

# Sustainable Cities – Towards a Low-carbon & Resilient Future

Mitigation  
Adaptation



## Addressing Urban Greenhouse Gas Emissions

Today, approximately 75 % of global energy-related greenhouse gas emissions like carbon dioxide (CO<sub>2</sub>) or methane come from cities.



It is estimated that 60 % of the built environment, which is required to accommodate the earth's urban population by 2050, is yet to be built.

Developing and emerging countries alone have a need of infrastructure yet to be built that will consume some three quarters of the global greenhouse gas emissions "budget" that we have to keep global warming within 1.5 degree as recommended by the Paris Agreement.



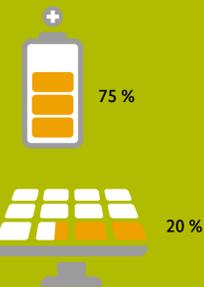
## Balancing Urban Growth and Land Consumption

Today, cities occupy approximately 2 % of the earth's surface, while accommodating more than half of the world population. By 2030, this number will increase to 60 % due to an addition of around 1.1 billion urban dwellers by then. In the same time span, urban land cover will nearly triple, increasing the build-up area by 1.2 million km<sup>2</sup> (an area twice the surface of France), compared to 2000.



## Finding Sustainable Solutions for Urban Energy Demand

Today, 75 % of the globally produced energy is consumed in cities. However, as density increases in urban areas, per capita energy demand decreases – pointing out the great potential for energy savings through urbanisation.

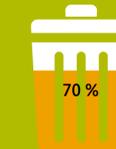
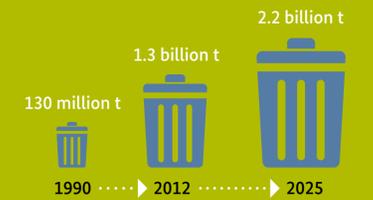


In 2013, renewable energy sources supplied about 20 % of all building- and transport-related energy in cities. Cities are therefore driving actors in promoting innovative solutions and transforming pathways.



## Harvesting the Potentials of Waste Management

The annual amount of municipal solid waste from human settlements has increased tenfold in the last century, amounting to approximately 1.3 billion tonnes in 2012. This amount is expected to almost double to 2.2 billion tons by 2025.

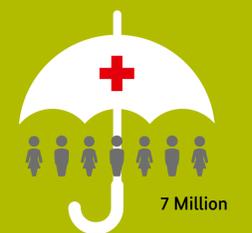


Today, human settlements produce approximately 70 % of global waste. However, circular economy approaches and improved municipal solid waste management, including "reduce, reuse and recycling", as well as more efficient waste transport, could reduce global greenhouse gas emissions in the urban waste sector 10–15 %.



## Fighting the Costs of Urban Air Pollution

The reduction of urban air pollution – for example through effective measures in the fields of urban mobility, industry and waste management – could prevent up to 7 million premature deaths annually.



## Realising Water Supply for all Residents

Urban water consumption is likely to double by 2025, increasing the already high pressure on freshwater resources and climate-sensitive ecosystems.



Today, 150 million urban dwellers live without adequate water supply. By 2050, urban population growth will increase this figure to almost 1 billion people. Additional 100 million urbanites will suffer from water shortages caused by effects of climate change.



## Reducing Vulnerability to Sea-level Rise

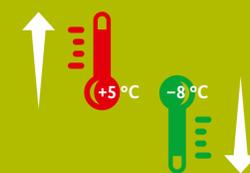
The number of urbanites living at sea level or below has doubled in the last 40 years from 45 to 88 million residents. The likely sea-level rise of 5–10 cm over the next two decades is expected to double the risk of coastal flooding in many areas. This will endanger the life and property of millions of people living in coastal urban agglomerations.



## Regulating Micro-climate through Urban Green

According to a business-as-usual scenario, the temperature in most cities will increase by up to 2.5 to 5° Celsius by 2100.

Urban green spaces can cool the air in their direct surrounding by 2 to 8 °Celsius. This cooling effect can reduce air-conditioning costs by up to 80 % and help avoid heat-related premature human deaths.



Globally, city centres are becoming greener. In the period from 2000 to 2015 the share in urban green has increased by 25 %.



## Transforming Urban Mobility

The transport sector accounted for 28 % of global energy-related GHG emissions in 2015. Densely populated and highly connected urban agglomerations inherit the potential to reduce this carbon footprint. If cities embrace three revolutions in vehicle technology – namely automation, electrification, and ride sharing – CO<sub>2</sub> emissions could be reduced by 80 % by 2050.



References: You can find a comprehensive list of references to all information of the graphic under: <http://star-www.giz.de> (search term: Bibliography Poster Series Urbanisation)