

# CLIMATE ACTION PATHWAY

# **HUMAN SETTLEMENTS**

Executive Summary

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November 2019



## Vision statement

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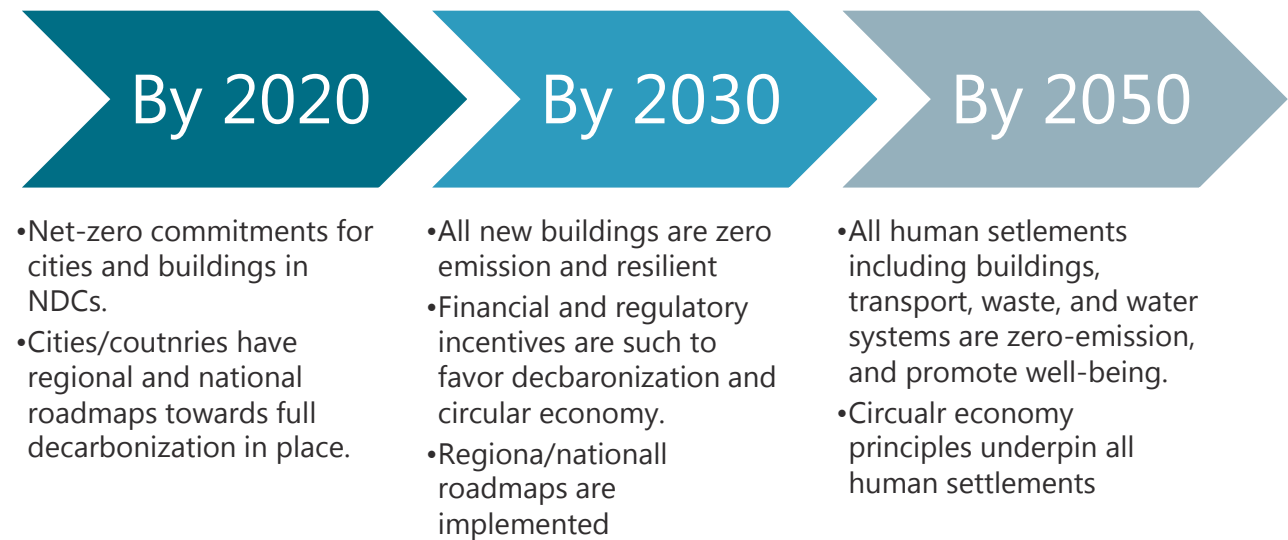
**By 2050** all human settlements are net zero emissions, offer a decent standard of living and are affordable to all including the most vulnerable. Ambitious climate action in cities have transformed cities for the better, addressing urgent political priorities for national and local governments, for example by improving air quality, cutting traffic congestion, reducing road injuries and ensuring key services are accessible to all. Compact, connected and clean cities will enhance productivity and stimulate innovation. Together with the benefits described above, zero-carbon, climate-resilient cities and human settlements will become more attractive places to live and work, offering a national competitive advantage in the global race for talent and investment. Human settlements are resilient and play an active role as climate action hubs and for carbon sequestration, supported with proactive leadership from national governments and meaningful partnerships with subnational governments and other tiers of government. While we are well on our way to add 230 billion square meters to the planet (by 2060), meaning a doubling of floor space, these new constructions provide shelter from the elements, clean air, clean water, vegetation, green space, food production through vertical urban farming, and biodiversity. Buildings provide surplus energy and provide cooling and heating by the sole quality of their design. Appliances are highly efficient. Any additional energy needs are provided by renewable energy.

All materials used are part of a circular economy, the dominating economic model underpinning human settlements. Buildings have a key role as circular economy hubs, acting as material banks and construction material is reused when buildings are dismantled. Thanks to circular economy principles, waste (including construction, food, and non-recyclables) is virtually non-existent. Water operates in a closed loop without any loss from recovery, distribution, to consumption. Buildings are fully adapted to local conditions and are designed based nature-based solutions and vernacular architecture principles. Transport is zero-carbon and entirely public. Cycling and walking is prioritized everywhere.

