Federal Ministry
for Economic Cooperation
and Development

Climate Change Mitigation in Cities

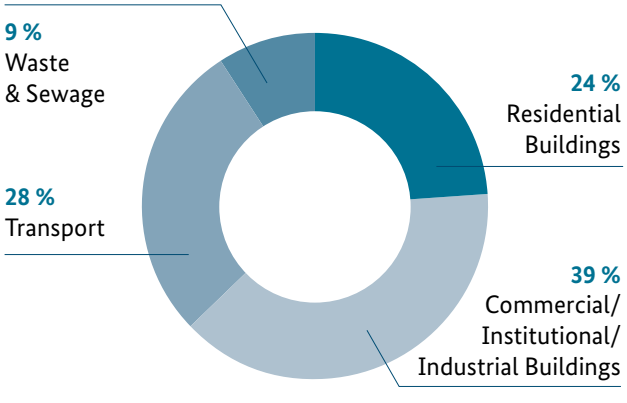
Urban action to reduce greenhouse gas emissions

WHY IS MITIGATION IN CITIES CRUCIAL TO TACKLE CLIMATE CHANGE?

Cities are major contributors to climate change, as they currently account for some 75 per cent of the global greenhouse gas (GHG) emissions. Urban areas accommodate more than half the world's population and are main centres of economic activities. The way in which cities grow and operate matters for energy demand and thus for GHG emissions. The anticipated growth in urban population will require extensive construction of infrastructure and buildings. Without deliberate policy interventions, the expected increase of urban areas would result in even higher emissions. The implementation of the Paris Agreement to limit global warming well below 2 °C or even below 1.5 °C implies a fundamental reorganisation of crucial urban sectors.

On account of their density, cities can be considered as ideal starting points to tackle climate change: they can save resources on a large scale and become a modelling ground for aspects of sustainability, such as space-saving, compact and polycentric urban structures, low-emission transport, energy-efficient buildings and regulated waste and water management. The largest opportunities for future urban GHG emission reduction are in rapidly urbanising areas where urban form and infrastructure are not locked-in. However, cities are often overburdened with concurrent challenges of rapid urban growth and climate action. Financial, political and institutional barriers can constrain the full realisation of mitigation options in cities, such as a lack of local budgets, municipal decision-making power and coordination between national and subnational authorities.

Share of GHG emissions in cities by sector (average of sixty C40 cities)



Source: C40, 2018: Measuring GHG emissions.

HOW IS GERMAN DEVELOPMENT COOPERATION SUPPORTING CITIES' CLIMATE MITIGATION?

In its effort to mitigate climate change in cities, the German Federal Ministry for Economic Cooperation

What are the key areas?	What can cities do to save energy and reduce GHG emissions?
Urban planning	Reduction of land consumption through compact urban design (e.g. establishing climate-friendly building codes, densification, designation of protected areas and restricted zones for settlements)
Building	Resource efficient (re-)construction and operation of buildings (e.g. sustainable building materials and design, efficiency in cooling and heating, appliances and lighting)
Mobility	Reduction of traffic by creation of walkable, compact and mixed-use neighbourhoods, provision of public transport and sharing systems, safe bicycle network, and promotion of efficient and electric vehicles
Energy	Decentralised and renewable energy supply (e.g. distributed solar photovoltaics)
Waste	Improving solid waste management, 3R strategy (reduce, reuse and recycle), waste-to energy
Water & Sewage	Energy efficiency of treatment plants and the use of renewable energies

Left: Affordable and energy-efficient EcoCasas in Mexico.

Right: Construction site of a new residential building in Brazil to fight energy poverty of residents and at the same time contribute to climate change mitigation.

and Development (BMZ) focuses on coordinated local and national approaches in the interest of a maximum impact – towards the Paris Agreement as well as the broader development goals of the 2030 Agenda. BMZ's fields of action range from the preparation of low-carbon projects and infrastructure financing to policy support of partner countries in key urban sectors (see box) and the strengthening of planning, policy and implementation capacities at the local level. Cross-sectoral and multi-stakeholder approaches shall trigger local commitment, ingenuity and action towards zero carbon cities. Global programmes – such as the C40 Cities Finance Facility (CFF) – complement the bilateral and regional work.

ENERGY-EFFICIENT HOUSING IN MEXICO AND BRAZIL

Mexico's housing sector is essential in achieving the country's commitment to reduce GHG emissions by 50 per cent by 2050. Every year, an additional two million people need housing and around 500,000 new residential units are built. On behalf of BMZ, KfW is supporting the energy-efficient social housing programme EcoCasa together with the Inter-American Development Bank: Efficiency standards are established and backed by low-interest loans and subsidies for building contractors. Depending on the regional climate, adapted technologies are used for energy-efficient heating or cooling. On average, an EcoCasa consumes 20 per cent less energy than a conventional house. To date, EcoCasa financed around 44,000 houses for over 170,000 people in all four climate zones of the country. In total, the programme saves more than 2 MtCO2e (million tons of CO_2 equivalent).

In Brazil, the provision of adequate housing is equally challenging for many cities. Despite enormous public efforts, the country is still short of some 6.9 million housing units. In 2018, more than 20 per cent of electricity was consumed in residential buildings, amounting to 18.6 MtCO2e. Residential electricity demand could rise by 80 per cent until 2050. BMZ, through GIZ, supports the Brazilian Ministry for Regional Development to integrate energy standards into social housing policies and related investment programmes. In a first phase, the team reviewed existing typologies of social housing for technical and climatic shortcomings. The next step is a nationwide competition to develop and adapt new typologies and technical solutions. To prevent urban sprawl and traffic, the competition encourages more compact housing schemes. New business models shall refinance the incremental costs of energy efficiency and renewable energies with operational savings.

MITIGATION THROUGH WASTE MANAGEMENT IN INDONESIAN CITIES

Municipal waste in Indonesia hardly manages to meet the growing demands of citizens and private companies. Every year, around 3.2 million tons of plastic waste are not disposed properly and are discharged into the environment. GHG emissions of improper waste disposal are of particular importance. In 2005, the waste sector generated an estimated 0.156GtCO2e, which is 7.4 per cent of the country's total emissions. Indonesia plans to reduce plastic waste by 70 per cent up until 2025. On behalf of the German government, KfW is financing the construction of landfills with sorting and composting facilities in the cities of Jambi, Sidoarjo, Jombang and Malang. Additionally, these cities are supported to operate the facilities sustainably, to organize a waste collection and to raise their residents' awareness of the 3R concept "reduce, reuse, recycle." By composting organic waste and capturing gas in landfill bodies, methane gas emissions are reduced by an average of 62,000 tCO2e per year in each city over a period of 14 years. BMZ, through GIZ, also provides policy and technical planning support to Indonesian regencies and cities in order to improve the development of more comprehensive climate action plans.

Improved waste management can reduce both greenhouse gas emissions as well as the improper waste disposal into the environment.

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