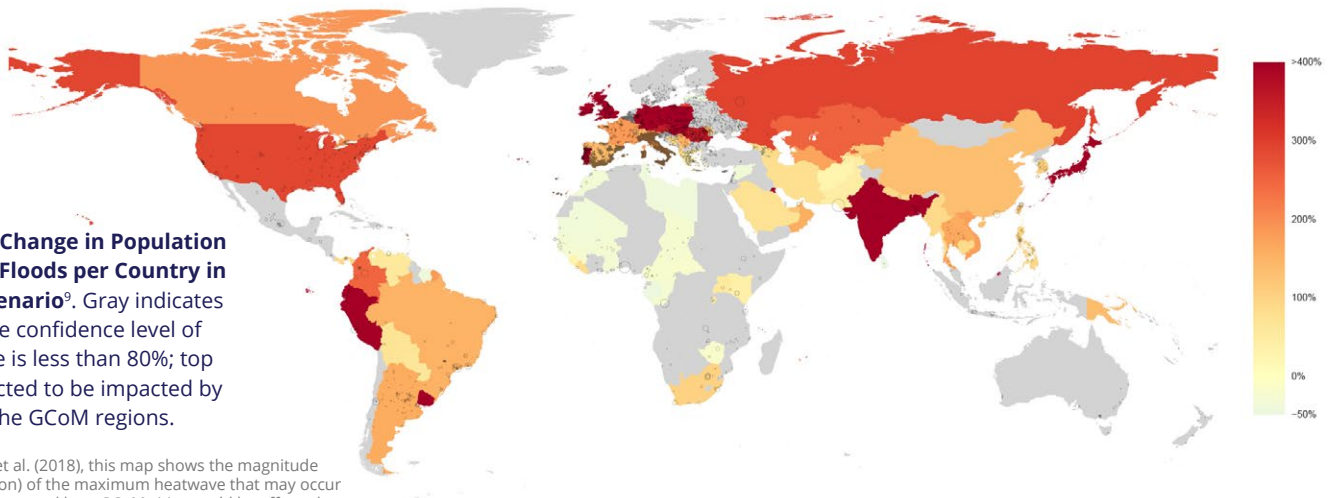


Figure 8: Average Change in Population Affected by River Floods per Country in a 2°C Warming Scenario[9]. Gray indicates countries where the confidence level of the average change is less than 80%; top three sectors expected to be impacted by reporting cities in the GCoM regions.

[8] Elaborated from Dosio et al. (2018), this map shows the magnitude (intensity and duration) of the maximum heatwave that may occur at least once in 30 years and how GCoM cities could be affected.

[9] Elaborated from Alfieri et al. (2017) Earth's Future, this map shows the average change in population affected by river floods per country, and how GCoM cities could be affected.

UNLOCKING THE FUTURE

Local governments are on the front lines of the climate change challenge and they are working to serve their constituents who already feel the adverse impacts of climate change. Cities require data and information at the right geographical and temporal scales to respond to current climate impacts, as well as plan and prepare for the future. Through a newly established global reporting framework, GCoM cities across the globe will assess and report their emissions, risks and vulnerabilities, and plans for action in a common way. This will allow for better identification of shared challenges, greater cooperation, and development of common responses to the impacts of climate change. These endeavors will lead to a step-change in urban adaptation and climate change resilience.

Global Covenant of Mayors' cities and local governments are united in their shared goals to increase access to secure, affordable and sustainable energy, ensure communities live in healthy environments, and raise awareness to promote initiatives and best practices that will accelerate the response to climate change. GCoM and its partners are supporting cities to bridge the knowledge gap, working towards enhancing access to information, building partnership with data and climate service providers, access to finance institutions and those who can provide relevant tools and information that facilitate their efforts.

Our collective impact can make significant progress in securing a climate-safe world and in meeting the goals of the Paris Agreement.

About the Global Covenant of Mayors

The Global Covenant of Mayors for Climate and Energy is the largest global coalition of cities and local governments voluntarily committed to actively combatting climate change and transitioning to a low carbon and climate resilient economy. Led by UN Secretary-General's Special Envoy for Climate Action, Michael R. Bloomberg, and European Commission Vice President, Maroš Šefčovič, in partnership with local, regional and global city networks, the Global Covenant has thousands of city signatories across 6 continents and more than 130 countries, representing over 750 million people or more than 10% of the global population.

Regional Covenants

Global Covenant of Mayors for Climate & Energy – Latin America & Caribbean

Covenant of Mayors in Sub-Saharan Africa

Covenant of Mayors for Climate & Energy Japan

Covenant of Mayors for Climate & Energy - India

Covenant of Mayors for Climate & Energy

Supporting Partners

Joint Research Centre JRC

ICLEI Local Governments for Sustainability

C40 Cities

Eurocities

UN-Habitat For a Better Urban Future

CDP Disclosure Insight Action

energycities

UCLG United Cities and Local Governments

Climate Alliance

FEDARENE

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