RAJASTHAN AGRICULTURAL COMPETITIVENESS PROJECT

Detailed Project Report on Cold Store

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An instinct for growth™

AGRI BUSINESS PROMOTION FACILITY

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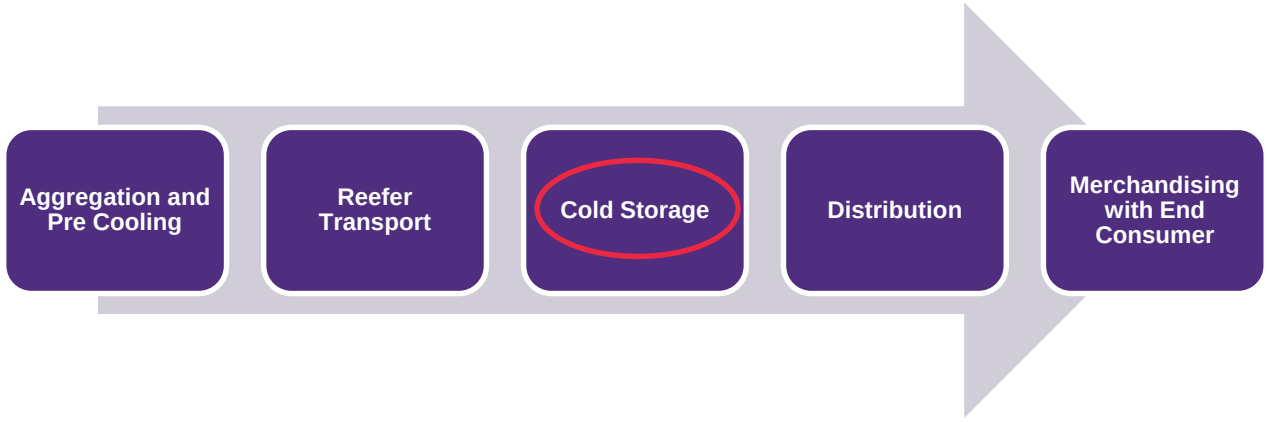
Chapter 1- Introduction to Cold Chain in India

India ranks as the second largest producer, after China, of horticulture crops and fruits in the world. The country produces over 285 million metric ton of horticulture crops on around 2.5 crore hectare land. One the back of diverse agro-climatic zones in India, the production of many crops not only extends in quantity, but also to a wide variety of them.

Despite one of the largest producer, the country is also amongst the leading nations in terms of food loss, even though a sizeable share of the population is suffering from hunger and malnutrition. The economic situation of farmers is not really good in terms of the realisation of the output produced by them which is very different to farmers in the developed countries. The key reasons driving the huge volume of wastages are poor post-harvest system, inefficient supply chains, lack of proper storage and processing infrastructure.

The typical value chain from farm to end consumer involves the practices of Aggregation to concentrate the produce at one location, maintenance of temperature by bringing in the process of pre-cooling, preservation of shelf life through apt storing practices followed by distribution and reaching the consumer.

Figure 1: Post harvest Supply Chain



Source: GT analysis

Cold chain is a logistic system that provides a series of facilities for ensuring ideal storage conditions for perishable products from the point of production to the point of consumption in the food supply chain. The cycle originates from the farm level where the production takes place and goes till the consumer level. A well-organized cold chain reduces spoilage, retains the quality of the harvested products and guarantees

a cost efficient delivery to the consumer. Perishable and edible products deteriorate on parameters of quality upon improper storage facilities.

The trends given below highlight the prevailing losses in various categories of products:

Table 1: Trends for losses

Type of crops	% of Losses
Fruits and Vegetables	5.8 to 18.0%
Cereals	3.9 to 6.0%
Milk	0.5 to 1.0%
Pulses	4.3 to 6.1%
Oilseeds	2.8 to 10.1%
Mean & Poultry	2.3 to 4.0%
Inland & Marine Fisheries	2.9 to 6.9%

Source; GT analysis

The Key benefits of a proper cold store infrastructure

- **Quality:** Maintaining the refrigerated conditions after processing or freezing slowing down the respiration rate, reducing transpiration, lowering microbial activity etc. and thus reduces the rate of deterioration.
- **Availability**: The application of the appropriate cold chain components provides flexibility by making it possible to market products at the optimum time by increasing the product life of fresh foods for days, weeks or even months
- **Affordability**: The cold chain beings' affordability by normalising the price of crops throughout the year through the holistic development of integrated cold-chain. It holds the key to reducing post-harvest losses, ensuring uninterrupted supply and thereby minimizing food inflation.
- **Accessibility**: The cold-chain helps crop growers to reach beyond their production market. It empowers them with the ability to capture a larger buyer base and helps to bring their harvest to more valuable end use. Increasing the cold chain network is a key solution to fulfil the existing gap and strengthen these supply chains.

