

# Integrated Cold Chain



# Actionable Area

Enabling integrated cold chain solutions that are energy and cost-efficient towards better logistics connectivity of farm to fork and reducing food loss.

## Issue

- In terms of food storage and cold chain infrastructure, significant gaps exist in India at present. The gaps have been listed by the National Center for Cold Chain Development as given in the table.
- The optimum utilisation of cold storages is also a challenge with the most of the cold storages operating at sub-optimal capacities. This leads to higher operating costs as well as energy loss. Another problem is that the developments in the sector are happening in silos.
- While setting up new infrastructure and facilitation, ensuring the efficient use of the existing infrastructure and building sustainable integrated supply chains should also be focused on.
- An effective and economically viable cold chain will totally integrate the supply chains for all commodities from the production centers to the consumption centers, thereby reducing physical waste and loss of value of perishable commodities. For setting up such an effective and viable cold chain, it is imperative to keep pace with the necessary infrastructure development, commodity-specific protocols development, promoting technological innovations, dovetailing of various schemes, coordination among the various ministries for the financial outlay, and business model restructuring.

| Type of Infrastructure | All India Gap        |
|------------------------|----------------------|
| Modern Pack house      | <b>69,831 units</b>  |
| Reefer Transport       | <b>52,826 units</b>  |
| Ripening Chamber       | <b>8,319 units</b>   |
| Cold Storage Bulk      | <b>34,164,411 MT</b> |
| Cold Storage Hub       | <b>936,251 MT</b>    |



- While planning new cold chain infrastructure - be at seaports (dedicated perishable berths), railways (reefer wagons), airports (CPC's and quarantine areas), and on-farm infrastructure - it is critical to look at the existing available capacity. An unbroken cold chain network can then be shaped by interconnecting the existing components and the new infrastructure of the cold chain. This would be setting up new infrastructure at the required places rather than sporadic development.
- Technology must be continuously upgraded to ensure efficiency, integrity, and safety. The innovative methods should be integrated from time to time for a sustainable supply chain.
- Cold chain development is an integral element of growth in the food sector. It needs to be integrated into agriculture and food policies, strategies, and action plans, aligning various agencies working towards its development.
- An integrated cold chain can be an industry driver that can transform India's rural economy. Strong post-harvest and logistics have a direct multiplier effect on farmers' incomes. An industry-led pilot study on the impact of cold storage and refrigerated transport on extending shelf-life and expanding sales of Kinnow from Punjab showed how the cold chain is a game-changer. It increased profitability by up to 23%, reduced the post-harvest food loss and CO<sub>2</sub> emissions by 76% 16%, respectively, and opened up exports to 10 countries.

# Status

Cold chain systems are vital to the growth of global trade in perishable products and the worldwide availability of food supplies. Global losses in the food industry total more than \$750 billion annually. These losses primarily result from a lack of proper storage facilities, improper food safety handling procedures, and insufficient training for those personnel working in the cold chain.

## Government Initiatives

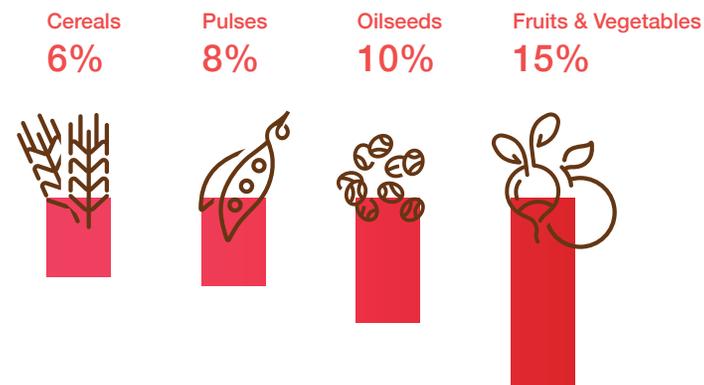
- Various government initiatives like grant of infrastructure status to logistics, the introduction of E-Way bill, GST exemption, and financial support are facilitating the growth of the cold logistics sector. The National Logistics Policy with the key objective of integrated development of the logistics sector, by way of multimodal transport, digital transformation, sector modernisation, logistics excellence, and democratisation are in the offing.
- The government is providing support through various channels for the setting up of storage and cold chain infrastructure. Financial assistance for setting up cold storage for storing perishable horticulture produce is provided under two schemes.
  - a. The mission for Integrated Development of Horticulture (MIDH) provides financial assistance for various horticulture activities, including setting up cold storage.
  - b. 'Integrated Cold Chain and Value Addition Infrastructure' scheme: This scheme is being implemented to reduce post-harvest losses of horticulture & non-horticulture produce and to provide remunerative prices to farmers for their produce.

