



WALK-IN COLD ROOMS

Solar Appliance Snapshot

JULY 2021

EFFICIENCY FOR ACCESS COALITION

Cold rooms play a critical role in developing countries, where post-harvest food losses can be as high as 40%. Improvements in cold room affordability, efficiency and accessibility are essential to advancing their market maturity.

MARKET INSIGHTS

Markets for off- and weak-grid walk-in cold rooms have proven commercial viability but remain quite nascent. In Sub-Saharan Africa, the cold storage market is still underdeveloped and largely disorganised, with most business in the distributed energy sector in their infancy, funded primarily by donors' programs or grants.

The cold storage market in India is more advanced, with a commercial sector most developed on-grid but of growing maturity for off- and weak-grid settings. Deployment of walk-in cold rooms is however, skewed towards single versus multi-commodities and wealthy states versus poor. According to estimates from the National Centre for Cold Chain Development, there remains a shortfall of [12.6 million tons](#) of cold storage capacity in India.

CONSUMER IMPACTS

Globally, about [1.3 billion tons of food](#) are wasted or lost per year. Post-harvest food loss presents a threat to food security, farmers' livelihoods, and the environment. Walk-in cold rooms have the potential to significantly improve livelihoods for smallholder farmers and small traders by reducing post-harvest loss of high-value crops, increasing profits through greater bargaining power at the marketplace, and enabling better commercialization of agricultural produce in regional and international markets.

Cold storage solutions can also enable the delivery and storage of vaccines and medicines to the furthest, most marginalised communities. However, off-grid walk-in cold rooms remain prohibitively expensive and inaccessible to most off- and weak-grid consumers.



13-15%

The cold chain market in India is projected to [grow by 13-15%](#) over the next 5 years.



4.4 Billion tons

The CO₂ emissions from global food loss and wastage is estimated to be [4.4 billion tons per annum](#).



15%

Establishing cold chains as extensive and reliable as those in industrialised countries would enable developing countries to raise food supply by 15%.



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In Kenya, there have been almost zero commercial sales of walk-in cold rooms among first-mile farmers.

CURRENT SUCCESSSES

A new generation of innovative technology providers are actively designing and manufacturing cold storage systems for the distributed energy sector, and the application of modular, prefabricated and mobile components is bringing cost-effective solutions that are sparking growth among producers and agribusinesses. Progress has also been made with innovative cold chain business models aimed at increasing affordability and access to more consumers, especially in the first mile.

Recently, there has been a marked increase in engagement and discussions on cold chain from a variety of stakeholders who are becoming increasingly cognizant of its importance in agriculture, trade, environment, and health. Initiatives implemented have included the green cooling initiative by GIZ, KCEP program, Cool coalition, [Efficiency for Access Research & Development Fund](#) and the [Global LEAP Off-Grid Cold Chain Challenge](#).

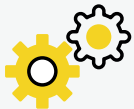
REMAINING CHALLENGES

Walk-in cold room solutions are difficult to incorporate into product supply chains. To increase the cold storage technology's usage and penetration, manufacturers in emerging markets need to find creative ways to deliver attractive technology and business solutions that will lead to identifying customers. Further, even in the face of attractive business models, such as CaaS and leasing, there remains a low level of consumer awareness and the challenge of making these models viable for all commodities.

There is a lack of an organised and enabling environment including absence of system wide collaboration, political alignment, enabling policies, as well as viable business and financial models. More research and value chain support are required to find answers to aspects such as how to reach people in more challenging locations, what solutions suit different segments of the population best and how to access financing.

RECOMENDATIONS AND PATHWAYS TO SCALE

The off-grid cold room market in most emerging economies is still in its infancy, with most of the players being small-startup companies. Greater investment, research and stakeholder collaboration are needed to scale the market for off-grid cold rooms.



Scale cold chain technology and business models research

To scale the cold chain market, there is need for sustained support and investment to identify viable deployment models for public and private sector approaches.



Increase financial support for R&D and innovation

Direct more support and financial investments towards product R&D and enabling technologies, like remote monitoring. Fund innovative business models that enhance affordability and access.



Foster stakeholder collaboration

For example, the creation of a dedicated body to bring together and coordinate activities between the different players in the supply chain would greatly enhance the efficiency and responsiveness of local cold chains.



Build a strong enabling environment

There is call to advocate for the creation and implementation of policy instruments and schemes among governments that facilitate the uptake of nascent technologies aimed at productive use.