



© Egor Myznik/Unsplash

# 02

# CHALLENGE AND OPPORTUNITY

## 02 | Challenge and Opportunity

**The ability to reach the Paris Climate Agreement goals rests on many factors, but much depends on what happens in cities and on mobilizing private resources.** Cities currently account for 55 percent of the global population. Their share is projected to increase to 75 percent by 2050 as a result of rapid urbanization and demographic trends, with significant effects on climate change mitigation and adaptation efforts. The Intergovernmental Panel on Climate Change (IPCC) reports that cities' ability to address climate change is critical to limiting global warming to 1.5° Celcius. The IPCC identifies urban and infrastructure systems as one of four key systems with the opportunity for transformational change toward a low-carbon, resilient global economy (IPCC 2018).

**The magnitude of the investment needed to strategically plan for, build, and retrofit climate-smart infrastructure far exceeds public balance sheets.** Leveraging private sector investment, innovation and know-how will be critical to delivering climate-smart infrastructure and services by 2030. Although numbers vary depending on the methodology used, the message is clear: The investment gap in sustainable urban infrastructure is estimated to be in the trillions annually and is particularly acute in emerging markets and developing economies.<sup>1</sup> According to the Cities Climate Finance Leadership Alliance, the global need for urban infrastructure investment is \$4.5 trillion to \$5.4 trillion per year with current levels of financing only reaching \$2.5 to \$3 trillion annually (CCFLA 2015). The need for infrastructure is particularly acute in rapidly growing cities within fast urbanizing developing countries in Africa and South Asia.

**Cities are key drivers of climate change.** They consume two thirds of global energy and account for more than 70 percent of global GHG emissions, with some of this being within their control and as a result of their policies and much of it not. Air pollution from traffic congestion or industry in cities such as black carbon, sulfates and nitrates have heavy implications for human health, increasing the risk of stroke, heart disease, lung cancer, and respiratory diseases. The World Health Organization recently reported that 7 million people die each year due to air pollution and some analysis shows life expectancy dropping by 4.3 years in some cities (Air Quality Life Index). This is particularly acute in developing countries.

**Cities are very vulnerable to climate change shocks, especially in poorer countries.** Cities increasingly concentrate people, assets and poverty. Rapid and unplanned growth is leading to urban sprawl, often onto low lying and vulnerable urban lands. Urban populations are already increasingly experiencing heat island effects,<sup>2</sup> rising sea levels, storm surges, and intensifying tropical storms (WBG 2019a) which could force hundreds of millions of people in coastal cities from their homes with a total cost to coastal urban areas of more than \$1 trillion per year by 2050 (GCA 2019). Climate change related losses can significantly drain public investment especially in poorer countries and could push an additional 100 million urban residents back into poverty by 2030. Cities are places in which the risks associated with warming to 1.5°C, such as heat stress, terrestrial and coastal flooding, new disease vectors, air pollution and water scarcity, will coalesce (Dodman et al. 2017a; Satterthwaite and Bartlett 2017; IPCC Report 2019).

1 The 2015 CCFLA State of City Climate Finance report identifies \$93 trillion of low-carbon, climate-resilient infrastructure needed by 2030, of which 70 percent will need to be built in urban areas.

2 The heat island effect is when built-up areas are hotter than nearby rural areas. The annual mean air temperature of a city with 1 million people can be 1°C to 3°C warmer than its surroundings. In the evening, the difference can be as much as 12°C. Heat islands can affect communities by increasing summertime peak energy demand, air conditioning costs, air pollution and GHG emissions, heat-related illness and mortality, and water pollution. See <https://www.epa.gov/heat-islands>

**Climate change is also a leading factor in the rapid urbanization in emerging markets and developing countries which has placed significant strain on long-term strategic and spatial urban planning.** In Sub-Saharan Africa, extreme temperatures and unpredictable rainfall have already affected income from agriculture and caused people to migrate from rural to urban areas. Agricultural yields are expected to face losses of up to 15 percent by 2050, signaling that further rural-to-urban migration in the coming decades is likely, along with the associated pressures on urban infrastructure and services (IFC 2017). More than 60 percent of the land projected to become urban by 2030 has yet to be developed (GCEC 2018) and smaller cities are growing faster than megacities, especially in South Asia and Africa. Lack of strategic and spatial urban planning could lock in inefficient, poorly designed and vulnerable urban infrastructure for decades to come.

