



PROCESSING

Innovative approaches to process local food in Sub-Saharan Africa and Southeast Asia, which contribute to improved nutrition, as well as qualitative and quantitative reduction of losses

Development of Milkfish (*Chanos chanos*) and Kimarawali (*Stolephorus delectatus*) Solar Drying-Cooling Technology, Value Addition and Quality Assurance – SolCoolDry

Country	Kenya
Funding Agency	Bundesministerium für Ernährung und Landwirtschaft – BMEL
Project executing Agency	Bundesanstalt für Landwirtschaft und Ernährung – BLE
Project Budget	966.094,70 €
Project Duration	09/2018 – 08/2021
Key Words	food security, solar cooling, solar drying, milkfish, mimarawali
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Partners	Kenya Industrial Research and Development Institute Kenya Marine and Fisheries Research Institute Technical University of Mombasa Innotech Ingenieursgesellschaft mbH
Short Description	Mariculture is gaining prominence in Kenya as natural fish stocks (e.g., tilapia in Lake Victoria) dwindle, a situation that has pushed Kenya to import fish from

China. Milkfish (*Chanos chanos*) is currently being produced in culture ponds by farmers at the Coast of Kenya. Fishermen also harvest a local sardine called Kimarawali (*Stolephorus delectatus*). Milkfish farmers depend on fluctuating and seasonal wild stocks of milkfish fingerlings from local mangroves and therefore must maximise their productivity and returns during periods of abundance. Kimarawali catches are also seasonal with high swarming occurring in the months of March to July.

However, the fisher folk lack appropriate technologies to process their fish and are therefore forced to sell their produce when fresh to dealers at uneconomical prices. The farmers also practise poor handling techniques that negate the prospects of accessing high-end markets. This scenario offers an opportunity to Kenyan institutions to partner with Institutes and Firms and develop a technology package to processes and add value to Milkfish and Kimarawali. Such a technology package will utilise the latest advances in photovoltaic (PV), phase-change materials (PCM) and modelling technologies.

The proposed project aims to develop a solar cooling-drying system for fish. The Project will introduce a containerised, stand-alone solar technology package consisting of a 100% off-grid cooling and drying systems among mariculture farmers. For cooling technology, PCM cold storages or use of electrical battery, or a combination, will be optimised to guarantee stable and reliable cooling operations. Drying will be coupled to the cooling system and heat rejection will be optimised to supplement drying.

To produce high quality dried fish (premium nutritional value, texture and flavour), dehydration will be done through optimised control of temperature and humidity. Fish farmers will be trained on processing and quality assurance. Fraunhofer ISE and Innotech will partner with Kenya Industrial Research and Development Institute (KIRDI), Kenya Marine and Fisheries Research Institute (KMFRI) and Technical University of Mombasa (TUM) to design, develop and transfer the proposed technology package.

