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RESEARCH AND DEVELOPMENT FUND PROJECT SPOTLIGHT

Koolboks

Improving Affordability of Cold Chain Storage Using Internet of Things (IoT) Technology

Project Summary

This project will develop and embed Internet of Things (IoT) into Koolboks' solar freezers with the aim of improving overall functionality. It will enable predictive maintenance, temperature control and battery analytics and Koolbooks will field-test 180 of their solar-powered freezers with the new functionalities. It will address technical and service issues, understand customer affordability, and test the viability of the cooling-as-a-service model.

Project Description

The project is an eight-month pilot programme in the South West of Nigeria. It covers Ekiti, Kwara, Lagos, Ogun, Ondo, Osun and Oyo States. The project aims to conduct field tests with smallholder farmers, specifically catfish and livestock farmers. It will deploy and evaluate 180 solar-powered IoT-embedded Koolboks Solar Freezers to directly address critical business needs.

In off- and weak-grid regions of Nigeria, smallholder farmers struggle to preserve catfish and livestock. This results in high daily expenses (approximately $5) for purchasing diesel and petrol. Previous pilots of off-grid Pay As You Go (PAYG) solar refrigerators were effective but had limitations, particularly in addressing sudden breakdowns in remote locations, causing substantial losses for farmers.

Koolboks aims to improve the existing design by developing an advanced IoT platform for remote monitoring. This includes a robust online PAYG system for affordability, preventive maintenance features for unit longevity, and access to the carbon credit market.

In the initial six months, Koolboks will focus on developing, designing, and manufacturing 180 IoT-embedded solar-powered freezers. These will incorporate IoT sensors and connectivity for remote monitoring, billing, preventive maintenance, and carbon credit tracking. The products will then be transported to Southwest Nigeria, where the following six months will be dedicated to sales and field testing, using partnerships for distribution.

R&D Partner
Koolboks

Organisation Founded
March 2018

Technology
Solar freezer

Project Location
Nigeria