Temperatures maintained in cold chain storage facilities may be divided into two categories:

- **Refrigerated Temperature**: Refrigerated temperatures are typically those above 0- degree C (32oF).
- **Frozen Temperature**: Frozen temperatures those lower than 0-degree C.

Table 2: Categorizing the Product Temperature, Product Mix and Temperature Change

Product Segment	Product Mix	Temperature Range
Fruits and Vegetables	Fruits, Vegetables	+1 C to 14 C
Processed Produce	Frozen Dairy, RTE, RTC Products	-18 C to +10 C
Packaged Frozen Products	Frozen Peas, Frozen vegetables and other food products	-18 C to – 24 C

Source: NCCD report 2015

The temperature of fruits & vegetables, seafood, meat, poultry and milk must be maintained to keep the quality maintained. The maintenance of temperature after processing helps the product to enhance the shelf life. The temperature of storage and distribution will be maintained as per the requirement of products. Typically, fresh meat, poultry, seafood, milk are held at 38-degree F or 4-degree C while some products such as strawberries, cucumbers and tomatoes are held at higher temperatures due to sensitivity issues.

Hence, a proper storage and warehousing is not only integral for maintaining quality but also for increasing prices for producers and/or distributors and providing consumers the benefit of longer consumption seasons.

1.1. Cold Storage Overview

Cold Stores are chambers which maintain controlled environment using appropriate thermal insulation and refrigeration system. The primary aim is to properly handle and keep the quality of fresh produce intact under appropriate temperature and humidity conditions and extending shelf life. Fresh produce cold stores are designed to control respiration and prevent discoloration, sprouting, dehydration and decay.

The cold stores can be defined as follows:

- **Bulk Cold Stores**: For storage of perishable items in bulk, environmentally controlled warehousing space is utilised and the same is known as Bulk Cold Stores. These stores are designed for facilitating storage for long duration to enhance the process of creating a buffer for inventory to smoothen the episodic production by stabilizing & sustaining the supply lines. These storage spaces are constructed closer to production regions. to facilitate quick access to producers for a selective set of crops only. Bulk

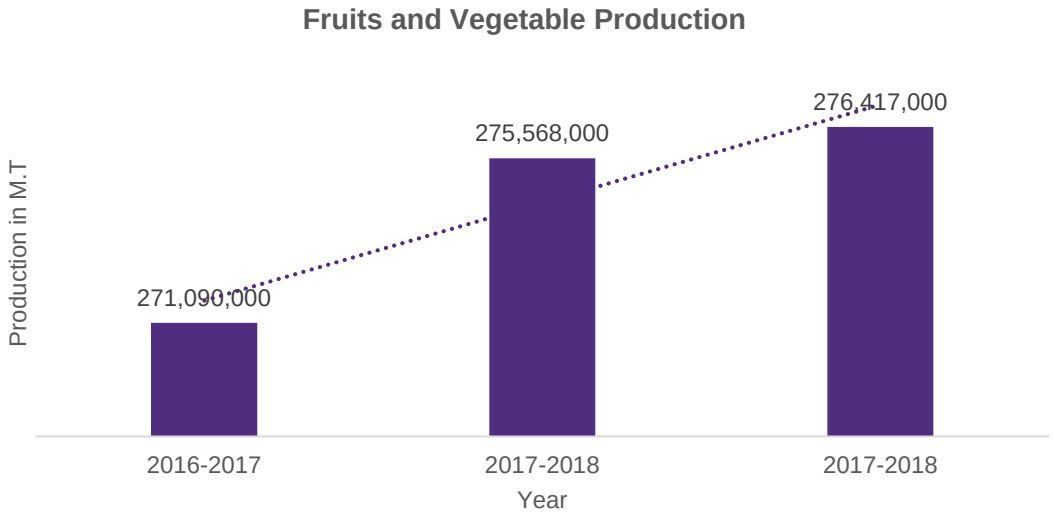
Cold Stores are generally used for storage of a single commodity, which mostly operates on a seasonal basis e.g. stores for Potato, Chilies, and Apples etc.

