



# Improvement of Milk Storage Using Solar Powered Coolers

## SUMMARY

Country	Zambia
Implementer	Ministry of Agriculture of Zambia
Target groups	Smallholder cattle farmers
Duration	02/2021 – 05/2023
Type of energy use	Cooling

## CHALLENGE

The livestock sector provides essential food products and sustains employment and income of the rural population in Zambia. The dairy subsector plays a major role in the livestock sector. Production of milk for the markets is dominated by smallholders largely due to many farmers joining dairy cooperatives. Smallholder dairy farmers contribute about 50 % of the marketed milk in Zambia. However, it is estimated that 60 % of raw milk, mostly produced by traditional cattle keepers, does not reach the formal market. This is attributed to the fact that many traditional cattle farmers live outside of the existing network of milk collection centres, which are often closer to bigger cities or the railway lines. Therefore, the milk of these farmers cannot be processed and marketed. This often leads to a waste of milk that cannot be used locally, reduces the earning potential of the cattle farmers and increases the dependency on foreign milk imports to the country.

## IMPACT LOGIC

The project provides cooling solutions for rural farmers, who are located off-grid, and in addition, also provides these farmers with an opportunity to participate in the formal sector of the dairy product value chain. This is achieved through a two-step process.

First, all relevant local stakeholders are identified and mapped to ensure that the project is locally anchored. Second, a suitable location for a new milk cooling unit is identified. At this location a milk cooling unit, which is operated completely by solar power, is constructed. As no connection to the national power grid is possible due to the remote location, the solar PV system ensures that the unit can operate continuously and the cooling chain is not interrupted. At the same time, sensitisation measures teach farmers about the importance and process of cooling chains to ensure the sustainability of the project. Combined, these measures increase the quantity of milk collected by the dairy processors, provide an income for farmers selling milk to the collection centres, and offer employment opportunities at the new milk collection centres.

## INNOVATIVE PROJECT ELEMENTS

This project provides a reliable alternative to traditional electricity supply for the milk's cooling value chain. The constructed milk cooling unit has no connection to the national electricity grid and instead is run entirely on solar power. Furthermore, milk can be stored for up to two days, which enables individual farmers to sell more milk overall. This innovative cooling system provides an additional advantage during dry seasons. Traditionally, farmers would not feed their cattle more than necessary to keep costs down, but by collecting and storing their milk at the cooling unit, they are incentivised to feed their cattle throughout the year, enabling them to establish a stable income from milk production.

## FURTHER INFORMATION

[www.gruene-buergerenergie.org](http://www.gruene-buergerenergie.org)