



Project AGRI Kellamino:

Agricultural Development Initiative

Mekelle, Ethiopia

Engineers Without Borders (EWB) - Israel

Engineers without Borders - Israel



Introduction:

This document provides information regarding a project in Mekelle, Ethiopia by Engineers Without Borders (EWB) – Israel, Rehovot Chapter. The project aims to work with the local development organization, The Tirgrai Development Association (TDA) to find solutions to the current challenges, with a special focus on agricultural development. EWB is using holistic approach to sustainable development. This approach emphasizes improvement in the human condition (social and human development) as its primary goal, and places respect for environmental quality and the limits of nature at the core of any economic, political, educational, and cultural strategy. Our holistic approach recognizes that for a truly inter-disciplinary development work there must be interaction and coordination among all of the factors and agents which intervene and act in a locality, region, or country. There is a need for local community decision making which is coordinated with regional and national planning. There is a strong desire to support the establishment of the local EWB – Mekelle branch and incorporate them into all aspects of the projects in Mekelle.

The Kellamino project aims to improve the efficiency of the business division of the school and to share technology, improve water management, provide alternative energy solutions for the school and the nearby communities who use it. The project will continue to collaborate with the Science Technology, Engineering and Mathematics centers (STEM), one of which is located at the Kellamino school where we will implement an agricultural engineering and science education program. The EWB – Rehovot chapter is also coordinating with other international EWB chapters to improve the conditions at the Mekelle school for the blind, where our focus will be to improve the agricultural methods and crop yields. These solutions will be developed with the local partners and together a long term implementation program will be established. The success of the program will depend on mutual cooperation and participation in scientific and engineering solutions.

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Project implementation Stage I:

- **Establish a demonstration farm** with the goal of improving current agricultural practices. The farm will consist of half drip irrigation and half furrow irrigation. The aim will be to introduce new technology as well as to improve the current methods. The project will introduce improved seeds, improved fertilizer practices, usage of a nursery, scientific measuring methods to improve agro-technical practices. An emphasis will be placed on managerial practices, monitoring and organizational memory.
- **Improve economic viability of farm.** Currently farm revenues are slight above costs. It is the intention of the project to promote correct managerial and agro-technical solution to improve the profitability of the farm. The long term intention (see MoU) is to have the entire farm operate with drip irrigation and have yields that are of commercial standard.
- **Work with local farmers and cooperatives** with the aim of reaching out beyond Kellamino and establishing relationships with the local farming community. This will hopefully increase the impact of the work done at Kellamino and improve the agricultural practices of farmers near the school.
- **Establish a working relationship with EWB – Mekelle.** The two chapters will work together to propose projects in agricultural development as well as solar energy. A solar powered water pump is currently being planned and in the future a proposal will be made for solar energy at Kellamino.
- **Agricultural Science and Engineering curriculum,** a school curriculum will be provided to the STEM centers that focus on agriculture. The curriculum will be

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based on hands on learning and will aim to involve the students at the STEM center in the agricultural development initiative.

- **Joint Research** between the Hebrew University Faculty of agriculture's and Mekelle University's College of Dryland Agriculture & Natural Resources. Formulation of joint research proposals in the field of agriculture in order to increase the exchange between the two scientific communities. In addition students from Mekelle will be encourage to participate in the Faculty of agriculture's English based international postgraduate courses, or MSc in Agricultural science.

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October 2014 Implementation:

Project Implementation details

At the end of September 2014 a team from Engineers Without Borders, Israel (EWB-Israel) arrived in Ethiopia. The team arrived in Addis and with the help of the Tigray Development Association (TDA) arranged a shipment of fertilizers and agricultural equipment to be sent to Mekelle. The team also brought equipment from Israel which included a drip irrigation system, protective covering for the nursery and trays for seeds. This documents aims to provide a comprehensive overview of the past 2 months and the progress that has been made thus far.

Over the past few months the team of EWB-Israel has implemented a demonstration farm that applies exact agriculture through new technologies and improved water management. The 0.5 hectare plot is in the center of the Kellamino farm that is operated by the TDA. All of the work has been accomplished through a joint effort by the farm's entire agricultural team and volunteers from EWB-Mekelle. Water is pumped from the river by an electrical pump to a Netafim irrigation system (DRIPK 5010). Irrigation is by drip irrigation and furrow irrigation. The furrow irrigation uses local techniques and improves furrow construction design in order to achieve improved water management. The drip irrigation demonstrates improved ways to irrigate that conserve water, improve yield and serve as a model for the rest of the farm. In addition a nursery for seedlings has been built, and an exact fertilizer and irrigation schedule is being implemented by the local staff. Tools and measurement equipment have been provided in order to enable the staff to conduct on going analysis of the soil and crop needs and to undertake the required measures. The changes in operation were based on water and soil analysis, topography and additional measurements taken during the initial assessment. All decisions made on crops and time tables are based on a market analysis to ensure profit maximization.

Our vision for the next few years is that the demonstration farm will serve as a training center for local farmers and enable introduction of different technologies and agricultural methods to be adopted as seen fit by the farmers themselves. We are interested in having farmers decide for themselves which technologies they see appropriate for their plots. Furthermore the joint cooperation of EWB and the TDA will be

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assessing the results of the plot in order to expand the use of drip irrigation and other technologies at the Kellamino farm as elaborated in the MoU.

Mekelle School for the Blind

The blind school holds 86 students from grade 1 to 8, boys and girls. Boys and girls live separately in 12-16 person rooms. Each year 80 students apply and only 20 are accepted, orphans get first priority. The rooms are crowded and in poor condition. There are several small plots of crops. All crops are planted without proper agro-technical knowledge, often in the furrow rather than on the bed. Most crops are in bad condition and dry.

In December a drip irrigation system will be installed at the school. We will supply the school with seeds and fertilizer. A nursery will be built. Improve composting will be accomplished through training of volunteers and local staff. The project will be in collaborating with students from Mekelle University and form EWB Mekelle.

For more information contact:

Tomer Malchi: Project manager, T.malchi82@gmail.com +972-528021140

Ben Cohen: Head Agronomist, Bentzuba@gmail.com +972-545637613

Yair Keinan: Financial officer, Yairkeinan@gmail.com +972-545805972

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