

AMICA – Mitigation and adaptation to climate change

The world's climate system has such long response times that experts now agree that, to some extent, climate change can no longer be halted completely. The impacts of climate change can now be felt in our own countries too. The adverse experiences with climatic extremes are a clear signal of the severe impacts of climate change even in Europe, making it only too apparent that there is a substantial need for mitigation and adaptation measures.



A flooded residential area in Dresden in August 2002

Emissions avoidance contributes to a global public good, whereas adaptation to climate change is a benefit from which poorer countries may be excluded, thus exposing them to greater risks. The choice between climate protection (mitigation) and adaptation to climate change is comparable with the choice between mending a broken brake on a bicycle or buying a cycle helmet instead. Functioning brakes help to prevent accidents (mitigation), whereas the helmet is intended to avert disaster if an accident does occur (adaptation). Most people would probably opt in favour of both. This comparison also makes it clear that both mitigation and adaptation measures (in other words, spending money on both the brakes and the helmet) are relatively cheap compared with the damage likely to occur in an accident or disaster (namely hospitalization etc.). In other words, we need an integrated approach which combines both mitigation and adaptation. We should not be putting all our eggs in the "adaptation" or "mitigation" basket.

The aim of the European project AMICA is to develop local and regional strategies which adopt a comprehensive approach to climate change. Climate policy should be an optimum blend of short- and long-term preventive and reactive measures, thus reducing future planning risks. In other words, AMICA is an integrated climate policy approach which combines the measures necessary to protect the environment by preventing climate change while pro-



Gondolas in Venice, which faces a constant flood risk

moting adaptation. As Dr Manfred Stock from the Potsdam Institute for Climate Impact Research, who is providing scientific support for the project, points out "Recent events show that adaptation measures are extremely important but these are reliant on a parallel process of mitigation in the longer term. If we don't do enough to tackle climate change, we will find that disasters are occurring thick and fast and our adaptation measures will be quite inadequate as a response". As part of the project, which is funded by the EU, partners from France, Italy, the Netherlands, Austria and Germany will work on key themes such as river and coastal flooding, drought in rural regions and overheating in urban centres.

Initial adaptation measures have already been analysed, exploring socio-economic, environmental and engineering/technological options alike. Preventive measures may include early warning systems in advance of heat waves or flooding, while reactive measures may mean improving disaster relief e.g. for flooding, or making special provision for older people during heat waves.

Measures to avoid heat islands in cities include "greening" the urban environment, e.g. through tree-



The Semper Opera and the river Elbe in Dresden in 2002





Upper Austria in August 2002: the water retreats, leaving stone and gravel deposits in its wake

planting, green roofs and green tramways. Many different techniques to maintain a cool ambient temperature in buildings during heat waves are already available; they include using district heating systems or solar energy to drive refrigeration equipment and using groundwater for cooling. In the agricultural sector, too, climate protection measures can increase adaptive capacities during periods of drought. For example, no-till cultivation and carbon fixation in farmland can help stabilize the soil-water balance, which in turn increases the capacity of crops to withstand both drought and flooding. More intensive afforestation and ecologically adapted silviculture near river sources can help stabilize the local and regional water budget and can be combined with climate protection measures such as more intensive biomass use and the closing of regional economic cycles.

As a preventive measure, more frequent and severe extreme events call for the designation of risk zones for flooding, flash floods, storms, fast-freezing ice, hail, snowfalls, avalanches and mudflows. Furthermore, if flooding occurs, part of the floodwater can be temporarily held in retention basins. In flood-risk areas, swapping oil-fired heating for some form of biomass heating can help to reduce greenhouse gases and also minimize the damage caused when heating oil seeps into and contaminates floodwater. But experience in the Netherlands has shown that adaptation measures which work against the natural conditions – such as higher dykes and larger pumps – are not sufficient in the long term. The Dutch therefore base their measures on the principle: "Living with water – not fighting against water". The national programme launched in the Netherlands therefore prioritizes measures such as widening river beds, restoring rivers to a more natural state and forming temporary flood plains. Instead of battling against the water, floating houses, greenhouses and even floating roads are being planned in high-risk areas.

Upper Austria – Less heating oil in flood areas

In many houses in Upper Austria, the 2002 floods caused inundation of heating-fuel tanks and hence contamination of flood water, despite the introduction of legislation to prevent this scenario. An evaluation programme undertaken subsequently found that groundwater had not been adversely affected, but even after the oily substances had been removed, there was a lingering problem with offensive smells. As a result of falling subsidies and increasing fuel costs, the proportion of subsidized oil-fired heating systems being newly installed in family houses in Upper Austria fell from 30 percent to below 1 percent within a few years. More than two-thirds of homes are now heated with biomass, heat pumps, and local and central district heating.

Stuttgart – Green roofs for a better city climate

In Germany, the city of Stuttgart – the capital of Baden-Württemberg – has been promoting green roof-planting on private buildings within the city limits for almost 20 years. Unlike the monotonous gravel, bitumen or tin roofs, roof greening benefits the climate,



Green roofs in Stuttgart

filters out harmful substances and, above all, evens out temperature extremes throughout the year. With a green roof, heat in summer and frost in winter do not penetrate the roof surface, or do so only to a limited degree.

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AMICA project data

AMICA (Adaptation and Mitigation – an Integrated Climate Policy Approach) aims to combine measures to promote adaptation to climate change with preventive strategies to maintain and protect the global climate.

Coordination: Climate Alliance / Alianza del Clima e.V.

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