Objectives of the project

The main objective of DeSIRA project is to improve climate change adaptation of agricultural and food systems in Malawi through research and uptake of integrated technological innovations. The project aims to develop climate-resilient integrated technological innovations, to enhance understanding of the opportunities and constraints for uptake of these innovations by farmers, and to inform policy makers and scaling partners about the potential of these technologies to contribute to climate resilience and sustainability.

Background

The smallholder farmers' agri-food system in Malawi faces persistent and new biophysical and socio-economic constraints resulting in low productivity and high production risks. These constraints endanger the food and nutrition security and income of smallholder farmers and the socio-economic growth of the country. These constraints are combined with a progressive degradation of natural resources putting at high risk the future of agriculture and food systems in the country.

Photo: An example of CGIAR integration of released technologies at Lisasadzi Residential Training Center in Kasungu under the EU funded KULIMA program. Photo credit: Gbenga Akinwale, IITA

This situation is aggravated by climate change, and science-based strategies to increase resilience against climatic shocks are urgently needed. There is limited partnership and coordination among the various players involved in technology generation and dissemination. This has led to development of fragmented technologies which cannot address efficiently the diversity of challenges faced by farmers. Through close collaboration at various levels (e.g. from on-farm participatory research to district innovation platforms, to national planning and dissemination workshops, to interactions with government departments) the DeSIRA project will support socio- economic assessments alongside technology generation to deliver technology options that are suitable for dissemination to farmers.

The theory of change to achieve the objectives

Innovations will be developed and tested to increase productivity and resilience of agri-food systems. Risks related to the systems will be reduced through adoption of the appropriate management options, dealing more effectively with pest and disease pressure, developing technologies to mitigate the effects of climate change and its related environmental degradation and through improved post-harvest management. Insights in pathways to adoption of technological innovation will be gained through joint identification of the main challenges faced by smallholder farmers together with stakeholders and using approaches of participatory design and evaluation of the tested innovations in innovation platforms.

Special studies will be conducted for some technologies to assess the trade-offs between different outcomes; technologies can have different effects on outcomes such as income, nutrition, food security and soil fertility/sustainability. This will also expose some of the risks associated with the adoption of technologies. For example, a technology that does not generate income but maximizes soil fertility may be less likely to be adopted than a technology that generates considerable income in the short term. Smallholder farmers may also prefer to maximize food security by prioritizing maize production before looking at nutrition outcomes.

With this in mind, the project will also analyze the gap between technology awareness and adoption in

Malawi and identify the conditions needed for increased technology uptake. Information that is generated will be shared with policy makers and scaling partners through an interactive process throughout the project. Using this multidisciplinary approach, the project will maximize the probability that technological innovations developed in the project will be appropriate to address the existing diverse, changing and complex challenges, and be taken up by smallholder farmers. This, in turn, will result in enhanced climate change adaptation and mitigation of agricultural and food systems in Malawi and improved productivity, reduced risks, reduced environmental degradation and ultimately improved food security, nutrition, and income.

