Netherlands Enterprise Agency

Climate Change

Learnings from public-private partnerships supported by the Facility for Sustainable Entrepreneurship and Food Security (FDOV)

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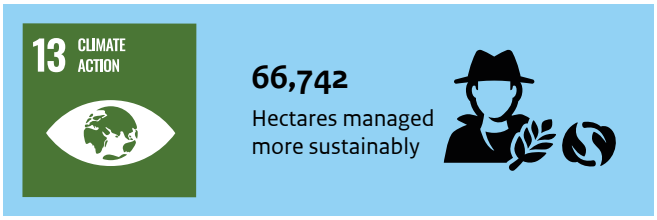
FDOV climate results



One of the biggest challenges for sustainable food systems is adapting to climate change and reducing its impact on global warming. For this reason, climate change is a cross-cutting FDOV theme. This means all public-private partnerships (PPPs) with FDOV subsidies should address climate change in their design to ensure the sustainability of results. Since the start of FDOV in 2012, climate change has become even more prominent as a development theme. What can we learn from FDOV regarding climate change for future PPPs?

Climate adaptation, a precondition for success

Agriculture is one of the sectors most vulnerable to climate change. Higher temperatures, extreme weather events, and droughts directly influence food production and profitability. It poses a direct threat to the food security of low-income households, whose incomes depend on food production. Therefore, it is important for the success of PPPs that farm households adapt to and become more resilient against weather shocks and long-term climatic trends.

The PPPs that FDOV supports have experienced how climate adaptation is a precondition for success. The **Food for All PPP in Kenya**, for example, found that climate change posed 'the greatest challenge' in stimulating sustainable horticulture. Due to recurrent droughts, water had become increasingly scarce. While the project partners expected droughts, the reality proved to be more severe: farmers only experienced 2 days of rainfall during some seasons. As a result, rainfall-dependent farmers could not make a living from horticulture. The project also promoted the modernisation of dairy production and processing for local markets. This allowed farmers to diversify their production, including feed for livestock and dairy. For those farmers with access to irrigation, the project promoted climate-smart agriculture. This included water-efficient drip irrigation, drought-tolerant crop and fodder varieties, and shade nets to reduce water evaporation.

Similarly, droughts experienced in Java prompted the need for climate adaptation in the FDOV project **Production and marketing of high Premium Rice**. A lesson learnt by the PPP is that sustainable and stable production of high-quality rice in Java requires investments in the resilience of farming systems. The partnership is now making these investments in water-harvesting infrastructure and farmer training on water-efficient cultivation techniques.

Agroecology and modern farming systems

The adaptation methods discussed so far, such as drip irrigation, drought-resistant varieties, and water-harvesting can be seen as single measures any farm system can apply. Using a more holistic approach or changing the farming system as a whole is another way to adapt to climate change. Farmers can achieve this by using agroecology insights.

FDOV projects show how to implement agroecological elements in modern and commercial value chains. One of these projects is the **Macadamia Value Chain Enhancement project in Malawi**, promoting intercropping macadamia trees with beans, a form of agroforestry. Besides reducing the reliance on a single crop, intercropping also has agronomic benefits. The beans can be used as an organic fertiliser for the trees and cover crops to prevent soil erosion and water evaporation. This helps farmers to become more resilient to droughts. At the same time, it reduces the need for chemical fertilisers. The project also contributes to climate change mitigation as the production of chemical fertilisers is an important contributor to greenhouse gas emissions.

What is agroecology?

Agroecology studies the optimal use of natural resources and the environment for farming without causing degradation to these resources. Examples of agroecological approaches include regenerative agriculture, circular agriculture, agroforestry, and organic farming. Farmers can apply agroecological principles in farming systems to increase yields and climate resilience. In addition, agroecological principles can contribute to reducing ecological footprints. It is relevant for adaptation to climate change and reducing greenhouse gas emissions.

Biodigesters and circular agriculture

Similarly, the **4s@scale project in Kenya and Uganda** stimulated coffee farmers to invest in various activities such as dairy and banana production. The project also promoted intercropping coffee with banana or fodder varieties.

In addition, the project helped farmers to invest in a biodigester through credit and technical support. Biodigesters convert the farm's waste streams, including crop residues, cow and chicken dung, into biogas and bioslurry. Biogas is a clean form of energy that can be used for cooking. Bioslurry is the liquid that remains in the digester after the gas has been tapped. It can be used as a natural fertiliser. Compared to unprocessed manure, the nutrients in bioslurry are more readily available, which means it works more quickly. The biodigester thus contributes to more efficient circular agriculture and reduces greenhouse gas emissions.

"Biodigesters have important social, environmental, and economic benefits for coffee farm households."
– Lucas Chacha (Program Manager 4S@Scale)

A recent evaluation report finds that households adopting biodigesters indeed use less chemical fertiliser and less firewood for cooking. Besides reducing the ecological footprint, it also leads to cost savings for the households and time savings for women. Women do not have to collect firewood anymore, reducing the time needed for cooking. Using biogas, instead of cooking on an open fire, can also reduce cases of respiratory and eye illnesses.

Despite these potential benefits, the adoption of biodigesters is yet limited. So far, the project has contributed to about 3,200 households adopting a biodigester. This means 94% of the farmers targeted by the project have not yet adopted a biodigester. The evaluation report suggests this is related to high investment costs, challenges in the credit provision, and households having other investment priorities. Based on the lessons learnt in this project, innovative credit solutions are in progress in Uganda and Kenya. Farmers can now buy a biodigester on credit and pay it back with bioslurry, packaged and sold as organic fertiliser on the market.

Challenges and future potential of Climate Mitigation

The Flying Food project aimed to establish commercial rearing of crickets for human consumption, involving 4,000 smallholder farmers in Kenya and Uganda. Production of crickets requires a fraction of the natural resources needed for regular livestock and provides nutritious food. However, establishing an effective rearing mechanism was far more challenging than initially anticipated. Lessons learnt were documented consciously and built upon by new initiatives, such as the *FeedTechKenya* impact cluster that successfully launched commercial rearing of insects for feed.

The **Facility for Sustainable Entrepreneurship and Food Security** (FDOV) encourages public-private partnerships in food security and private sector development. Climate Action is a cross-cutting theme included in the project approval of FDOV.

Conclusion

Adaptation to climate change is not only a development goal but also a precondition for successful PPPs. The PPPs FDOV supports have shown different viable adaptation strategies. This includes solutions for conventional farming systems, such as irrigation and the adoption of drought-resistant varieties. FDOV also demonstrated how to apply agroecological principles. The advantage of agroecological approaches is that they provide a holistic solution and have the potential to contribute to climate adaptation and climate mitigation. Innovative solutions toward climate mitigation require sufficient time for testing solutions and solid proof of the concept.

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