Cities are highly efficient innovation hubs, integrating nature-based solutions and fostering integration and dialogue among all citizens. Health and well-being are prioritized, and all policy and investment decisions are considered under a climate mitigation, adaptation, and resilience lens.



## Milestones towards 2050



## Facts & figures

- **Three quarters of resource-use and greenhouse gas emissions already come from cities, and trends in urbanization, population and economic growth will further drive up these** numbers if we don't get smarter in the way we consume and produce.
- Many cities face serious air and water pollution; both a direct result of unsustainable **consumption and production patterns, making citizens' health a key driver for action.**
- **The International Resource Panel publication "Weight of Cities" found that savings in the order of 30-60 percent,** for both resource use and GHG emissions, can be realized by leveraging connections, interactions, and resource sharing across multiple urban systems. Integrated urban planning, sector optimization, cross-sector optimization and behavioural changes will be required.
- According to the IPCC special report, restricting climate change to 1.5°C would need "rapid and far-reaching" changes around energy use, industry and buildings design, as well as the wider planning of cities and infrastructure.
- Building construction and operation is the biggest single contributor to energy- and process-related CO<sub>2</sub> emissions globally, accounting for almost **40% of these emissions and 36% of global final energy demand**
- Building **floor area is expected to double by 2060,** adding the floor area of Japan every year. Buildings are not only producing emissions, waste and, using material but are



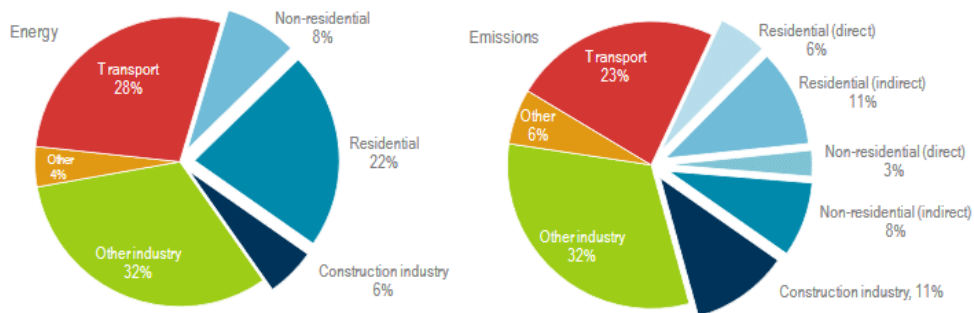
also a huge in terms of land use – given that the built surface is expected to double by 2060, this sector plays a critical role in setting the right/wrong direction to minimize the impact.

- We are not on track: **A 30% energy intensity reduction is needed until 2030 to put the sector on track to meeting the Paris Agreement goals. Instead, final energy demand in buildings has risen by 5% since 2010**, with the impact from growth in floor area and population outpacing the impact of energy efficiency improvements.
- Cooling is an emerging challenge: energy demand for cooling systems and air conditioner is rising sharply. In fact, **energy use for 'space cooling' increased by 25% since 2010** – space cooling is growing in energy intensity per unit floor area. In addition, only 8% of the 2.8 billion people living in paces with average daily temperatures above 25 degrees have an air conditioner – meaning there could be a drastic increase in demand in the coming years.
- Current ambitions and commitments are insufficient: While 136 countries mention buildings in their NDCs, most do not include concrete targets or measures to transform the sector. In addition, less than one third of countries have mandatory building energy codes or certifications in place
- The sector is responsible for 25% of global water use; **construction material use has grown by a factor of 34 between 1900 and 2005 (for comparison: overall material use has grown by a factor of 8)**; yet, 10-15% of building materials are wasted, and 54% of demolition materials end up in landfill.
- Improving buildings is an economical way to reduce emissions and with significant co-benefits, many of which are key to SDG targets: health, cost of living, and cost of public service provision. Yet 80% of economically viable energy savings in buildings remain untapped. **Getting buildings right means getting a huge industry right – considering the required extraction of raw materials, their transport, and their deployment.**
- Buildings are a huge investment opportunity: Default rates on 'green' mortgages are lower. **Yet, only a small fraction, 423 billion of the 5 trillion, spent on building construction and renovation is used for energy efficiency**



