

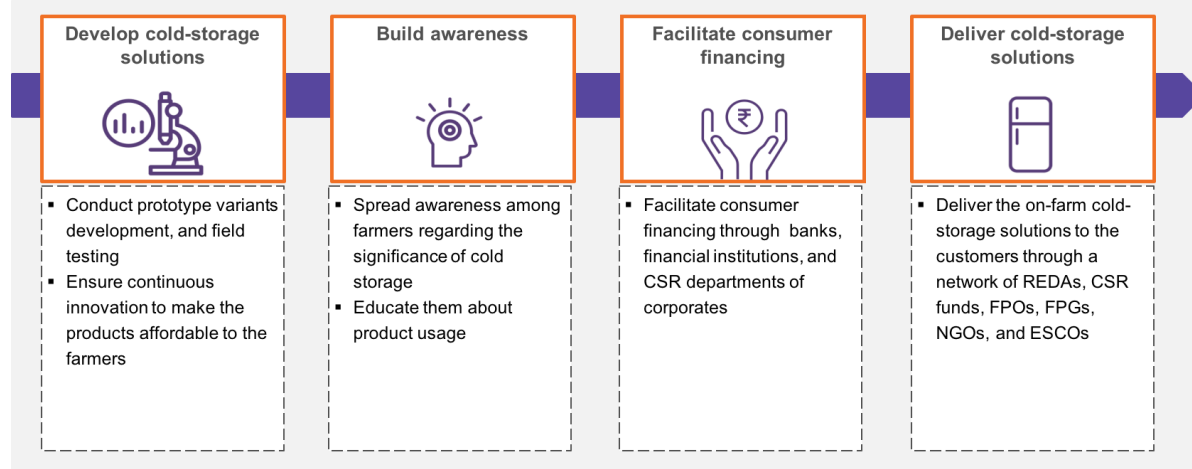
## CASE STUDY: ECOZEN



**Founding year:** 2009  
**HQ:** Pune, India  
**Countries of operation :** India  
**Orientation:** For-profit  
**Employees:** 100  
**Turnover:** USD 1.43 million

India, despite being the second largest horticulture producer in the world, is not able to meet the domestic demands owing to over 35% of total produce, worth USD 2 billion wasted annually due to inadequate infrastructure for storage. The lack of electricity across the major horticulture cultivation areas in India restricts the effective functioning of cold chain facilities .

Ecozen Solutions, a renewable energy company, has developed solar micro cold storage systems for use in agriculture and rural communities. Ecozen’s solution is as useful for smallholder farmers as it is for big farmers and agriculture based institutions. The micro cold storage units help in increasing the income of smallholder farmers who previously didn’t have access to on-farm storage solutions, leading to huge amount of wastage of perishable agriculture produce. The enterprise has served 400 farmers.



### Operating Model

Ecozen manufactures on-farm solar-powered cold storage—micro cold storage (mCS) systems and solar powered irrigation products. Ecofrost can be used by farmers located in remote rural areas.

Farmers can monitor the temperature of the cold storage unit using sensors attached to the unit and regulate the temperature using their mobile phones or any hand-held devices. The unit can be used without a battery and has a back-up capacity of 30 hours. It is portable and easy to transfer from one field to another, which enables a group of smallholder farmers to buy the product together, and share it.. The enterprise uses ICT for 'remote monitoring', 'predictive analytics' and 'preventive maintenance metrics'.

Smallholder farmers find it difficult to access large cold-storage facilities, thereby increasing the need for on-farm cold-storage solutions such as the one offered by Ecozen.

Ecozen continuously educates the customers regarding the product, usage models and value-addition because of the solution. The company’s personnel provide after-sales support as well. The enterprise leverages corporate social responsibility (CSR) and sustainability initiatives of corporate

In India, 10 million tons of cold storage capacity is required to prevent over 30 percent waste of perishable produce.

partners, various programs of municipalities, state government, renewable energy development agencies, community organizations and non-governmental organizations (NGOs) to increase its market reach. For donor based initiatives, partners fund the capital cost, while Ecozen covers the operating expenses including installation, commissioning, and maintenance of the product at nominal cost. For community owned initiatives, the capital cost is borne by the partners as per pre-determined installments, and the enterprise undertakes training of the operators or village level entrepreneurs (VLEs) on the usage models.

