

**ADAPTATION & MITIGATION
NON-BLENDED**

PROJECT NAME	Low Carbon Cooling for Small Hold Farmers in India¹
COUNTRY/REGION	India
SECTOR	Cleantech/Agritech
PROJECT/INVESTMENT AMOUNT	\$14.07 million raised to date, over three equity and one debt financing rounds
DEVELOPMENT PARTNER(S)/STAKEHOLDERS	N/A
BENEFICIARY MINISTRY/ INSTITUTION	N/A
INVESTOR(S) AND FUNDERS	Venture Capital and Debt funders including, <ul style="list-style-type: none"> • Omnivore VC Fund • Hivos-Triad Fund • Dare Ventures
GUIDEBOOK TAXONOMY FINANCIAL SYSTEM ACTOR	Venture Capital Philanthropy and Impact Investors Bilateral, Multilateral & Development Finance Institution
PROJECT OVERALL GOAL	Support the livelihoods of small hold farmers in India in the face of rising temperatures, reduces food wastage, and reduces dependency on fossil fuels.
PROJECT OUTCOMES	<ul style="list-style-type: none"> • 674 Mn kWh clean energy generated • 14,040 MT produce wastage reduced • 71,905 farmers benefited • 225 Mn litre diesel consumption abated • 37,500 MT cold chain infrastructure capacity created • 2,29,480 cumulative acres of land irrigated • 6,74,000 tons CO2 emission abated
ALIGNMENT WITH COUNTRY IDENTIFIED CLIMATE STRATEGIES, NDCs, ETC. (IF APPLICABLE)	India's Updated NDC includes a commitment to reduce emissions intensity of its GDP by 45% by 2030 (from 2005 levels) and to enhance investments in key sectors including agriculture to better adapt to climate change.
CONTRIBUTION OF THE PROJECT TO THE UN SDGs	SDG 1: No Poverty SDG 12: Responsible Production and Consumption SDG 13: Climate Action
SOCIOECONOMIC IMPACT	Cooling infrastructure allows farmers to maintain their incomes and flexibility in choosing when and where to sell their goods in the face of rising temperatures. Smallholder farmers can negotiate much better prices for their produce, while reducing their food waste.
ENVIRONMENTAL IMPACT (ON CLIMATE MITIGATION AND/OR ADAPTATION)	Adaptation impact providing cooling services in a region and a sector likely to be affected by increasing extreme heat and heatwaves. Mitigation impact by primarily using solar power to power cooling technologies and refrigerators, reducing reliance on equipment using fossil fuels.
ENABLING ENVIRONMENT (SUPPORTING POLICIES)	N/A

¹ This case was provided by Climate Finance Advisors (CFA) as a contribution to the Sharm El-Sheikh Guidebook for Just Financing

TECHNICAL ASSISTANCE (IF PROVIDED)	N/A
FINANCING MODEL/APPROACH (EX: BLENDED FINANCE)	Venture capital series A and C funding
RATIONALE FOR FINANCING MODEL/APPROACH	Start-up, founder-led company using innovative technology
FINANCIAL INSTRUMENT(S) (LOANS (COMMERCIAL/ CONCESSIONAL), EQUITY, GUARANTEE)	<ul style="list-style-type: none"> Equity- three rounds of venture capital raising Debt- one round of debt financing raised Grants- 2 grants from business model accelerators/competitions
DIAGRAM OF THE FINANCING STRUCTURE	

Executive Summary

Indian start-up, Ecozen Solutions manufactures solar-powered micro-cold storage units and water pumping technologies for small hold farmers and rural communities. Their Ecofrost Solar Portable Cold Room uses thermal energy storage, reduces and/or avoids the costly and environmentally damaging use of diesel power generators or chemical battery technologies. The Solar PV as the primary source of energy so it enables emissions reductions by reducing the use of fossil fuels for energy, reduces food wastage and increases the penetration of technology into off grid geographical regions. It provides a solar powered cold storage with thermal technology to provide 30 hours of backup cooling without the need for conventional energy solutions. The service support farmers' incomes and drives efficiency in the agricultural value chain.

