



A STUDY ON THE DEMAND FOR COLD CHAIN LOGISTICS AND THE POOR INFRA IN INDIA

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Abstract: This research investigates the infrastructure and cold chain logistics in India, which are vital for the transportation and storage of temperature-sensitive goods including food and medications. It looks at the field's prospects and difficulties and makes policy recommendations for enhancing India's cold chain infrastructure. Several data sources, including surveys, interviews, publications, and articles, are used in the research. The project's objectives include giving a thorough assessment of the market, highlighting best practices and innovative ideas, and outlining workable solutions for raising the efficiency and competitiveness of India's cold chain logistics.

IndexTerms- Logistics, Marketing, Cold chain , Supply chain, Warehousing, 3pl, Storage, Cold storage, perishable goods, Infrastructure, India.

I. OBJECTIVE:

To evaluate the infrastructure for cold chain logistics in India as well as its opportunities and constraints. to compare India's and other nations' cold chain logistics infrastructure, best practices, and innovations. To suggest strategies and policy proposals for integrating technology into India's cold chain infrastructure and modernizing it. to determine how a better cold chain infrastructure and logistics system in India may affect the quality and efficiency of items that are sensitive to temperature.

INTRODUCTION:

Cold chain logistics is primarily a technological procedure that protects the integrity and movement of commodities and products that are susceptible to temperature variations across the supply chain. Cold chain logistics is the planning and execution of the safe and secure transportation of any temperature-sensitive product over a long distance while preserving its proper temperature and humidity requirements, utilizing the appropriate tools and transport method². A cold chain is a temperature-controlled supply chain made up of facilities for refrigerated manufacturing, storage, and delivery, all of which are backed by tools that can maintain the necessary low temperatures on a consistent basis.

LITERATURE REVIEW:

Transportation and storage of temperature-sensitive goods, such as food, medications, and vaccinations, is known as "cold chain logistics." It is essential to India's economy because it supports several industries like biotechnology, healthcare, and agriculture. However, there are several issues with India's cold chain logistics infrastructure, including high costs, a lack of norms and regulations, subpar storage facilities, and environmental considerations.

In India, the cold chain infrastructure is still weak and dispersed, according to a report by Research and Markets¹. According to the report, India's cold chain industry was worth \$16 million in 2021 and is projected to grow to \$36 million by 2027. The research also emphasizes the possibilities and growth factors for India's cold chain industry, including the expanding awareness of quality and safety standards, the government initiatives and programmes, the emergence of e-commerce and online food delivery platforms, and the rising demand for perishable goods.

According to JLL India2, a report that supports Research and Markets' findings, the cold chain section of the logistics industry would increase at a compound annual growth rate (CAGR) of more than 20% by 2025. According to the report, this growth is the result of a shift away from traditional cold storage and towards more contemporary facilities that provide greater temperature control, automation, visibility, and analytics. Additionally, the paper highlights prospective markets for cold chain logistics in India, including both tier-I and tier-II cities, and recommends that an additional 1.5 lakh to 2 lakh pallet capacity (frozen and chilled).

These publications give a thorough assessment of India's infrastructure for cold chain logistics, including its state today and its potential for the future. They also discuss the field's opportunities and problems and provide some potential fixes for India's cold chain infrastructure.

Fruit and vegetable cold chain is currently the largest market segment in terms of cold chain circulation, and aquatic products have a rapidly expanding demand for cold chain. Meat, aquatic products, quick-frozen food, fruits and vegetables, and dairy products are the main drivers of cold chain logistics. Vaccines, blood products, and diagnostic reagents will also be major growth drivers for the cold chain logistics industry.

In order to meet the expanding demand, there are numerous local participants in the fragmented cold chain logistics industry in India. Gati Kausar India Pvt Ltd, Snowman Logistics Pvt Ltd, ColdEx Logistics Pvt Ltd, and Stellar Value Chain Solutions Pvt Ltd are a few of the leading companies in the sector.1. As of 2022, the cold chain logistics market share was 55.42% of the whole market. The Indian cold chain logistics market was estimated to be worth \$16 million in 2021, and by 202734, it is anticipated to be worth \$36 million. In the logistics industry, the cold chain segment is anticipated to develop at a compound annual growth rate (CAGR) of over 20% by 2025 as a result of its evolution from conventional cold storage.

VARIOUS SUPPORT SCHEMES BY GOVERNMENT OF INDIA:

The Mission for Integrated Development of Horticulture (MIDH) offers credit-linked back-ended assistance to entice private businesses to establish integrated post-harvest systems.

Infrastructure such as the construction of cold storage facilities, contemporary packhouses, transportation, processing facilities, ripening chambers, and retail facilities. Beneficiaries receive a subsidy of @35% of the permissible cost in general areas and @50% in cases of hilly and scheduled locations.

