

# Climate change and cities: why urban agendas are central to adaptation and mitigation

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**Cities could hold the key to slowing and eventually stopping global warming. Most greenhouse gas emissions are generated from producing the goods and services used by middle- and upper-income urban consumers. Keeping global warming within safe limits demands far more energy-efficient urban buildings and production systems and urban lifestyles that are far less carbon-intensive. It is up to high-income nations — the biggest contributors to greenhouse gas emissions past and present — to show how such a transformation can be combined with high living standards. However, urgent action is also needed in the urban areas of low- and middle-income countries, both through mitigation to curb greenhouse gas emissions, and adaptation to the serious risks that climate change brings.**

## Getting mitigation into the urban plans of all nations

Per person, greenhouse gas emissions are 25 to 50 times higher in many North American cities than in most cities of low-income nations. The responsibility of high-income nations to rapidly reduce such emissions is clear. Demonstrating how to have a high quality of life without generating high greenhouse gas emissions is a priority. Well-governed cities are an important part of this – with support for increasingly energy-efficient homes, workplaces and transport systems. So much of what makes cities special as centres of culture, social innovation and entertainment need not be energy-intensive.

Does this need for ‘low-carbon’ urban development apply in Africa, Asia and Latin America? In one sense no, because most of their urban centres have much lower greenhouse gas emissions per person – and the priority response to climate change must be for protection from its likely impacts. But how these regions’ cities develop will be one of the main influences on future greenhouse gas emissions. Unless the world’s wealthiest nations demonstrate

that successful cities with a high quality of life can drastically reduce their greenhouse gas emissions, nations such as Brazil, China and India are unlikely to act on this.

## Constraints on adaptation in cities

Most of the cities at greatest risk from climate change are in Africa, Asia and Latin America and the Caribbean. Many lack protective infrastructure. Most lack funding to take needed action.

There are two issues here. The first is the limits to what adaptation can do to protect natural resources and cities, towns and villages from the impacts of climate change. Adaptation only buys a little time – protecting against climate-change impacts that cannot be avoided. Efforts to adapt will become increasingly ineffective with no international agreement on keeping total greenhouse gas emissions within safe limits. And no international agreement will be reached unless high-income nations (including the US) agree to major reductions – to allow lower-income nations to expand their economies and increase consumption levels. The future of many major cities on the African or Asian coast or on many small islands is in doubt if no such international agreement is reached soon. Bangladesh, China, Egypt, India, Indonesia, Thailand and Vietnam are among the nations with the largest urban population within the low-elevation coastal zone.

The second issue is that many city governments lack the competence and capacity to adapt, and have huge infrastructure backlogs. In Asia, Africa and parts of Latin America, it is common for half a city’s population to live in informal settlements, lacking piped water supplies, paved roads, sewers, storm drains, and household waste collection. Many such settlements are on floodplains or coasts, next to rivers or on unstable slopes, leaving their inhabitants at greatest risk from storms and floods. City

## KEY MESSAGES:

- High-income nations have generated the bulk of greenhouse gas emissions past and present. It is up to them to show how far less carbon-intensive lifestyles and production systems can be combined with high living standards.
- Low- and middle-income countries house three-quarters of the world’s urban population. Most of the global growth in population in the next few decades will be in cities and smaller urban centres in low- and middle-income nations, so how they develop will be a major influence on whether total greenhouse gas emissions can be reduced.
- Urban areas in low- and middle-income countries have a large and growing proportion of the world’s population most at risk from the storms, floods, heat waves and freshwater shortages that climate change is bringing or will bring. The earlier that adaptation to reduce these risks can be incorporated into city investment and development plans, the lower the unit costs.

governments often refuse to provide infrastructure for these settlements and to bulldoze them when they can. Thus, city politicians and civil servants have antagonistic relationships with the very people who are most at risk – yet who also provide the city with a cheap and flexible labour force, and urban businesses and consumers with a vast range of goods and services. Without fundamental changes in the way that city governments work with their low-income populations, effective adaptation to climate change is impossible.