Ecozen reaches its customers by means of several online and offline modes including articles, blogs, field surveys, exhibitions, seminars and workshops. The sales team of Ecozen also conducts face to face meetings and calls with the customers. Ecozen offers a quarterly lease to farmers, which helps in increasing the affordability of its products among small-scale farmers. Farmers are encouraged to lease the product on a trial basis for a quarter, post which the farmer acquires the product if there is a visible cost-benefit attached.<sup>1</sup>

“Inclusion of the Ecofrost in the existing National Horticulture mission and Jawaharlal Nehru National Solar mission will impact the lives of several farmers and eventually reduce agriculture wastage to a great extent.”  
- Prateek Singhal, Co-founder, Ecozen (Energy Next, November 2014)

Ecozen either distributes its products to farmers directly or through its corporate and institutional buyers. Under the partnership model, the distribution process involves State Renewable Energy Development Agencies (REDAs), CSR funds, local governments, and donor agencies. The enterprise is also in discussion with Farmer Producer Organizations (FPOs), Farmer Producer Groups (FPGs), Microfinance Institutions (MFIs), NGOs, and Energy Saving Companies (ESCOs) to build up the market and increase accessibility to its storage solutions.

### Financial Sustainability

Some of the major expenses of the enterprise include those for research and development, prototype variants/version development, field testing, acquiring certifications, marketing and product promotion, vendor development, and client scouting & servicing expenses. Ecozen prices its products based on survey outcomes, price elasticity of clients and product costs involved.

“Omnivore funded Ecozen because it believes that Ecozen has the solution to provide last-mile cold chain to India's farmers and radically reduce losses of fresh produce.” - Jinesh Shah, Founding Partner, Omnivore Partners (The Economic Times, April 2015)

In April 2015, Ecozen raised about USD 1 million from Omnivore Partners. With this funding, Villgro, which had invested in Ecozen in March 2014 through a combination of equity and grant, exited the company with a profitable return. Ecozen planned to utilize the funding from Omnivore Partners to strengthen the business structure and supply chain including logistics and production, increase the production capacity, and widen the market reach.<sup>2</sup>

The enterprise is an approved supplier for Chhattisgarh state government and it receives a subsidy of 40 percent each from the state and central governments respectively. It is also an approved supplier under National Bank for Agriculture and Rural Development (NABARD) supported subsidy scheme for solar pumps in Madhya Pradesh, Chhattisgarh, Maharashtra and Bihar, and it receives 40 percent subsidy from the state governments. The subsidy for micro cold storage (mCS) from Ministry of New and Renewable Energy, Government of India (MNRE, GOI) is approved for 30 percent central assistance. Ecozen's revenues have quadrupled from USD 360,000 in financial year 2015 to USD 1.43 million in financial year 2016.

## Impact

The enterprise's micro cold storage units help in increasing the income of smallholder farmers who previously didn't have access to on-farm storage solutions. A group of smallholder farmers collate funds to buy the storage unit to store perishable fruits and vegetables instead of being forced to sell their produce at low prices in the market. The product also enables farmers to reduce electricity costs. The cold storage solution leads to over 40 percent increase in the profits of the smallholder farmers, after a 2-year breakeven.

Ecozen Solutions has won several awards and recognitions including the Dow Sustainability Innovation Challenge at California Institute of Technology, Pasadena Ecozen Solutions received Economic Times-Power of Ideas award from DST, Government of India. Ecozen Solutions' idea was ranked among the world's top 30 business ideas at Stanford's E-bootcamp. Ecozen Solutions was awarded the Technology and Sustainable Development Award 2011 at Eureka IIT Bombay and was covered as a Pioneering Product by CNBC TV18.

## Challenges and Lessons

The company's primary challenges relate to the high upfront cost of the system to smallholder farmers. The enterprise faces difficulties in ensuring end user financing for its smallholder farmer customer base. Ecozen also finds it challenging to make the products affordable to the lower income consumers; however the in-house R&D team is focusing its efforts to devise cost-effective technology solutions that it can leverage to decrease the price of the product.

## Road Ahead

Ecozen targets to expand its reach in Maharashtra, and surrounding areas, while exploring the opportunity to make direct sales to big farmers and agriculture based institutions. It aims to reach a revenue scale of USD 3 million by the end of 2016. By 2017, Ecozen plans to complete nearly 500 installations in India. It targets to reach a turnover of USD 11.7 million by the end of financial year 2018. It also wishes to expand geographically, into Africa and East Asia. The enterprise targets to achieve break-even by mid-2017. The enterprise is in discussion with banks, financial institutions, and CSR departments to facilitate financing options for its customers.

<sup>1</sup> ET Tech, June 2016 <http://tech.economictimes.indiatimes.com/news/startups/how-the-startup-boom-is-helping-farmers-and-forcing-investors-to-pay-attention-to-agriculture/52893746>

<sup>2</sup> The Economic Times, April 2015 [http://articles.economictimes.indiatimes.com/2015-04-07/news/60902706\\_1\\_omnivore-partners-small-farmers-storage-solution](http://articles.economictimes.indiatimes.com/2015-04-07/news/60902706_1_omnivore-partners-small-farmers-storage-solution)