The partnership between WE4F East Africa Regional Innovation Hub (EA RIH) and Turkana Basin Institute (TBI) pilots innovative technologies and training approaches in water, energy, and farming for sustainable and diversified local food production in Kenya.

**Background**

In the very **North of Kenya** in Marsabit County, living conditions in the village of Ileret are extremely harsh. With an average precipitation rate of around **300mm per year**, the region is classified as an **arid** land and crops can’t be grown by only relying on rainfall. **Available water sources in the area are heavily mineralized** and, without treatment, are generally unsafe for human consumption. Due to the combination of the village’s **remoteness**, unequipped schools, insufficient healthcare, and few job opportunities, the local community in Ileret faces some serious challenges, especially when it comes to the **access of nutritious food**.

**Project in a Nutshell**

**Improving livelihoods** of people in Ileret, supporting **local entrepreneurship** and **increasing food security** in the region are the main foci of the partnership between TBI and WE4F. A solar-powered **reverse osmosis (RO) system** for water treatment is at the heart of the project. The water serves both TBI and the local community and enables the **hydroponic production of vegetables**. The following steps will be implemented over the course of the project’s duration:

1. Installation and operation of a novel batteryless solar-powered RO system.
2. Installation and operation of a hydroponic farm.
3. Training of local community members in hydroponic farming and supporting them in starting their own hydroponic vegetable production.
4. Nutritious food research and awareness outreach.
5. Information collection and dissemination.

**PROJECT TARGETS AT A GLANCE**

- A functional batteryless solar-powered reverse osmosis system installed
- 9 functional hydroponic farms established in the community
- 12 local community members trained in hydroponic farming
- 1,000 people reached by the food and nutritional security awareness program
- Evidence of the impact of reverse osmosis and hydroponics collected and disseminated
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Main Implementer:
Turkana Basin Institute (TBI)

Main Partners:
Federal Ministry for Economic Cooperation and Development (BMZ) European Union (EU)
Ministry of Foreign Affairs of the Kingdom of the Netherlands
Swedish International Development Cooperation Agency (Sida)
US Agency for International Development (USAID)

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Photos:
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More about the global initiative Water and Energy for Food (WE4F) Grand Challenge: https://we4f.org/
Further information about the project: https://we4f.org/
As at September 2021

Water and Energy
14,600 m³ water treated by the reverse osmosis system for use within the community
35,000 kWh of solar energy used for water treatment

What has been achieved so far?
The RO system and the hydroponic farm are installed at the TBI compound and produce fresh water and vegetables. TBI has hired a project officer and a hydroponic gardener with vast experience. Among local communities, they are raising awareness about hydroponic farming and the nutritious benefits of vegetables. They have also started training 12 young entrepreneurs on how to do hydroponic farming and how to turn it into a business.

Looking Forward
1. Water from heavily mineralized sources will be treated to produce potable water with low operational and energy costs.

2. Newly available potable water will be used in hydroponic farming that will be tailored to local conditions, resulting in the production of otherwise unavailable crops.

3. Local community members will be trained in the installation and operation of hydroponic farms and provided with resources to replicate hydroponic agriculture in the region.

4. Nutritious food awareness programs will be deployed by leveraging existing resources and agricultural activities will be used to sustainably enhance long-term food and nutritional food security.

5. Experience from the project activities and evidence of impact will be collected and disseminated widely to promote scaling of project activities.

Hydroponic Farming in TBI Research Station in Illeret/TBI

FACTS

- Arid and semi-arid lands cover 80% of Kenya’s land surface and hold 25% of its population, mainly in rural settings.
- Hydroponic farming is relatively new in Kenya and is a climate-smart agricultural and water-efficient alternative.
- The reverse osmosis water purification process can remove both suspended and dissolved impurities and salts, as well as bacteria and viruses.