// Cities are places in which the risks associated with warming of 1.5°C, such as heat stress, terrestrial and coastal flooding, new disease vectors, air pollution and water scarcity, will coalesce

**Climate change, along with other factors, may have future impacts on city competitiveness.** Low carbon, resilient urban development pathways will be critical for creating attractive and livable cities that offer healthy and active lifestyles; clean air, green spaces, well managed waste and energy services, comfortable commutes and access to safe, resilient and green buildings.

Investments in green infrastructure raise quality of life, which in turn, attracts talent and businesses. Green buildings<sup>3</sup> can also lower the cost of living and help attract or retain talent in urban centers. Investing in resilience reduces costs to rebuild or repair; low carbon infrastructure planning and investments enhance energy efficiency and cost effectiveness, which can also help build resilience to financial shocks. On the other hand, not investing in climate smart urban infrastructure may have the opposite effect of future lost competitiveness and reverse urbanization, in some cases. Already today many large cities such as New York City, Chicago, Los Angeles, London and Paris, are beginning to see reverse urbanization due to the impacts of climate change or the problems that cause it such as pollution, congestion and inefficient housing.

**The investment potential of climate-smart urban infrastructure is substantial.** The anticipated growth in urban populations will require massive investment in climate-smart urban infrastructure, including energy efficiency, renewable energy sources for electricity, public transport and e-vehicle charging, water resources, and waste management. The Climate Investment Opportunities in Cities report identified \$29.4 trillion of investment opportunities in developing countries across six urban sectors (renewable energy, public transportation, climate-smart water, electric vehicles, and green buildings) (IFC 2017). Realizing the investment potential of cities will require a focus on integrated urban planning and city spatial plans that promote low-carbon, compact urban development. The COVID 19 pandemic and crisis has exposed systemic vulnerabilities in urban areas and the importance of urban planning in achieving well-planned, optimized and well-managed urban density and form (Lall and Wahba 2020).

3 As defined by the World Green Building Council, a 'green' building is a building that, in its design, construction or operation, reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment. Green buildings preserve precious natural resources and improve our quality of life. See <https://www.worldgbc.org/what-green-building>

**Investment in urban resilience is important for the economy, for competitiveness and for business at the local, national, and global level.** Cities produce more than 80 percent of global gross domestic product (GDP) and are the economic powerhouses of most countries as they concentrate people, businesses, jobs and tax revenue, and provide goods and services (UNEP 2019; IFC 2017). However, climate- and disaster-related shocks can disrupt supply chains, essential services, and livelihoods. Climate change can also lead to health risks due to vector-borne diseases, extreme heat, pollution, as well as loss of productivity and an increase in unexpected expenses resulting from the need to repair or rebuild physical assets (IFC 2017). Upfront resilience and prevention have been found to have an economic return of \$4 for each dollar invested (WBG 2019b). It is estimated across 279 cities that increasing urban resilience could protect as much as \$73.4 billion a year of GDP from climate change risks (Lloyds 2018).

**In spite of their investment potential, cities have unique challenges accessing finance and they need innovative approaches to leverage and attract private sector financing to fill the climate-smart investment gap.** In general, cities rely primarily on reallocating existing municipal budgets or

channeling tax revenue to fund investments and operating budgets for climate-smart infrastructure and services. However, the ability to mobilize private investment is shaped by the size, sophistication and institutional capacity of a city, which can vary widely even within the same country. Cities often face such barriers as limited or restricted bonding and taxation authority, low or no credit rating, limited capacity to structure bankable climate projects, and a lack of control over policies and enabling environment conditions that can encourage private investment. The combinations of these barriers in a given context will impact the financing modalities cities can use to attract private capital and at what cost (IFC 2017).

**Private investors face their own challenges investing in urban climate projects.** The risks associated with emerging markets and developing countries are still present in cities. These include political risks, such as breach of contract, currency convertibility and expropriation of assets, and macroeconomic risks, such as currency fluctuation and inflation. At the urban level, investors are often less familiar with municipal governments and their financial conditions and finding a pipeline of sufficient size and quality can be difficult.