



Adapting to Climate Change by Improving Water Management in Ethiopia

Scenario

Ethiopia's climate has always been characterised by extreme weather variability. The country regularly experiences devastating floods and droughts. During the drought in 2008 almost 5 million Ethiopians were dependent on food aid due to the loss of harvests and high food prices. In 2006, country wide floods cost hundreds of people's lives and left thousands of Ethiopians homeless.

Climate variabilities are worsened by already observable repercussions of climate change. Precipitation patterns of the country's two main rainy seasons are changing and are becoming less predictable. Additionally, more erratic and extreme rain events as well as droughts have been observed over the last decades. For the future only moderate rises in temperature and rainfall are expected, however, rainfall patterns are likely to continue to change with an increase in extreme weather events.

Changes within the climate have serious effects on the Ethiopian agricultural sector. About 80% of Ethiopians work in this sector dominated by small-scale farmers employing rainfed cultivation. The agricultural sector also contributes about 50% to the country's gross national product, mainly through the export of coffee. As climate change is expected to increase rainfall intensity as well as the frequency of floods and droughts, more soil will be stripped from farmers' fields, fertile soils will lose valuable nutrients, and overall crop yields are likely to decline. This will have detrimental effects on the livelihoods of farmers and the Ethiopian economy as a whole, if context-specific coping mechanisms are not employed.

Acknowledging the pressing threat of climate change, the Ethiopian Government developed its National Adaptation Programmes of Action (NAPA) in 2007. The NAPA process was initiated and coordinated by the National Meteorological Agency (NMA) with the aim of identifying priority adaptation needs due to climate change. NAPA identified a number of major vulnerabilities including:

- Food insecurity arising from increasing occurrences of droughts and floods,
- Outbreaks of diseases such as malaria, dengue fever, water borne diseases associated with floods and respiratory diseases linked to the occurrence of droughts,
- Land erosion due to heavy rainfall,
- Damage to communication, road and other infrastructure by floods.

Climate change adaptation in the Ethiopian-Israeli-German irrigation project

To address the impacts of climate change, especially the negative implications on local farmers, the Federal Democratic Republic of Ethiopia has entered into a trilateral cooperation with the State of Israel and the Federal Republic of Germany. GIZ on behalf of the BMU (the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety) supports the Ethiopian partners in the coordination and implementation of the project "Enhancing Irrigation Efficiency and Water



Management as a Tool for Adaptation to Climate Change". The main objective of the joint Ethiopian-Israeli-German project is to improve farmers' capacities to adapt to negative implications of climate change. It involves three pillars of cooperation with the Ethiopian Ministry of Agriculture (MoA): The promotion of sustainable water resource uses, the improvement of water irrigation productivity, and the usage of treated wastewater in agriculture. Within this trilateral cooperation Israel and Germany provide the necessary expertise and technical know-how to support our project partner in managing local water resources more efficiently. Concrete measures taken within the joint project include:

- Support of water user groups in sustainable water management, including the preparation of water management plans,
- Provision of drip irrigation equipment and measuring instruments for agro-climatic and hydrological parameters in order to monitor climate and water resources developments,
- Training of farmers and irrigation instructors in water efficient and locally adapted irrigation techniques,
- Conducting a study on the potential of including treated waste water reuse in agricultural production and carry out pilot projects.

Expected results

The application of modern irrigation technologies adapted to local conditions will increase water productivity in the project areas. Farmers will be less dependent on rainfall and enjoy higher crop yields. This will positively influence food security, especially in times of low rainfall

and drought events. As the cultivators are expected to increase their harvests, they are also more likely to have food surpluses which could be sold at local markets and thus increase their income.



In order to become more independent of increasingly unreliable rainwater and to manage incidences of water shortages, new and innovative water resources for agricultural irrigation need to be tapped. One possible way to do so is the introduction of treated waste water practices for agricultural irrigation. Within the trilateral project a study will examine the conditions for technical implementation as well as the cultural acceptance of wastewater practice in food production. The use of wastewater as a contribution to climate change adaptation represents an innovative approach for the Ethiopian agricultural sector.

Overall the project will improve capacities of farmers to adapt to climate change by increasing water available for agricultural purposes as well as raising water productivity.

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