



**MULTIPLE CITIES
NIGERIA**

COLDHUBS COOLING-AS-A-SERVICE

Solar-powered refrigeration

KEY CONCEPTS

COLDHUBS, FRESH PRODUCE, SOLAR, MARKETS, FOOD LOSS, COOLING AS A SERVICE (CAAS), COLD CHAIN

An estimated 50% of food produced in Nigeria goes to waste due to a lack of access to cooling facilities. Established in 2015 in response to Nigerian farmers' and vendors' lack of cold storage facilities, ColdHubs uses solar panels to power small refrigeration facilities for the storage of agricultural produce, extending shelf life and reducing food loss. With its pay-as-you-go model, ColdHubs users can access the infrastructure at a relatively affordable rate—paying a daily flat fee of US\$0.50 for each crate of food stored (versus the usual cold storage cost of US\$37.50 per day).



COMMUNITIES

Hubs are located across 22 states in Nigeria



POPULATION

3 751 140



DENSITY

382,8 inhabitants per km²



INFRASTRUCTURE DEFICITS

Unreliable electricity supply, lack of affordable refrigeration



CLIMATE

Tropical climate with variable rainy and dry seasons



RISKS

Food spoilage, loss of income, organic waste

Introduction

Approximately 40% of food produced in Nigeria is lost along the value chain before reaching consumers—a waste carrying significant economic, social, and environmental costs. In response, Nnaemeka Ikegwuonu founded ColdHubs Ltd. in 2015, thus pioneering the provision of solar-powered food storage units designed for Nigeria's markets and farms. Designing, installing, and operating solar-powered, walk-in cold rooms, the branded 'ColdHubs' are located in farm clusters, produce aggregation centres, and outdoor markets. Improving access to cooling and eliminating associated food waste, the project has increased the income of farmers and retailers in rural and urban Nigerian communities. Originally established in Owerri (Imo State), ColdHubs now operates 54 facilities across 22 states in Nigeria.

Approach

Making solar-powered, cold storage rooms accessible to farmers and retailers across 22 states in Nigeria, ColdHubs accommodate up to three tons of perishable food. Sites to install a ColdHub are identified according to metrics targeting the areas that will benefit most from the hub, and the local community is given a trial run of the facilities before the ColdHub is commissioned. Hub operators are responsible for day-to-day operations, while cameras and sensors monitor each hub to ensure optimal function. Customers pay per unit of cooling they consume, strengthening incentives for efficient consumption, while also making the system cost-effective.

Institutions, Governance, and Finance

Partnering with Germany's development agency (GIZ) to build its first units, ColdHubs is a profit-driven company reliant on international investors. A percentage of profits generated from each hub pays for technical maintenance visits every three months, as well as the salaries of hub operators. Coming from the communities, the (mostly female) hub operators participate in a five-day training on food handling, and their involvement grows the sense of community ownership of the storage rooms. Meanwhile, local government allows Cold Hubs to be placed in food markets (owned by county government in Nigeria), while also linking the company to market unions to ensure a smooth flow of operations.

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The Impact

IMPACT	SOCIAL	ENVIRONMENTAL	ECONOMIC
Reduced CO ² emissions from solar energy versus diesel generators		X	
Lower cost than other available options			X
Job creation: 54 units have been installed in 22 states, creating 54 hub operator jobs	X		X
Reduced food waste from reduced spoilage	X	X	X
Women's empowerment: hub operators are typically females from the community	X		X
Reduced organic waste dumping due to improved shelf life of products		X	X
Improved earnings for rural farmers and retailers due to reduced losses	X		X

Looking Ahead

ColdHubs is developing produce-freezing technology targeted for fishing communities in the Niger Delta. The company also will continue focusing on gender parity by employing women in the communities it serves. Finally, although the company's current focus is on further expanding the business in Nigeria, there are also plans to roll the technology out to other countries struggling with food waste problems. While the efficiency of solar energy is a concern, ColdHubs' existing facilities can run for three days without full sunshine. With constant improvements to solar photovoltaic technology, overcast daylight should soon be sufficient to keep the hubs running.

Learn More

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