- **Multi-purpose Cold Stores**: This infrastructure comprises of warehousing space to function as a distribution hub with multiple temperature zones. This structure is designed for short term handling of products as to serve as a distribution logistics platform for market ready packaged produce and ready to retail products. These spaces are utilised for things that are produced round the year. The products stored in these types of cold stores are seasonal fruits, vegetables, dry fruits, spices, pulses, milk products etc.
- **Small Cold Stores**: These spaces have pre- cooling facility for fresh and export oriented items with major concentration of units in Maharashtra and a trend picking up in Karnataka, Andhra Pradesh and Gujarat.
- **Fresh food stores**: These units facilitate both growth of frozen food sector as well as promotion of the same in domestic and export market. This comprise of items with or without processing and freezing facility for fish, meat, poultry, dairy products and processed fruits and vegetables.

1.2. National Scenario of Cold Chain Infrastructure

The demand for the cold chain infrastructure can be derived from the factors mentioned in the section.

Figure 2: Fruits and Vegetable Production in India



Source- GT Analysis and NHB

The estimated positive trajectory of fruits and vegetable production highlights increased production and currently, India is the 2nd largest producers of horticulture crops globally. The increased production faces the impediment of wastage and the

population encounters limited availability of the production. Not only does it contribute to losses for almost one third of the total production but also it affects the quality of final product that reaches the final consumer. Hence, this establishes the demand for investment in the infrastructure of Cold Chain.

There are nearly 7645 cold storages of approximate size of over 34.95 million MT in 2017. Cold storage capacity in India has grown 1.2x times during 2012 to 2017. It has been noted that over one third of these cold storages in India have capacity below 1,000 MT. Nearly 60% of the total cold storage capacity is concentrated in the states of Uttar Pradesh and West Bengal, wherein a majority of the cold storages are for a single commodity - Potato.

The region and commodity wise distribution of cold storages across India is depicted in the chart mentioned below:

Table 3: State wise & Agency wise distribution of Cold Storage as on 2017

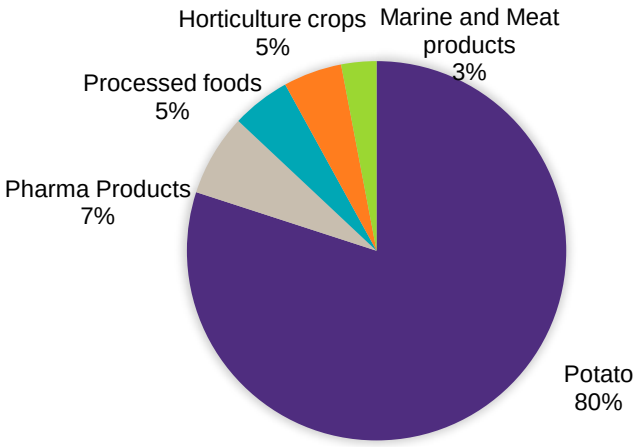
Sr. No.	Name of the State	Total Number of Storage	Capacity (MT)
1	Andaman & Nicobar Islands (UT)	3	810
2	Andhra Pradesh & Telangana	442	1,782,561
3	Arunachal Pradesh	2	6,000
4	Assam	36	157,906
5	Bihar	306	1,415,595
6	Chandigarh (UT)	7	12,462
7	Chhattisgarh	98	484,087
8	Delhi	97	129,857
9	Goa	29	7,705
10	Gujarat	764	2,901,807
11	Haryana	338	749,830
12	Himachal Pradesh	66	131,017
13	Jammu & Kashmir	38	112,516
14	Jharkhand	58	236,680
15	Karnataka	198	560,178
16	Kerala	198	80,405
17	Lakshadweep (UT)	1	15
18	Madhya Pradesh	300	1,263,665
19	Maharashtra	604	978,392
20	Manipur	2	5,500

21	Meghalaya	4	8,200
22	Mizoram	3	4,001
23	Nagaland	4	7,350
24	Orissa	171	540,141
25	Pondicherry (UT)	3	85
26	Punjab	660	2,155,704
27	Rajasthan	166	555,278
28	Sikkim	2	2,100
29	Tamil Nadu	174	337,625
30	Tripura	14	45,477
31	Uttar Pradesh	2299	14,176,062
32	Uttarakhand	46	160,419
33	West Bengal	512	5,947,561
	Total	**7645**	**34,956,991**

