

Low Carbon Development
Summary Sheets

Cities and low carbon development

Key message: Cities and urban areas contain most of the productive and consumptive activities that are contributing to climate change. Indeed, almost all growth, both demographic and economic, is now occurring in and around urban settlements. Urban populations are also increasingly exposed to climate change impacts, such as increased flooding or water shortages. Though the challenges are immense, cities have major potential to influence the causes and consequences of climate change through climate compatible urban planning and management. These improvements will need to be driven locally, and supported nationally and internationally.



Introduction

The effects of climate change will have an impact on many millions of people in urban areas across the world (more than half of the world's population now lives in cities, a share that is expected to grow to two-thirds by 2050¹). The overall vulnerability of human settlements, including food shortages, will increase through more frequent and extreme weather events, such as tropical cyclones, flooding and droughts as a result of changing patterns of precipitation. At the same time, cities are major contributors to greenhouse gas (GHG) emissions and, therefore, need to be at the forefront of mitigation efforts.

- 1. Cities worldwide account for an increasingly large proportion of global energy use and carbon dioxide (CO₂) emissions.** Although detailed harmonised data are not available, a recent analysis by the IEA estimates that cities and urban areas account for between 60% and 80% of world energy use². This can be attributed, in part, to changes occurring in urban areas of emerging economies and developing countries, including increased economic activity. Also, as countries develop and urbanise, they tend to shift from CO₂-neutral energy sources (biomass and waste) to CO₂-intensive energy sources. This leads to cities emitting a greater proportion of the total CO₂ emissions³. Furthermore, the consumption habits of urban residents also increase the generation of GHGs elsewhere – for electricity generation and the production of goods and services^{4 5}. Sectors that are among the biggest contributors include construction, energy production, industry and transport.
- 2. Climate change poses key threats to urban infrastructure and quality of life.** Due to the low-lying land they are often built on, coastal cities and urban areas (including many cities in low- and middle-income countries, in particular East and South Asia) are at risk from rising sea levels. In contrast, dryland cities are likely to suffer from scarce water resources due to extended periods of drought caused by climate change. Heat waves will be felt more strongly in urban areas due to the urban heat island effect^{6 7}.
- 3. How cities and urban areas expand and operate has an impact on energy consumption and carbon emissions.** Population density and spatial organisation are crucial factors influencing energy consumption, especially in the transportation and building sectors. Lifestyle choices, in particular the way people commute and energy/technology choices are also crucial in the generation of CO₂ emissions in cities.
- 4. Local authorities can promote 'green' growth in many ways, including:**
 - The creative use of procurement (e.g. through energy efficient buildings, low carbon vehicle fleets).
 - Facilitating low carbon development through land-use planning (to influence urban form and growth), transportation planning (to encourage use of mass transit and non-motorised transport), building regulations (to encourage low-energy construction where appropriate), legislation (on emissions targets and standards), and education and awareness campaigns (to influence individual behavioural choices)³.
 - Public-private partnerships, such as energy efficiency retrofitting programmes in the building sector, have great potential for reducing the burden on local finances and increasing the efficiency of green investments^{3 8}.

5. **City administrations can also contribute to green industrial production and enable eco-innovation.** This can be achieved by creating incentives and support mechanisms for green industry start-ups, energy conservation in existing businesses, and through the creation of knowledge-sharing platforms and well-designed support for research and development (R&D)³.
6. **Green jobs can result from targeted energy policies at the urban level.** This can be achieved through, for example, regulatory innovations such as local feed-in tariffs for renewable energy or strong market support for the deployment of information and communication technology (ICT), and other energy saving technologies. The employment benefits recorded are largely a result of multiplier effects, as households and businesses shift expenditures from a capital-intensive sector (e.g. energy) to more labour-intensive decentralised sectors (e.g. local services)³.
7. **Innovative urban policies and practices have shown that adaptation to climate impacts in cities is possible and can be built into local development plans.** These include community-based initiatives led by organisations formed by the urban poor and local governments working in partnership with their low-income populations⁹.
8. **Finance is an issue.** Budget pressures and the high up-front capital investments might require additional financial instruments for cities, which could be provided by carbon finance mechanisms and access to capital markets. National governments could play a key role in greening urban finance by redesigning sub-national tax and grant subsidies for local governments, especially those that have an impact on a city's built environment, transport and energy³. There is also a need for increased international financing for climate change mitigation and adaptation in cities as there are no targeted mechanisms on this level¹⁰.
9. **More information and analysis is needed to enable local policy makers to assess low-carbon measures, and their effect on job creation and benefit distribution.** Additional best-practice examples for low carbon successes in cities of developing countries would encourage ambitious action by city governments in these countries.

Case study Brazil

Through its innovative approaches in urban planning, Curitiba has been able to grow in population from 361,000 (in 1960) to 1.828 million (in 2008), without experiencing typical negative effects from congestion, pollution and reduction of public space. The population density in the city has increased three-fold from 1970 to 2008. At the same time, the average green area per person increased from 1 km² to over 50 km². As a result of integrated urban planning, Curitiba has the highest rate of public transport use in Brazil and one of the country's lowest rates of urban air pollution. Curitiba's transport fuel usage is 30% lower than in Brazil's other major cities.

By turning areas vulnerable to flooding into parks planted with trees, and creating artificial lakes to hold floodwaters, Curitiba has managed to address its potentially costly flooding problem.

The city government helped to establish the Curitiba Industrial City (CIC) in the city's West. The CIC has strict environmental regulations and is a centre for sustainable production. After three decades, the CIC today accommodates more than 700 companies, including a vehicle manufacturer producing rapid transit buses (used by the city) and information technology companies. The CIC has already created about 50,000 direct jobs and 150,000 indirect jobs. About 20% of the Parana State's exports are from the CIC.¹¹

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Definitions

Low carbon climate resilient development combines key elements of mitigation, adaptation and development strategies. A 'triple win' is where low carbon development brings benefits in mitigation, adaptation and poverty reduction/economic development. A 'double win' is where benefits are seen in only two of these areas.

Climate resilience is used in this document to mean: The capacity of households and communities to manage change and maintain or transform their living standards in the face of climate induced stresses and shocks without compromising long term prospects.

USD is the US dollar

Disclaimer

This summary sheet has been funded by the UK Department of International Development (DFID) and published by AEA Technology plc. The findings, views and recommendations contained in this summary sheet do not necessarily represent the views of DFID or AEA Technology plc. Research was carried out in November 2010 to February 2011.

For more information about the issues covered in this document, please contact Gill Wilkins at AEA.

T 0870 190 6309 or 0870 190 1900 E gill.wilkins@aeat.co.uk or enquiry@aeat.co.uk W www.aeat.com