



## Rural development

# Agriculture and climate change

### The challenge

The agricultural sector is among those most seriously affected by climate change. The impacts of global warming vary according to region and are primarily seen in increasing frequency of climate irregularities and extreme weather events such as droughts, floods and strong winds. Growing pressure on natural resources due to population growth and inappropriate use are causing soil degradation and lower yields. In many places, harvests are declining further due to unpredictable rainfall patterns caused by climate change, as well as a rise in the incidence of disease and pests. Agrobiodiversity is similarly suffering under the changing environmental conditions. As a result, sustainable food security is no longer ensured.

However, agriculture is not just affected by global warming, it also contributes to greenhouse gas emissions. Rice cultivation and manure contribute approximately 90 per cent of emissions from the agricultural sector through nitrogen oxides released by soils and fertilisers as well as methane from ruminants.

Small-scale farmers in developing countries are particularly affected by the impacts of climate change due to their dependency on agriculture – and are not sufficiently prepared to overcome these challenges. Due to their limited resources and inadequate access to knowledge, they have little chance of adjusting to the impacts of climate change and therefore have a low level of resilience.

### Our approach

GIZ supports partner countries and the donor community to develop and implement approaches and plans for climate change adaptation and greenhouse gas mitigation. In the agricultural sector, the focus is on building up the resilience of small-scale farmers in rural areas and identifying priority adaptation measures.

### Our services

We work closely together with governmental, civil society and private sector actors involved in agriculture, as well as their organisations. Our services are divided across several areas:

- **Implementing national climate adaptation strategies (policy advising).** We advise policy-makers on formulating and implementing national adaptation strategies for the agricultural sector. This also includes integrating aspects of adaptation and mitigation into existing agricultural strategies and programmes. In addition, we advise clients on how they can utilise national and international financing opportunities for climate change adaptation in the agricultural sector.
- **Promoting activities to increase resilience and climate change adaptation (capacity development).** Building on regional climate projections, we support the planning and implementation of adaptation activities. First and foremost is a systematic analysis of the risks and potentials (vulnerability analysis) of the farming families affected by climate change in a certain region. Next, targeted adaptation measures are planned. The activities and technologies to be used have usually already been shown to work, are specifically oriented towards the impacts of climate change, and are incorporated into an adaptation strategy. Activities include good practices for sustainable agriculture, for instance those that are water efficient, prevent erosion, provide reliable harvests, and are also climate smart, contributing to greenhouse gas mitigation.
- **Information provision and public relations.** Better information about extreme weather events and early warning systems for future floods or droughts increase the responsiveness and resilience of small-scale farmers. We help to provide weather and climate data through



close cooperation with meteorological services. Using specialist forums, podium discussions and publications, we contribute to raising awareness and the public discussion of climate change.

- **Monitoring and measuring impacts.** We have developed specific impact indicators to track the results of climate adaptation activities.

### The benefits

Through its many years working as an international advisory service, GIZ has a broad range of knowledge and experience as well as a large pool of outstanding experts on agriculture and climate change. Our comprehensive portfolio of tested technologies and methods combined with our market-oriented work style enable us to develop tailored approaches to increasing resilience, adapting to climate change and reducing emissions. We can offer customised solutions thanks to our extensive knowledge of overarching and associated issues such as environmental protection and gender, as well as our excellent contacts with other organisations

### An example from the field

In cooperation with the private sector, we are supporting adaptation measures for the coffee and tea sector in Latin America through the 'Adaptation for Smallholders to Climate Change' project. Drawing on a detailed risk and potential analysis, adaptation measures were jointly identified and implemented together with small-scale farmers. The introduction of water-efficient irrigation systems, mulches and the utilisation of other improved cultivation technologies are compensating for reduced rainfall and are stabilising, improving and increasing yields.

A higher level of CO<sub>2</sub> fixation is being achieved by integrating tea and coffee cultivation into indigenous agroforestry systems. The increased levels of agrobiodiversity are helping stabilise vulnerable coffee and tea cultivation systems. Similar measures are now being implemented in Kenya, Mexico, Nicaragua and Peru.

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