Source: National Horticulture Board (NHB)

However, further capacity is required to be built in these states as well as other parts of the country. 80% of the total cold storages in India are single commodity based (mainly potatoes), 5% are processed food, 5% are Horticulture crops, 3% are Marine and Meat product's, commodity wise distribution of cold storage uses in India given in below figure:

Figure 3: Commodity wise distribution of cold storage

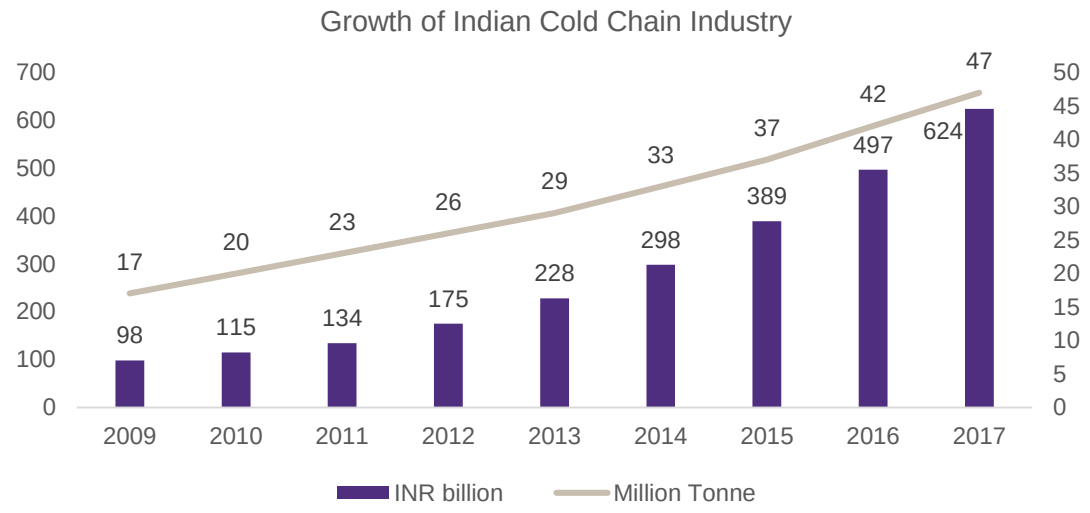


Source: Secondary sources, GT analysis

India's integrated cold chain industry - a combination of surface storage and refrigerated transport - has been growing at a CAGR of 27% for the last three years. The cold chain market in India was valued at around INR 624 Billion 2017. The growth

in cold chain in India has been largely driven by the growth in organized retail, the fast food market, food processing industry and e-commerce industry.

Figure 4: Growth of the Indian Cold Chain Industry



Source: Secondary sources, GT analysis

The cold storage market in India is highly fragmented with over 3500 players, 95% of which are private operators, in the unorganized sector and around 30 players in the organized sector. More than 7,500 cold storages are operating in India, out of which 50% are located in Uttar Pradesh, Gujarat and West Bengal. A large number of cold chains are of small sizes and offer standalone storage solutions. It is estimated that ~5,000 cold storages which existed before 2004 offers standalone cold storage services without pack houses or any other ancillary units. In addition, over one third of the total existing cold storages in the country have less than 1,000 metric tonnes of capacity.

Cold chain infrastructure comprises of cold storage infrastructure, transport infrastructure and point of production infrastructure. Majority revenue contributors in cold chain industry are storage infrastructure. Refrigerated transport or cold chain distribution is still in its nascent stage in India and is way behind if compared to world standards for cargo movement. More than 100 MMT of perishable produce is transported across India annually, only 4 MMT is transported via reefers.

1.3. The Need of an Hour

The table below highlights the gaps in the Indian cold chain infrastructure scenario considering the existing infrastructure already created in the country the estimated requirement.

