Federal Ministry
for Economic Cooperation
and Development

Climate change and agriculture

A world without hunger – despite climate change

Background

The world's population is set to grow from roughly 7.5 billion people in 2017 to an expected 9.7 billion people in 2050. Most of this growth will occur in developing countries and emerging economies, which at the end of the century will be home to an estimated 87 per cent of the global population.

There are still 800 million hungry people in the world. Some two billion people are malnourished. In order to feed the nearly ten billion people who will be living on this planet by the middle of the century, global agricultural food production will have to be increased by about 60 per cent.

Climate change makes this a particularly challenging goal. The combination of extreme climate events (heat waves, droughts, floods, forest fires, storms) and long-term developments (rising average temperatures, changed precipitation patterns, etc.) is already having an impact on crop yields and thus also on food production in different parts of the world. It is expected, for instance, that in Africa productivity in the cultivation of staple foods such as corn or grain may decrease by up to 17 per cent.

At the same time, agriculture also accounts for roughly a quarter of global greenhouse gas emissions. These emissions include not only carbon dioxide but also methane, which has a far more severe impact on the climate. Methane gas is released, for instance, by cattle or as result of certain production methods like paddy cultivation. Excessive use of nitrogen fertilisers, intensive tillage and the conversion of grassland into cropland are other practices that are detrimental to the climate. Moreover, the conversion of forest to farmland is by far the biggest driver of deforestation. Greenhouse gas emissions in agriculture are caused in roughly equal parts by farming and changes in land use.

Measures that make agriculture more climate-friendly are an effective form of climate action. In other words, agriculture is both part of the problem and part of the solution.

That is why the agricultural sector has moved up on the agenda in international climate policy. At the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 21) in December 2015 in Paris, a climate agreement was adopted that is binding under international law. The agreement seeks to limit global warming to well below 2 degrees Celsius, if possible to below 1.5 degrees Celsius, above pre-industrial levels.

In their Nationally Determined Contributions (NDCs) under the Paris Agreement, more than 90 per cent of countries also take account of the agricultural sector. Almost all developing countries have defined targets in their NDCs for adapting agriculture to the consequences of climate change. Roughly 70 per cent of developing countries are aiming to implement concrete measures to reduce greenhouse gas emissions in agriculture or to aid carbon storage, e.g. in the soil.

Activities of the BMZ

In order to achieve food security despite climate change, agricultural production needs to be transformed and increased over the long term. This will only be possible by implementing measures for adaptation to changed climate conditions whilst

Left: pastoralists in Ethiopia
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Right: deforestation in Indonesia
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significantly reducing greenhouse gas emissions in agriculture. The Federal Ministry for Economic Cooperation and Development (BMZ) is therefore supporting the approach developed by the Food and Agriculture Organization of the United Nations (FAO) known as “climate smart agriculture”. It consists of three elements: increasing productivity, adapting to climate change and reducing greenhouse gas emissions. Therefore, the BMZ focuses on the following aspects:

1. All projects in agriculture need to **tackle the challenges of climate change**, e.g. through changed tillage practices, improved water management or diversification of production. To that end, the BMZ is working closely with various partners, including the Adaptation for Smallholder Agriculture Programme (ASAP) of the International Fund for Agricultural Development (IFAD), to which it has contributed 13 million euros in funding.

2. The BMZ **is developing and promoting concrete adaptation and mitigation measures**. This includes, for example, climate-smart animal husbandry, restoration of soil fertility, reforestation and measures of international agricultural research to breed drought-resistant crop varieties.

3. The BMZ **is supporting its partner countries’ climate policies**. It assists political decision-makers in the effective implementation of the agricultural components of their Nationally Determined Contributions (NDCs). This assistance includes efforts to help these countries access climate finance.

4. Poor smallholders are particularly affected when entire crops are destroyed by droughts, storms or floods. The BMZ supports the **development of climate risk insurance schemes in the agricultural sector**, e.g. under the InsuResilience initiative, including through the insurance programmes of the African Risk Capacity (ARC).

5. Worldwide, climate change is presenting challenges for agriculture. That is why the BMZ **is promoting dialogue** on these issues. Exchanging experiences, learning from one another and critically reviewing one’s own approaches can be helpful in developing global solutions.

Development and agriculture are inseparably linked. Adaptation and mitigation are two sides of the same coin.

Cooperation in action

The BMZ is supporting climate-smart agriculture through more than 30 bilateral, regional and global projects and programmes.

Land- and water-related measures that help conserve resources, such as specific agroforestry practices and improved irrigation and drainage of farmland, foster the adaptation of the agricultural sector to climate change. Simultaneously, they improve soil fertility and can help reduce greenhouse gas emissions.

Activities to increase humus content facilitate carbon sequestration in the soil. This is an effective, but not yet widely used means to sequester carbon and, at the same time, enhance the capacity for adaptation for climate change.

Through measures under the BMZ’s “soil conservation and soil rehabilitation for food security” programme, the fertility of the soil is being restored in six countries. Soil protection, adapted crop rotation and more efficient water use enable a sustainable use of the soil, which is a vital source of livelihood. For example, 340,000 hectares of degraded land are being rehabilitated and made fit for use. This will increase farmers’ production, secure harvests in dry years and stabilise and increase farmers’ incomes.

All in all, the different measures funded by the BMZ are making rural households more resilient to the impacts of climate change. At the same time, sequestration of carbon in the soil helps to mitigate climate change.

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