

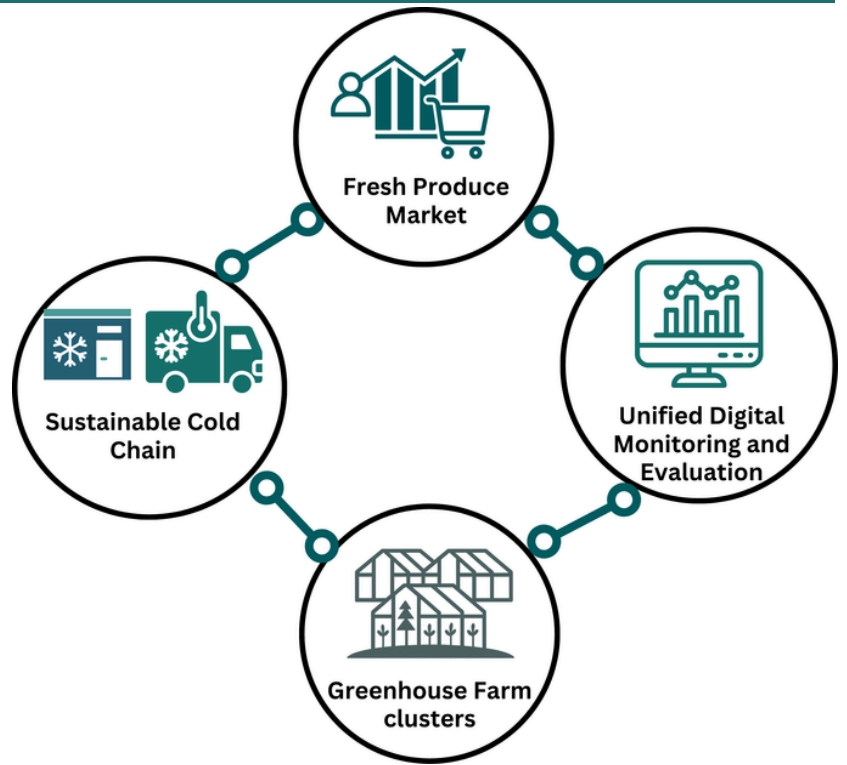


Enugu State Ministry
of Agriculture &
Agro-Industrialization



MANAMUZ

ENUGU ANCHOR GREENHOUSE CLUSTER MODEL



Pilot an initial 2,000 Greenhouses, Generating 10,000 + Jobs by 2026



Stage 1: Demonstration Supply Network in Aguobo Iwollo (Completed)



Stage 2: The 150 Greenhouse Farm Cluster In Owo (Ongoing)

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Scaling Localized Vegetable Production in Enugu State through the Implementation of a two thousand Vegetable Greenhouse Pilot.

Executive Summary

Enugu State is launching a climate smart vegetable production and cold chain pilot programme that will start with a 150 vegetable greenhouse farming cluster in Owo and scale to a 2000 vegetable greenhouse supply network across the state. This partnership between the **Enugu State Government** and **Manamuz Group** will be private sector led and create dignified jobs for youth and women, increase farmer incomes by up to twenty billion naira (13 million dollars) annually and position Enugu as a hub for traceable, low carbon, pesticide free vegetable exports. This document outlines the model, partner roles and expected outcomes as implementation has commenced in November 2025.

1. The Anchor Greenhouse Cluster Model

This pilot project is designed to create and enable operational efficiency for a supply network of two thousand vegetable greenhouses in Enugu State. It builds on lessons from a demonstration site comprising an Anchor cluster of three solar irrigated greenhouses integrated with a solar powered cold storage facility and on the integration of over sixty independent greenhouses into a coordinated supply network built upon this Anchor Cluster. .

The project is being implemented by the **Enugu State Government** through the **Ministry of Agriculture and Agro Industrialization** in partnership with **Manamuz Group**, a market leader in controlled environment food systems. The greenhouses will be manufactured in Enugu and will produce at least **4000 tonnes** of vegetables annually. All produce will be managed through a decentralized, renewable energy powered and digitized cold chain that ensures value created is retained instead of lost to spoilage.

This initiative is expected to create up to **10,000 jobs** and put as much as **Twenty Billion Naira** each year into the hands of farmers in Enugu State. It will help the state capture part of Nigeria's estimated thirteen million tonne vegetable supply gap and tap into European demand for traceable, pesticide free, low carbon footprint African produce. The long term goal is to use the results of this model as a foundation for producing and distributing **300,000 tonnes** of vegetables annually by the year 2031 in Enugu State and to contribute up to **one billion dollars** each year to the state's gross domestic product.

