

City and climate

Cities make a significant contribution to meeting the major challenges of the future. This also applies to environmental and resource problems. As the population of cities continues to grow and more and more economic output is generated in cities, the ecological sustainability of cities is also becoming increasingly important. One key aspect to consider is the efficiency of energy supply and moderate demand for energy. The rate of energy consumption by humankind is continuously rising and constitutes a serious challenge in terms of both climate change and energy security. The International Energy Agency forecasts that global energy consumption in 2030 will be 60 percent higher than in 2020, for example. By then, about 85 percent of the energy supply will still rely on fossil fuels, the burning of which is the main cause of climate change.

Cities and conurbations play a significant role in climate change. UN-HABITAT estimates that 80 percent of man-made greenhouse gases originate from these urban areas, despite the fact that only half of the world's population lives there. People, commerce, industry, traffic and transport are concentrated into a very small space in cities, and transport, industry and private households are the main sources of CO₂ emissions.

Cities, especially those in developing countries, are vulnerable to the consequences of changes in the climate. Factors such as extreme weather conditions, rising sea levels, melting glaciers, floods or water shortages, drought, new diseases and pests have a direct or indirect impact on the city as an organism. Food shortages as a result of crop failures are only the most dramatic consequences facing conurbations. Of 33 cities that are expected to have a population exceeding eight million by 2015, 21 are threatened by a rise in sea levels on account of their coastal location.

Cities also have a great deal of scope to take steps to reduce the emission of greenhouse gases. According to experts, far-reaching measures such as increased use of renewable energy and greater energy efficiency, and their implementation in cities, are the only way to make a positive impact on the climate. Measures such as curbing air pollution not only help mitigate climate change, however, but also improve local quality of life as a whole. To do so, cities must pursue policies geared towards sustainable urban development. They must make use of their role as planners and regulators to draw up and enforce guidelines for manufacturing industry and residential areas, for example, and to plan land use according to ecological criteria. Municipal services and infrastructure systems (local public transport, water supply and wastewater disposal, waste management, energy and buildings) must be planned and implemented to be energy efficient, produce low emissions and minimize the risks resulting from climate change. Infrastructure projects are important components of Germany's international cooperation. Germany and Europe are playing a leading role in the fight against climate change.

Decisions made in cities and megacities today will have an impact on the climate for many years to come. With this in mind, Germany is initiating and promoting numerous projects around the world devoted to a wide range of aspects of climate change in urban areas, from both a scientific and a practical angle. The main emphasis is on researching, developing and implementing strategies that can be used to lessen the consequences of climate change. In many countries, the German Government is assisting local governments in their efforts to minimize emissions from transport and from power generation, buildings and industry. German experts are cooperating with local academics and practitioners to achieve these aims.

Energy as a Key Element for Sustainable Development (South Africa)

Megacities present many opportunities for countering climate change with the principles of sustainability. This project develops solutions for secure energy supply, fair access to clean forms of energy, and climate-friendly and environmentally sound energy production in the Greater Johannesburg region (Gauteng), and combines technical, economic, environmental and social considerations.

The Gauteng region has many faces. On the one hand, the lack of energy provision is hampering economic development. At the same time, however, the concentration of people and flows of materials in this dynamic economic region also presents many opportunities to conserve resources. Modern planning and corresponding service concepts make it possible to provide a growing number of inhabitants with the same services in terms of energy supply, efficient means of transport and utilization of living space.

The EnerKey project develops the appropriate tools to bring about a sustainable transformation of the greater urban area: rational use of energy, promotion of energy efficiency and energy saving, use of renewable forms of energy, and improvement of social and administrative structures, for example through the participation of citizens in decision-making processes and facilitating access to information and education. The approach integrates technical, economic, environmental and socio-economic aspects. The results are to be applied to as many areas of urban life as possible and to be transferred to other regions.

Promotion of Urban Agriculture in the Context of Climate Change (Morocco)

It is not unusual for cities to grow beyond their boundaries. Many people take up home in unplanned settlements in the surrounding areas. This often involves building on land that was previously used for agriculture. This is the case in Greater Casablanca too. This region is the largest urban agglomeration in Morocco and is characterized by high economic and population growth. The research project "Urban Agriculture as an Integrative Factor of Climate-Optimized Urban Development" is investigating the opportunities arising from the mutual interconnection of agriculture and urban development. Its focus of attention is directed at aspects of climate change.

One of the questions that the project aims to answer is the extent to which climate-optimized and energy-efficient forms of urban agriculture can help reduce greenhouse gases; it also aims to highlight ways in which the region can adapt to changes in the climate. The project is being implemented by an interdisciplinary team of Moroccan and German practitioners and scientists. It is designed to devise measures and guidelines, and to implement these in four pilot projects on urban agriculture. Another of its tasks is to develop technical solutions (energy-saving greenhouses and irrigation technology). The aim is to optimize the interrelationship between urban and agricultural land use and to produce high-quality food in the region.