



# What does the latest IPCC report mean for cities?

The International Panel on Climate Change (IPCC) is the UN's official body for assessing the science related to climate change. The IPCC's Spring 2022 report includes important analysis on global cities and climate change impacts on urban systems.

The Net Zero Cities Team at WSP supports cities across the world to reduce their emissions, adapt to climate change and transition to a green economy. We have developed a round-up of some of the IPCC's most important findings for cities, along with some key recommendations.

## Context

Cities represent a significant majority of global emissions. However, this is not shared equally across the planet with urban areas in the Global North producing significantly more per capita than cities in the low and middle income countries of the Global South.

Finance and capacity are huge challenges for cities. Global flows of climate finance are currently not enough to achieve global low carbon development and there is a huge regional variation in cities' institutional capacity to develop, coordinate and integrate net zero strategies.



Cities account for over 70% of global emissions



100 of the highest emitting urban areas account for approximately 18% of the global carbon footprint



Urban areas in the Global North produce nearly 7x more emissions per capita than the poorest countries in the Global South



Annual climate finance investment is 10% of what is necessary for low-carbon and resilient urban development at a global scale.

## Future Trends



As global temperatures continue to increase, extreme weather events such as sea level rise, flooding, and heatwaves are set to worsen. The planet's cities are both extremely vulnerable to these changes and a significant source of the emissions that are causing them.



Cities are expanding and so are their urban carbon footprints. Future population and emissions growth concentrated in cities of the global south. The highest rate of urban land growth is projected to occur in Africa, Eastern Europe, West-Central Asia, and the Middle East. This urban expansion means that the global share of future urban carbon emissions is expected to increase through 2050.



While cities are growing, population densities are declining, and urban sprawl is becoming more common. This has significant implications for carbon emissions.



Much of the planet's urban expansion will be self-built and informal and new modes of governance and planning will be required to engage effectively with these communities.



Urban land areas are expected to triple between 2015-2050 particularly in the Global South.



USD 90 trillion is expected to be invested in new urban development by 2030.



An analysis of 478 cities with populations of more than 1 million people found that the predominant urban growth pattern worldwide is outward expansion, suggesting that cities are becoming more expansive than dense.



50-63% of newly expanded urban areas are expected to occur on current croplands leading to the loss of almost 65 Mtonnes of crop production through 2040.

## What do these trends mean for cities?



The rapid growth of the planet's cities raises a number of sustainability challenges and the construction of new urban infrastructure combined with changes to incomes and lifestyles will lock in patterns of energy consumption for decades to come.



Future urban expansion will amplify the background warming caused by GHG emissions, with extreme warming most pronounced at night. It will also make cities more vulnerable to flooding and increase the impact of crisis such as supply chain disruptions.

It is the urban poor who will be disproportionately affected by climate change impacts.

Given the dual challenges of rising urban emissions and future projections of more frequent extreme climate events, there is an urgent need to integrate urban mitigation, adaptation and nature strategies for cities to address climate change.



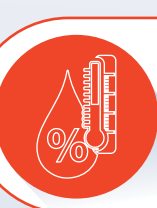
An urban footprint increase of 78-171% by 2050 is expected to result in average summer daytime and night-time warming in air temperature rise of 0.5°C-0.7°C, even up to about 3°C in certain locations.



Between 2000 and 2015, the global population in locations that were affected by floods grew by 58-86 million.



The direct economic costs of all extreme events reached USD 210-268 billion in 2020



Between half and three-quarters of the global population could be exposed to periods of life-threatening climatic conditions arising from coupled impacts of extreme heat and humidity by 2100



A review of local climate mitigation and adaptation plans across 885 urban areas of the European Union suggests mitigation plans are more common than adaptation plans.

## Where are the opportunities for cities?



Cities present the opportunity to decarbonise at scale.

Three broad mitigation strategies have been found to be effective when implemented concurrently:

Reducing or changing energy and material use towards more sustainable production and consumption;

Electrification in combination with switching to low-emission energy sources; and

Enhancing carbon uptake and storage in the urban environment, especially through urban greening and nature-based solutions

While there is huge economic and social inequality both between and within the world's cities, eradicating extreme poverty, energy poverty, and providing decent living standards can be achieved without significant global emissions growth.



Urbanisation is an opportunity to increase resource efficiency and decarbonize at scale. For most regions, per capita urban emissions are lower than per capita national emissions.



Transit Orientated Development (TOD) could reduce emissions by between 23-26% compared to Business As Usual approach. A TOD approach to urban planning puts transit and mobility at the centre of wellbeing and economic development when planning for city infrastructure and services



Global urban trees store approximately 7.4 billion tonnes of carbon, and sequester approximately 217 million tonnes of carbon annually.



New, non-networked technologies in informal settlements can reduce emissions by 15-25% in small- and medium sized cities



Modifying the layout of emerging urbanization to be more compact, walkable, and co-located can reduce future urban energy use by 20-25% in 2050 while providing a corresponding mitigation potential of 23-26%

## WSP's recommendations

Based on the IPCC's latest report we have highlighted four key aspects for cities to consider as they work to reach their net zero goals. The Net Zero Cities Team at WSP specialises in supporting cities across the world in achieving their sustainability targets and in developing a fairer future for the communities they serve.

### Engage across multiple scales of governance

Cities cannot achieve net zero GHG emissions by only focusing on reducing emissions within their geographic and administrative boundaries. Sustainability strategies depend on co-operation and coordination with national and sub-national governments, industry, and civil society. City stakeholders must look beyond bounded, sectoral approaches to sustainability and work with a cross-section of actors to catalyse climate action.

### Be future ready

Adapt and mitigate current emissions but also plan for urban growth, infrastructure and future trends-this will be key to avoid locking in emissions.

### Integrate mitigation, adaptation and nature strategies

Given the dual challenges of rising urban GHG emissions and future projections of more frequent extreme climate events, there is an urgent need to integrate urban mitigation, adaptation and nature strategies for cities to address climate change and withstand its effects.

### Prioritise a just transition

Reaching net zero depends on the integration of co-benefits into mitigation strategies. City stakeholders must prioritise equity across climate interventions if the transition to net zero is to be sustainable.