2. The 150 Vegetable Greenhouse Farming Cluster In Owo, Enugu State

To catalyze this private sector driven vegetable greenhouse supply network, the Enugu State Government, through the Ministry of Agriculture and Agro Industrialization, is partnering with Manamuz Group to implement a solar irrigated cluster of one hundred and fifty greenhouses in Owo, Enugu State,



This Owo cluster will serve as a women and youth focused innovation hub, with at least eighty percent of greenhouse owners and operators targeted to be young women under the age of thirty five. The cluster will be integrated with two solar powered cold storage rooms with thermal storage. Surplus solar power will be used to charge electric transport solutions that move fresh produce from farms to markets.

The one hundred and fifty greenhouses will be owned by fifteen cooperatives. Each cooperative will own ten greenhouses and have fifty members. The cooperatives will pay for their greenhouses over a period of three years from the sale of their harvests. In total, ownership of the one hundred and fifty greenhouses will be distributed across seven hundred and fifty farmers.

3. Roles and Contributions

Enugu State Government

- Provide a 5.8 hectare site at Owo Community, Enugu State.
- Fund perimeter fencing, signature entrance gate and **135 solar irrigated greenhouses**.
- Facilitate enabling policies, approvals, security and institutional support.
- Integrate the model into the Enugu state farm estate programme and local government structures.

Manamuz Group

- Manufacture and install greenhouses and cold rooms in Enugu State.
- Deploy a unified digital platform for registration, construction tracking, training, monitoring and repayments.
- Provide technical assistance for climate smart production, post harvest management and quality control.
- Coordinate market access and off taker agreements for fresh and processed vegetables.

EWAS and International Partners

- Fund fifteen solar irrigated greenhouses and a solar powered cold storage facility with two cold rooms.
- Support a unified digital platform used for farm management, cold chain management , traceability, market access and financial services.

The Energizing Women in Agrifood Systems (EWAS) project is funded by Mastercard Foundation in partnership with the Global Energy Alliance for People and Planet (GEAPP). It is implemented by Rocky Mountain Institute (RMI) based in Colorado in the United States, with venture building support from All On Energy Access, an impact investor seeded by Shell.



The EWAS projects aims to improve the agricultural productivity of young women under 35 years old by enabling ownership and access to renewable energy powered technology solutions. In this case, the productive use solutions are solar irrigated greenhouses and solar powered cold rooms. Manamuz is one of the five agriculture development partners in Nigeria and the organization has chosen Enugu State for its project implementation.

4. Expected Outcomes From the Owo Greenhouse Farming Cluster Project

Jobs and Income

- 750 dignified jobs for young people through ownership of 150 vegetable greenhouses in Owo Cluster cluster, with at least 80% owned by women.
- Up to 1.5 billion naira in additional annual income for farmers that own the 150 greenhouses at the Owo Cluster.
- Progress toward ten thousand jobs and 2000 greenhouses that generates 20 billion Naira annually as the model scales across the state.

Production and Markets

- Year round supply of climate smart vegetables aggregated, stored and distributed from solar powered cold rooms, ensuring that value created by farmers is fully captured as well as providing raw materials for processors.
- Up to 100 independent greenhouses established around the Owo cluster and supported by the Anchor Cluster.
- Replication of the 150 greenhouse farming cluster model across the 260 farm estates in Enugu State, with additional independent farms emerging and supported by these estates.
- Commencement of fresh and frozen vegetable exports from Enugu State to regional and international markets.

Industrialisation and Manufacturing

- Enugu State positioned as a manufacturing hub for Controlled Environment Agriculture food system components, including greenhouses, grow pipes, vertical farming systems and cold rooms.
- Expansion of local content and technical skills in fabrication, installation and maintenance of climate smart agriculture and cold chain infrastructure.

Knowledge and Research

- A Research and Development partnership with Godfrey Okoye University focused on smart agriculture, renewable energy and cold chain integration.
- A Research and Development partnership with Sustainable Energy Engineering Research Group, University of Nigeria, Nsukka on the Energy-Agriculture Nexus, Thermal Energy Storage, sustainable cooling and the circular economy.
- Gradual expansion of research and training partnerships to other tertiary institutions in Enugu State.
- Creation of a living laboratory where students, researchers and policy makers can learn from a functioning, data rich greenhouse and cold chain ecosystem.