### The risks of climate change: an urban perspective

The human and economic costs of storms and floods in urban areas have grown rapidly over the last few decades. Some 95 per cent of deaths from disasters over the last 25 years have been in low- and middle-income nations, where very few businesses or households have insurance. The precise contribution of global warming to the rapid rise in deaths, injuries and loss of property from urban disasters is not known. But almost all the growth in natural disasters since 1950 has been in storms, floods and droughts — whose frequency or intensity climate change is likely to increase. Already, 2007 is the worst year on record for extreme weather events.

Many cities will face more intense rainstorms and hurricanes/cyclones/typhoons. Coastal cities are inevitably more at risk from sea-level rise, but perhaps the greatest threat they face is combined storm surges and high tides. Rising sea level may cause water tables to rise and undermine building foundations or lead to saltwater entering valuable groundwater sources. Many cities further inland face serious problems with flooding, as they are beside rivers or in the foothills of high mountains and vulnerable to the effects of more intense precipitation or snowmelt.

Most cities will experience more heatwaves and worsening air pollution. Many city economies will suffer as agricultural production in surrounding countryside is hit by storms, floods or constraints on water availability. The amenities of many coastal resort towns will be compromised by flood damage or loss of beaches. Warmer average temperatures can extend the range of disease vectors and increase risks from diarrhoeal diseases. While some changes may provide positive opportunities, these will require adaptation.

There is a profound unfairness globally in who generates climate change and who is at risk. Tens of millions of people in Asia and Africa have homes and livelihoods threatened by climate change, yet have made very little contribution to global warming. Would the US government oppose an international framework to reduce emissions if Washington DC, New York and Los Angeles faced risks comparable to those facing Alexandria, Dhaka, Mumbai and Bangkok today?

### Priority for action

The earlier action is taken to reduce greenhouse gas emissions and begin reducing vulnerability to climate change's impacts, the lower the costs. Urban centres need a planning and investment framework that breaks the link between growing incomes and rising emissions. This demands housing and office buildings designed to need less heating, cooling and artificial

light; an environment where walking, bicycling or public transport becomes the norm for all income groups; and industry, commerce and services committed to and capable of cutting energy requirements and wastes.

If initiated now, such action need not draw resources from other pressing tasks. In most African and Asian cities and many in Latin America, 33-50 per cent of the population lack good provision for water and sanitation and live in illegal settlements. Close to a billion urban inhabitants live in very poor-quality, overcrowded shelters. It is difficult to see action on climate change as a priority. But there are three good reasons for taking action now:

- Modest adjustments to investment by choosing low-carbon technologies can, over time, bring much lower greenhouse gas emissions, even in cities with booming economies. The concentration of people and production in cities facilitates many actions to keep down energy requirements and support waste reduction and recycling.
- Much of what needs to be done to reduce risks from climate change also reduces other risks. For instance, better drainage systems protect health and reduce risks of flooding and waterlogging, and good health care systems should support disaster preparedness and rapid post-disaster response.
- Much adaptation does not require additional government spending but is achieved by changing incentive and regulatory frameworks that influence individual, household, community, company and corporate investments. This includes adjustments to building regulations, land use plans, pollution control and waste management.

Investments in adaptation must work with low-income groups. This means fully involving them in plans to reduce flooding and other risks. Relocating those living in informal settlements should be avoided wherever possible. Instead, upgrading programmes should be favoured, in which governments work with the inhabitants to combine improved infrastructure — for instance, for water, sanitation and drainage — with risk reduction. Low-income groups may be prepared to move from hazardous sites, but only if they are involved in decisions about where to move and how the move is organized. The capacity and willingness of governments to offer them safer, well-located sites they can afford is obviously the key to success here.

These adaptations are not easy: most will face opposition from powerful vested interests. In addition, too many policy makers at national and city levels see climate change as an environmental or global issue that is not their concern. Too many climate change specialists focus on reducing greenhouse emissions or generating funding 'for adaptation', with little understanding of what constrains effective local adaptation and how this can be addressed.

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