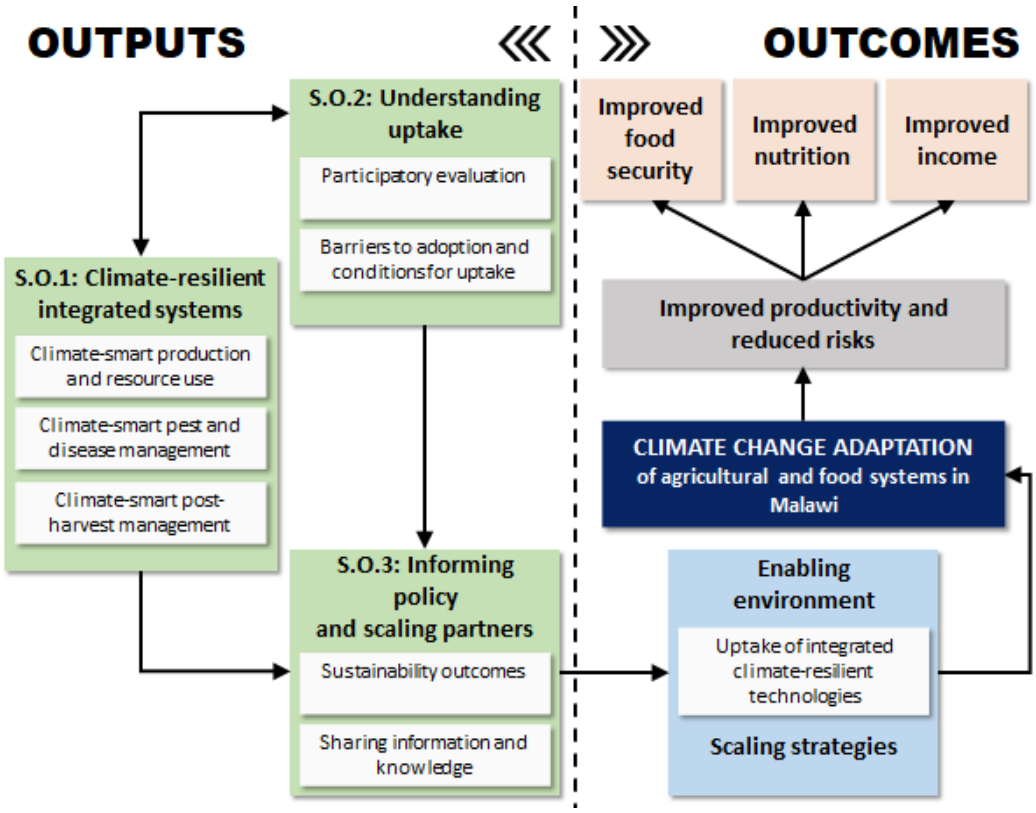

Figure: Theory of Change depicting the pathway from expected outputs to intermediary and final expected outcomes.

Main activities

Field research will be conducted and consist of a combination of on-station and on- farm experiments. Technologies include innovations that are already available in Malawi but need fine-tuning through farmer participation, innovations which have been proven effective on-station but need validation on-farm, combinations of existing component technologies into integrated options, and innovations which have proven effective in other countries but need validation under the conditions prevailing in Malawi.

Once established under on-farm conditions, the technologies will be evaluated by relevant stakeholders from district innovation platforms. This allows for joint learning by research, extension, and private sector partners in the district on the effectiveness and relevance of the technologies. This process will also strengthen the capacity of these actors at District level to continue supporting the farming communities to access and use the most preferred technologies.

Socio-economic research methods includes desk review to synthesize existing knowledge on barriers to adoption of technologies, modelling based on a nationally representative panel, farm risk models to assess the risk and returns associated with crops and technology packages, participatory workshops and focus groups to identify the impact pathways and the relevant indicators to be used, socio-

economic surveys, participatory workshops and focus groups to assess the empirical relevance of impact pathways. The results of the agronomic and socio-economic assessments will result in a dataset that can form the basis for official release of technologies by the Agricultural Technology Clearance Committee in Malawi.

Once released, the technologies can be further promoted and scaled out through different extension channels. Tailored communications outputs such as research and policy seminars, working papers and policy briefs, and high-level events supplemented by media coverage will aim at influencing policy makers, civil society, development partners and other key stakeholders. Capacity building will result in PhD qualification in banana virology for a Malawian scientist.

Organization

Led by the International Potato Center, this project is further strengthening the CGIAR country collaboration in Malawi. Under the EU-funded KULIMA program, the CGIAR collaboration focusses on capacity building and seed systems in the context of a large and innovative Farmer Field School program. The collaboration in DeSIRA focuses on the integration of research activities among eight CGIAR Centers, two European partners and national research partners. The project provides an opportunity for the CGIAR to work as one at country level and to demonstrate their relevance in both research and extension to address this century's agricultural challenges in a holistic and integrated manner.

Implementing organizations

The applicant and lead implementer is the International Potato Center (CIP). Funded co-applicants are International Center for Tropical Agriculture (CIAT), International Maize and Wheat Improvement Center (CIMMYT), World Agroforestry Centre (ICRAF), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), International Institute of Tropical Agriculture (IITA), World-Fish Center (WFC), International Food Policy Research Institute (IFPRI), The French Agricultural Research Centre for International Development (CIRAD) and University of Liège (ULiège).

Other main stakeholders

The project works in close collaboration with the Department of Agricultural Research Services (DARS), Department of Agriculture Extension Services (DAES), Department of Fisheries (DoF), District Agricultural Development Offices (DADOs) and Lilongwe University of Agriculture and Natural Resources (LUANAR). On-farm research will be conducted in collaboration with five NGOs led by Self Help Africa (SHA) under the already running KULIMA program. These NGOs are backstopping Farmer Field School groups which will be the main entry point for participatory field research in the DeSIRA project.

Region

The project is implemented in the following districts in Malawi: Mzimba, Chitipa, Karonga, Nkhata Bay, Nkhotakota, Kasungu, Salima, Mulanje, Thyolo and Chiradzulu. Some research stations outside these districts will also be selected.

Funding and co-funding

EU	€ 6,000,000
co-funding from the implementing partners	€ 315,790
Total budget	€ 6,315,790

Duration

The project duration is 5 years from December 2019 to December 2024.

CIMMYT
International Maize and Wheat Improvement Center

CIP
INTERNATIONAL
POTATO CENTER
A CGIAR RESEARCH CENTER

WorldFish

CIAT

ICRISAT

CGIAR

IITA
Transforming African Agriculture

LIÈGE
université

cirad

World
Agroforestry
Centre

INTERNATIONAL
FOOD POLICY
RESEARCH
INSTITUTE
IFPRI