Table 4: Gap Analysis of Cold-chain Infrastructure in India

Sources: Compilation of data from APEDA, DMI, MFPI, NCCD, MIDH

Type of Infrastructure	Pack-house (No.)	Cold Storage (Bulk – MT)	Cold Storage (Hub - MT)	Reefer Vehicles (No.)	Ripening Chamber (No.)
All India Requirement (A)	70,080	341,64,411	9,36,251	61,826	9,131
All India Created (B)	249	3,18,23,700		9,000	812
All India Gap (A-B)	69,831	32,76,962		52,826	8,319

Developing appropriate business models with suitable infrastructure should revolve around flow of goods on the basis of per capita consumption at population centres, linked to distance from identified producing districts, categorized by temperature ranges (under frozen, chill, mild-chill), segmented by bulk long term storage or short transitory supply chain and scope of reverse logistics.

Although there has been a consistent growth in the development of cold store infrastructure in the country, there is still a huge gap still for efficient preservation of produce. The state wise break up of cold store infrastructure requirement in the country can be seen in the table below:

Table 5: State-wise breakup of cold-chain infrastructure requirement

#	State/UTs	Urban Population 2014-15	% Share Population	CS Bulk (MT)	CS Hub (MT)	Onion Storage (MT)
1	Andhra Pradesh	18428602	4.46	489195	41730	551273
2	Arunachal	354419	0.09	6705	803	--
3	Assam	4774459	1.15	61185	10811	--
4	Bihar	13008947	3.15	5094524	29458	155936
5	Chhattisgarh	6670958	1.61	498724	15106	--
6	Delhi	17718674	4.29	--	40122	--

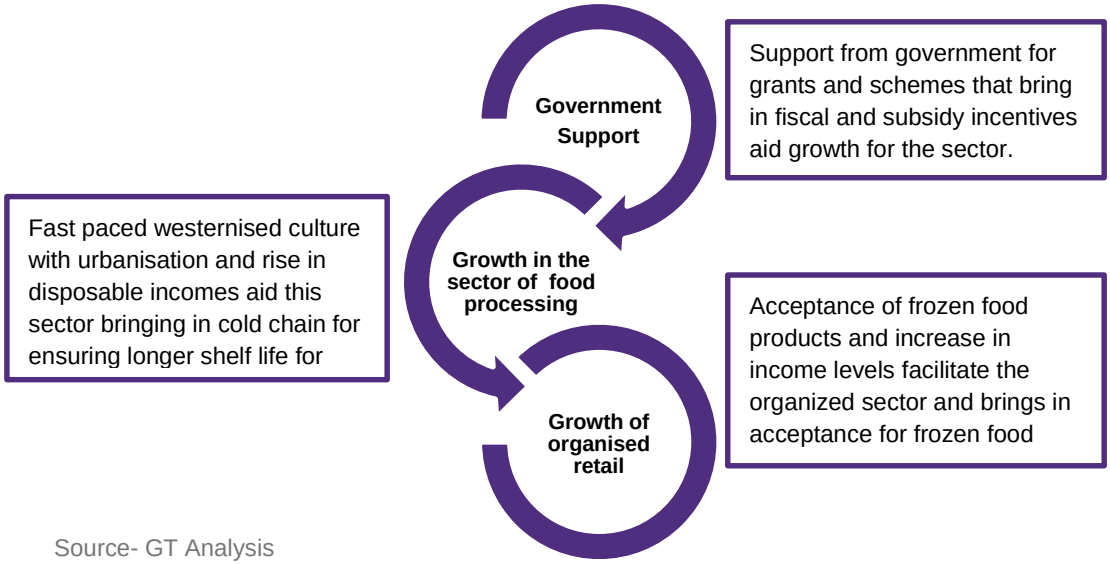
7	Goa	1002786	0.24	--	2271	--
8	Gujarat	28523771	6.9	2174886	64590	305066
9	Haryana	9998498	2.42	217754	22641	305686
10	HP	722662	0.17	304511	1636	--
11	J&K	3807726	0.92	899220	8622	--
12	Jharkhand	8710072	2.11	5228	19723	--
13	Karnataka	25886395	6.26	151695	58618	809817
14	Kerala	19831340	4.8	968	44906	--
15	MP	21658925	5.24	1818134	49045	1130550
16	Maharashtra	54543414	13.19	34200	123509	3063522
17	Manipur	943761	0.23	2925	2137	--
18	Meghalaya	651738	0.16	17228	1476	--
19	Mizoram	623469	0.15	7508	1412	--
20	Nagaland	676818	0.16	7142	1533	--
21	Odisha	7583316	1.83	288328	17172	--
22	Punjab	11227754	2.72	1667984	25424	--
23	Rajasthan	18558887	4.49	11370	42025	337343
24	Sikkim	210234	0.05	2145	476	--
25	Tamil Nadu	37817826	9.15	109005	85635	--
26	Telangana	12806317	3.1	248130	28999	442517
27	Tripura	1161198	0.28	5925	2629	--
28	Uttar Pradesh	48414644	11.71	10565506	109631	72945
29	Uttarakhand	3410752	0.82	65208	7723	273893
30	West Bengal	31729218	7.67	9409081	71848	--
UT & Others		**--**	**--**	**--**	**4539**	**--**
All-India Urban		**413461936**		**34164411**	**936251**	**7448545**