The company provides cooling services through the provision of cooling equipment to users through a variety of financing models such as upfront purchase, leasing or community funding models. The company also provides the equipment and technology for Cooling as a Service businesses such as SokoFresh.

Since founding Ecozen Solutions has raised a total of \$14.07M in funding through 8 funding rounds. In June 2022 it raised \$7M in a combination of Series C and Debt rounds. Investors in the round included Dare Ventures (corporate venture arm of agricultural firm Coromandel International), Hivos-Triodos fund (a partnership between international development organization Hivos International and Dutch Investment Manager Triodos) and Indian VC Funds Caspian Impact Investments, Northern Arc Investments, and Maanaveeya. Initial seed funding came from Omnivore a venture fund investing in early-stage agriculture & food technology companies in India, capitalised by a variety of commercial and philanthropic/impact both local and international investors including Sidbi, RBL Bank, Sorenson Impact Foundation, The Rockefeller Foundation, Dutch Good Growth Fund (DGGF), Ceniarth, and KfW, a German government development bank.

Analysis

WHAT MADE THIS PROJECT SUCCESSFUL?	<ul style="list-style-type: none"> Much needed venture capital provided at an earlier stage than traditional investors would engage allowed the company to finance early growth and expansion. Financing mechanisms to reduce upfront cost barriers to cooling for the agriculture sector have enormous adaptation benefits for smallholder farmers, the wider agriculture value-chain and food supplies. India has relatively mature and sophisticated financial markets and an active domestic venture capital ecosystem. agriculture is a core pillar of India's economy employing c. 60% of the Indian labour force and account for c. 17% of GDP, so the market for agri-tech/clean tech innovation in the agriculture sectors is significant.
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	<ul style="list-style-type: none"> ● Uses technological innovation to address a multi-faceted challenges (e.g., lack of upfront capital, climate challenges to income stream) for an underserved community and business and revenue model flexibility to access market segment with limited upfront capital. ● Capitalised on the active venture capital ecosystem in India and attracted international impact venture capital.
TO WHAT EXTENT IS THIS MODEL SCALABLE?	Demand for cooling services will increase as temperatures rise and heatwaves become more common. Cooling services will be essential for adaptation, as well as a growing source of emissions; business models that address both will be in high demand. Applicability in a wide variety of sectors, from agriculture to data centres. Flexible revenue model.
WHAT ARE THE NECESSARY CONDITIONS TO MAKE IT REPLICABLE IN OTHER COUNTRIES/REGIONS?	The business model is replicable and not regionally specific. Cooling business models, including leasing and cooling as a service, are being used in a number of sectors and in many other countries and regions. The company has recently expanded into Kenya.
CONSTRAINTS/DRAWBACKS OF FINANCING MODEL	Venture Capital is a high-risk source of financing. From the investor perspective there is a high risk of failure of a new business or nascent technology. From the founder/owner perspective, VC funds acquire relatively large equity stakes in early stage, “start-up” enterprises and influence over operational, investment and strategic decisions.
LESSONS LEARNT	<ul style="list-style-type: none"> ● Small hold farmers account for 86% of all farmers in India, and as temperatures rise and heatwaves become more frequent portable and low emission methods of cooling will be essential to support their livelihoods and rural food supply. ● International impact venture capital can be mobilised to provide early-stage financing for innovative technology and business models that meet the needs of farmers AND address climate-related impacts. Where local private market depth exists startups can tap into these pools of capital from venture funds, debt provides and corporate venture arms. ● As the business grows and the balance sheet is strengthened through equity funding, lower cost debt financing becomes accessible to scale the business. ● Flexible business and revenue models can enable market penetration in low-income markets.

SOURCES:

- <https://www.caas-initiative.org/casestudies/caas-kenyas-off-grid-cold-storage/>
- <https://app.cbinsights.com/profiles/c/M2Pvg/overview>
- <https://www.gatesfoundation.org/our-work/places/india/agricultural-development>
- <https://www.ecozensolutions.com/agriculture/ecozen-comes-to-kenya-channelizing-the-path-to-sustainable-development.html>
- <https://www.weforum.org/agenda/2021/06/agri-tech-innovation-can-improve-value-capture-and-transform-ecosystem-for-india-s-small-farmers/>