The **MoFPI** Ministry of Food Processing Industries runs a programme wherein financial support (grant-in-aid) is made available up to a maximum of Rs. 10.00 crore per project at 50% of the permissible cost in general areas and @75% in difficult areas. Up to 50 crores in grant-in-aid are also being offered by MoFPI for the creation of common infrastructure for mega food parks. The cold-chain infrastructure is a part of the common infrastructure.

APEDA :

Additionally, the Ministry of Commerce assists private businesses at a rate of 25% through the Agricultural & Processed Food Products Export Development Authority (APEDA) for establishing up infrastructure such as specialised packing facilities, reefer transportation, and cold storage facilities as perishable cargo centres.

DAC - ISAM:

As part of Integrated Value Chain (IVC) Projects, cold storage facility building can be subsidised through the Agricultural Marketing Infrastructure (AMI) sub-scheme of the Integrated Scheme for Agricultural Marketing (ISAM). North Eastern (NE) States, Sikkim, the Andaman and Nicobar and Lakshadweep Islands, hilly areas, Registered FPOs, Panchayats, women, SC/ST businesses & their cooperatives, and self-help groups are all eligible for a subsidy of 33.33%. The subsidy rate for all other categories is 25%.

Cold-chain Capacity Status :

A. Cold-chain Infrastructure:

1. As of July 31, 2015, cold storage capacity was 32.86 million tons.

According to information obtained from the relevant Ministries, the nation's cold storage facilities have a combined capacity of 32.86 million tons, or 7129 units.

Other storage built specifically for captive use by users, such as that found in abattoirs, hotels, and food-processing facilities, is not taken into consideration by this capacity. According to a recent baseline census, 1219 cold warehouses with a capacity of an estimated 5 million tons were discovered to be permanently closed or unavailable.

The country should ideally require cold stores in the form of bulk depots and distribution hubs, totaling 35.1 million tons in size, according to the report "All India Cold-chain Infrastructure Capacity (Assessment of Status & Gap)".

2. There have been 250 modern packhouses built in the nation.

The country's existing perishable food consumption patterns lack fresh product that has been preconditioned at modern pack-houses and has benefited from the cold-chain's well-organized mobility. According to a recent NCCD study, there are currently less than 70,000 packhouses in operation1. The grape industry in India has gained speed on a worldwide scale thanks to a small number of packhouses, much like the Milk Revolution was mostly fueled by milk chillers in rural areas.

The lack of 70,000 packhouses suggests that there is a need for one packhouse every ten communities on average. According to this review, there needs to be significant investment in rural India at the village level because the cold-chain backend is weak.

The opportunities and obstacles we see in the cold supply chain:

Modern technology innovations like refrigeration, tracking systems, and improved packaging can be used to solve the challenges and opportunities that the cold supply chain brings. The pharmaceutical, dairy, meat, poultry, fruit, and frozen food industries all

have increasing need for perishable products, and the cold chain industry is no exception. There are potential to offer multi-temperature warehousing and transportation solutions, notably in the dairy, pharma, e-commerce, and grocery categories. India has experienced issues with a fragmented market, high electricity costs, power outages, and high transportation costs. The government's Pradhan Mantri Kisan Sampada Yojana also wants to support integrated cold chain initiatives, opening the door for better infrastructure and less food waste.

Grade A standards for warehouse infrastructure:

The logistics sector expects Grade A warehouse infrastructure to meet the necessary safety standards, offer enough parking space and turning room for vehicles, have FM2 flooring with dock levellers, provide thermal insulation, have advanced fire safety control systems like sprinklers and fire hydrants, and offer a height of 40 feet (12 meters) at eaves along with at least 6 air changes per hour. It is anticipated that Grade A warehousing will contribute significantly to lower storage expenses and higher cubic capacity utilization. Grade A warehousing is in high demand and is anticipated to reach 400 million square feet by 2026.

CONCLUSION:

One of the most promising areas in the cold chain warehousing and logistics sector is India, where the industry is still in its infancy. The Indian cold chain logistics market was worth \$16 million in 2021, and by 2027, it is anticipated to be worth \$36 million. India is anticipated to become the fifth-largest economy in the world by 2027, and as a recognized leader in the global market, annual investment in India's supply chain infrastructure is anticipated to rise.

Fortunately, the Indian government is one of the factors behind the development of the cold chain industry and encourages private participation through a variety of grant and subsidy programmes. The "scheme on cold chain, value addition & preservation infrastructure" was a programme launched by the Ministry of Food Processing Industries (MoFPI) that was focused solely on cold chains.

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