

COOLING INNOVATION CASE STUDY

EJA-ICE

Overview

Eja-Ice is a solar-powered refrigeration and cold-chain services company. The company provides solar-powered cold rooms, cooling vans, and freezers supporting food-producing communities, aggregators, processors, wholesalers, and retailers. Their portfolio comprises of solar-powered cold chain assets operating under a Cooling-as-a-Service (CaaS) model.

Eja-Ice focus markets include Africa (primarily Nigeria and Kenya) and Indonesia where Eja-Ice has signed a tripartite contract with the largest fish aggregator for cold-chain development and a local engineering partner. [Learn more about Eja-Ice here.](#)



The Challenge

Post-harvest food loss: A large share of perishable food produced across Sub-Saharan Africa is lost before it reaches consumers due to the absence of preservation infrastructure at the point of harvest.

Energy access gap: Conventional refrigeration requires a stable electricity supply. In markets like Nigeria and Kenya, grid power is unreliable and expensive, making traditional cold chain solutions inaccessible or unaffordable for most smallholder operators.

Last-mile logistics gap: There is no reliable, temperature-controlled logistics solution connecting rural food-producing communities to urban markets. Food that is preserved at the farm level is often lost in transit.

High capital barriers: The upfront cost of refrigeration equipment is prohibitive for the majority of MSMEs, women-led businesses, and

individual entrepreneurs who would benefit most from access to cold storage.

The Solution

For Eja-Ice, refrigeration is the critical infrastructure link between food production and consumption that is currently absent across much of Sub-Saharan Africa.

Cooling also carries a clear environmental dimension for Eja-Ice. By powering all assets with solar energy and using ultra-low GWP refrigerants, the company positions the cold chain as a climate solution rather than a climate burden, with a long-term target of averting 27.9 million tons of CO₂. Their solutions include:

Post-harvest food loss: Solar-powered cold rooms (1.5T & 5T) deployed at aggregation/landing sites (e.g. Okibou Zion, Mile 12 Lagos) let fishers and farmers preserve produce immediately after harvest/catch.

Energy access gap: Core technology pairs solar

with lithium battery storage, providing reliable cooling fully decoupled from unstable grid power and diesel dependence - "100% off-grid, zero diesel for cooling." [Learn more.](#)

Refrigerant transition: Fleet-wide use of R600/R290 refrigerants (GWP of 3) vs. conventional R134a/R404 (GWP 1,450–3,950) leads to >99% reduction in refrigerant-related GWP, supporting Kigali Amendment-aligned cooling. [Learn more.](#)

Last-mile logistics gap: The Poise tricycle (world's first solar cooling tricycle) and solar cooling vans provide critical last-mile delivery infrastructure. The battery-powered Freeze Box extends cold transport to buses, trucks, trains and planes.



High capital barriers: Direct Sale, Lease-to-Own, and Cooling-as-a-Service financing is layered on the hardware, making the product more affordable. Partnership on PAYGO financing with The Alternative Bank has already enabled almost 200 women-led businesses to own their cooling assets.

World Bank Group's Role

Eja-Ice was one of a small group of innovators competitively selected in 2021 to join the TechEmerge Temperature-Controlled Logistics (TCL) initiative in Nigeria. This program was launched with the support of the UK Government's International Climate Finance (ICF) and the Ayrton Challenge.

WBG provided catalytic grant financing, vital for the company to scale its operations. Beyond grant financing, WBG specifically supported Eja-Ice in developing and scaling its Cooling-as-a-Service (CaaS) model as a way to unbundle asset-ownership and rider-management barriers for African cold-chain operators.

- [Learn more about UK's ICF.](#)
- [Learn more about TechEmerge.](#)

Since then, the company has won many accolades, including:

- World Economic Forum (WEF) Top Innovator: Selected for the UpLink Blue Food Challenge for using solar refrigeration to reduce fish waste for women-led small and medium enterprises.
- FoodTech 500 Finalist (2025): Named a finalist by Forward Fooding among over 1,200 global entries.
- Start Up Energy Transition (SET) Participant: Featured in the SET100 database.

Development Impact

Job creation: Cold hubs create direct local employment by enabling access to refrigeration to underserved populations. The company's CaaS model also creates a workforce of local solar and refrigeration technical repair leads.

GHG emissions reduction: Eja-Ice estimates it is currently averting approximately 2.79 million tons of CO₂, with a long-term target of 27.9 million tons as the fleet and hub network scale. This is achieved by combining solar generation (displacing diesel generators and grid power) with ultra-low-GWP R600/R290 refrigerants (GWP of 3, versus 1,450–3,950 for conventional refrigerants).

Electrification: Eja-Ice's freezers, cold rooms, vans and tricycles run on 50–100% solar power with battery storage, letting operators bypass unreliable and costly grid electricity and displacing diesel generators. The company

markets its offering as **“100% off-grid, zero diesel for cooling, climate smart.”** In some of the communities where Eja-Ice operates, this is often the first time cooling - and, indirectly, reliable power - has been available at all, since these locations sit beyond the reach of the national grid.

Circular economy: The Lease-to-Own and CaaS models keep equipment, financing and servicing attached to the asset for its full working life, and pass ownership of a movable, bankable asset to the operator rather than retaining it solely with Eja-Ice - supporting longer, more accountable use of each unit and

enabling it to be used as collateral for further investment.

Mobilizing climate finance: Eja-Ice blends grant, development, and commercial capital to de-risk and scale its solar cold-chain assets. So far, the company has leveraged TechEmerge program for catalytic grant funding and technical assistance, PIND Foundation support for community cold rooms in underserved areas, and a financing partnership with The Alternative Bank to offer PAYG and lease-to-own terms that make its equipment bankable for smallholders and MSMEs.



About the WBG Sustainable Cooling and Heat Resilience Initiative

The World Bank Group's Sustainable Cooling and Heat Resilience Initiative is a “five by five” strategy, addressing cooling in the **five sectors where it's needed most**: 1) built environment, 2) manufacturing, 3) agribusiness and cold chains, 4) health and education, 5) transportation and infrastructure.

The Initiative accomplishes this through **five modes of engagement** designed to catalyze global action: 1) providing insights, 2) influencing decision-makers, 3) catalyzing innovation, 4) scaling up investment, and 5) creating impact through job creation and livelihoods for a livable planet. [Learn more here.](#)

The Initiative is comprised of several targeted programs across the WBG which address portions of the above “five by five” strategy. The Cooling Innovation Facility provides technical advice to investment clients looking to embed cooling into their operations, along with CapEx grants for piloting of innovative technology. The Facility is funded by the UK Government's Department for Energy Security & Net Zero.