- To promote scientific storage, the government is promoting the Agricultural Marketing Infrastructure (AMI) scheme, under which assistance is provided for the construction/ renovation of godowns/warehouses in the rural areas of various states to enhance the storage capacity for agricultural produce. Warehouse Infrastructure Fund (WIF) of National Bank for Agriculture and Rural Development (NABARD) envisages extension of low-cost loans to public and private sectors for construction/modernization of warehouses, silos, cold storages, cold chain infrastructure.
- The government has also approved a new central sector scheme for 'Financial Facility under Agriculture Infrastructure Fund' to provide a medium-long term debt financing facility for investment in viable projects for post-harvest market infrastructure (including warehousing facility and community farming assets) through interest subvention and financial support.
- Under the scheme, NABARD has received a total of 3,055 proposals, including the proposal for warehouses from Primary Agricultural Credit Societies (PACs) through state cooperative banks in 22 states for which Rs. 1568 crore has been sanctioned in principle.

## Vision 2030

- **In line with the UN SDG, reduce post-harvest losses by 50% by 2030.**
- **Ensure harmonised scientific post-harvest protocols towards retaining the nutritious value of food.**
- **Promote environmentally sustainable cold chain solutions.**

### Post-harvest losses in India (2018-19)



Source: ICAR - Central Institute of Post-Harvest Engineering & Technology, Annual Report 2018-19

# Pathways

## INFRASTRUCTURE



**Ensure cross-functional utilisation** of cold chain infrastructure towards improving efficiencies and focusing on multi-commodity cold storage.

**Focus on pre-cooling infrastructure** to reduce post-harvest losses ensuring to have at least 1 pre-cooling unit per district.

**Enable access to the steady power supply** at the village level, which is crucial for sustainable cold chain infrastructure, by exploiting renewable energy sources.

**Build up food producers' and retailers' storage, processing, and packaging capacities** to reduce spoilage and contamination of nutritious foods.

**Build up capacities of infrastructure operators** towards efficient utilisation of infrastructure.

## SUSTAINABILITY



**Promote sustainable business models** for cold chains as once the business is sustainable, investments into technology will follow automatically.

**Focus on phase-wise shifts to sustainable technologies.** A one-go shift will lead to high operating costs and thus will have lower uptake. It is pertinent to scale up business and technology in tandem.

**Promote renewable energy-based on-farm storage.**

**Promote cost-efficient rural cooling solutions** such as community cooling hubs.

# Pathways



**Create an integrated cold chain infrastructure database** up to district level, and also at ports, airports, farm gate, distribution channel, etc., utilized capacity, projects being supported by various agencies. This will enable optimum utilisation and cross-sectorial usage of infrastructure. The database can be linked to a digital platform to support national and global initiatives.

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**Enable tech solutions** with traceability and visibility to farmers to enable informed decision-making with regard to price realisation. Develop and disseminate innovative post-harvest storage technologies, packaging, and processing techniques that are conducive to India for nutritious foods to reduce nutrient losses.

**Establish national 'Clean Energy Information and Coordination Platforms'** complemented by international information sources to expand clean, affordable, and reliable energy access along food supply chains.