

# The Quinta Irimi smallholder farm transitions from the use of firewood to solar powered systems

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Quinta Irimi, an agricultural and agro-processing initiative located in Mafuiane engages in a wide range of agricultural activities including agro-processing agriculture, fungal beekeeping, mushroom production, and animal husbandry. The small holder farm largely relies on firewood and charcoal as the largest source of energy used in the process of pasteurizing the substrate for the production of mushrooms. Food processing at the farm consumes large amounts of firewood per day for cooking over 200-litres drums.

In January 2023 the Quinta Irimi small holder farm with support from UNIDO and in Partnership with the Ministry of Agriculture embarked on the transition from using environmentally detrimental sources of energy to the

use of solar powered systems, thus increased production. The ongoing energy transition was made possible by the installation of 4 solar powered systems including; a Solar grinder, a solar fruit and vegetable dryer, a solar powered irrigation system, and a biodigester.

### **Solar powered grinder**

In the past the farm solely depended a small electric grinder for processing bananas, okra, and cereals (rice, sorghum, and millet) in small quantities using electric power worth 4500 to 5000 meticaais per month. Acquisition of the solar powered grinder will not only reduce electricity costs but also the use of firewood and time spent by workers during the process of preparation and control of the fire to process edible flour from different types of dried grains such as corn, millet, sorghum, wheat, barley, rice, soybeans, pepper, or other agricultural products. The grinder will be capable of processing 40kg/h of fine flour depending on the moisture of the grains, and 200kg/h for more coarse flours used for animal feeds production.

### **Solar dryer for fruits and vegetables**

*“It used to take about six days to dry fruit and four days to dry vegetables. On days with little sun shine, depending on the length of the days with clouds or rain, we ended up losing the produce, especially the fruit, which has a poor-quality level”*. --- Malisa, Smallholder farmer on the benefits of the solar fruit and vegetable dryer

The total quantity of fresh fruit that can be dried simultaneously in all drying chambers using the solar-powered dryer is 90kg per day. This means a reduction in time, an improvement in efficiency and a reduction in the loss of vegetables, fruits and tea leaves.

### **Solar powered irrigation system**

In July 2022 a borehole was drilled for water supply with an estimated flow volume of 4m<sup>3</sup>/h which is sufficient for irrigation and water supply to the surrounding communities as well as for consumption. In order to guarantee the storage of the precious liquid, the construction of a 10 cubic meter high water storage tower is in progress and a PS2 600 solar pump installed to facilitate the pumping of water for irrigating the 10 acres farm.

### **Biodigester**

To reduce the use of firewood and the time spent by the workers during the process of preparation and control of the fire, the construction and feeding of a biodigester a 20m<sup>3</sup> is in an advanced stage. Besides, identification of sites for acquisition of goat, bovine and pig manure to ensure the continuous feeding of the equipment.