Figure 1

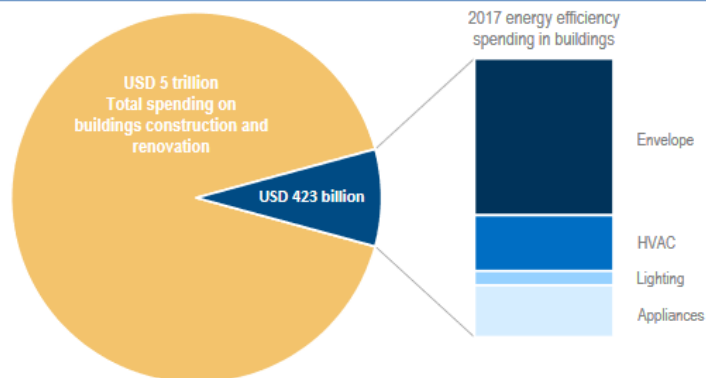
Figure 1 • Global share of buildings and construction final energy and emissions, 2017



International Energy Agency and the United Nations Environment Programme (2018): 2018 Global Status Report: towards a zero-emission, efficient and resilient buildings and construction sector.

Figure 2

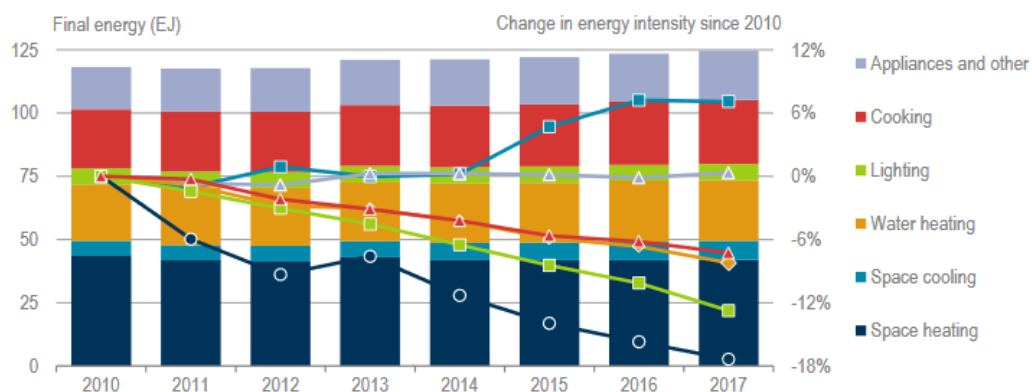
Figure 9 • Global energy efficiency investments and total spending on buildings, 2017



International Energy Agency and the United Nations Environment Programme (2018): 2018 Global Status Report: towards a zero-emission, efficient and resilient buildings and construction sector.

Figure 3

Figure 3 • Global buildings final energy use and change in intensity by end use, 2010-17





International Energy Agency and the United Nations Environment Programme (2018): 2018 Global Status Report: towards a zero-emission, efficient and resilient buildings and construction sector.

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## Climate action table

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This summary should be read in combination with the corresponding Climate Action Table for this area that outlines concrete actions for 2020, 2030 and 2050 with respect to policies, finance and investment, technology and innovation, business and services and civil society towards fully implementing the Paris Agreement.

## Contributions

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Under the leadership of the High-Level Champions and through the Marrakech Partnership for Global Climate Action, the development of this Climate Action Pathway was led by the Global Alliance for Buildings and Construction (GlobalABC) in collaboration with CDP, Cities Climate Finance Leadership Alliance, C40, Global Covenant of Mayors (GCoM), Global Fund for Cities Development (FMDV), ICLEI – Local Governments for Sustainability, Regions4, R20, UN Habitat and 100 Resilient Cities.