Source: All India Cold-chain Infrastructure Capacity (Assessment of Status & Gap), NCCD 2015

1.4. Growth Drivers

The key drivers for growth of the cold chain sector in India are mentioned in the diagram below:

Figure 5: Drivers of Food Processing Industry

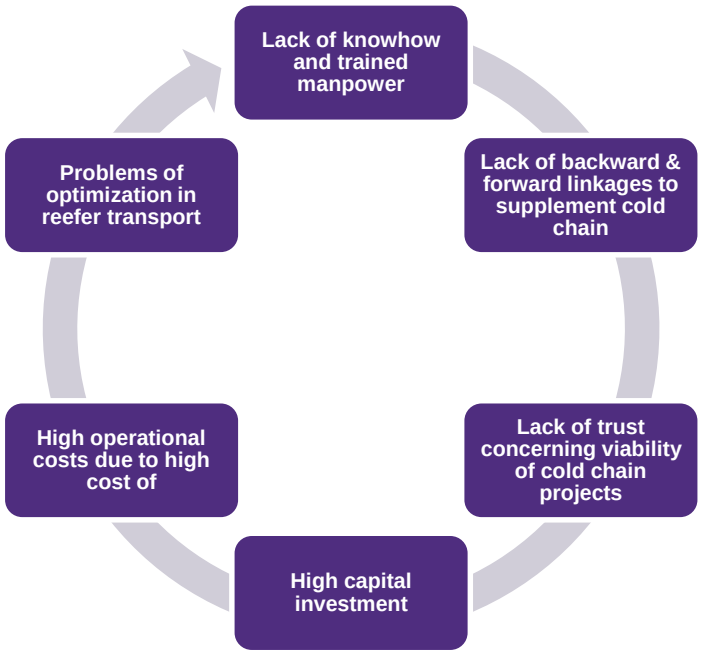


Source- GT Analysis

1.5. Major Challenges for the development of Cold Chain Industry

In India, the agri-supply chain is poorly integrated, posing challenges at each step. There are huge gaps in the system, both in terms of capacity and integration. Critical linkages like reefer transport are almost non-existent. Despite the obvious need for improvement and new government initiatives to stimulate growth, private investment is in short supply for some of the following reasons:

Figure 6: Challenges for Cold Chain



Source- GT Analysis

- **Lack of knowhow and trained manpower:** Despite the increasing number of infrastructure projects, there is a severe lack of manpower with appropriate and upgraded skills to handle modern technology;
- **Lack of backward & forward linkages to supplement cold chain –** Cold chain in itself is not a complete solution to address quality and marketability issues concerning perishable products. The commodities which are transported and stored in the cold chain should have enough market value to absorb the added cost to make the endeavour worth the cost incurred.
- **Lack of trust concerning viability of cold chain projects:** Cold chain projects are still seen by investors as high on capital, low on volume and requiring a long payback period for the investment. Cold chain projects also involve aggressive marketing and investment on backward and forward linkages. This, coupled with a dearth of successful demonstration projects in the sector is keeping potential investors away
- **High capital investment** – As noted above, a high level of capital is required at the initial stage of building a high-end cold chain facility, thus reducing the attractiveness of this type of investment. The lack of institutional investors has not helped to improve the sector. The result, to date, has been a disorganized approach to establishment of a truly efficient cold chain network of facilities and transportation companies;
- **High operational costs due to high cost of power** – Unlike the agricultural sector which is offered highly subsidized power tariffs by the Government of India, the cold chain industry does not enjoy this status and is instead subjected to industrial power tariffs. This significantly increases the operational cost for cold chain operators and act as a major deterrent for growth;

- **Problems of optimization in reefer transport –** Lack of two-way cargo movement/ back haulage, interstate barriers, intercity/state taxes, and bad roads are some of the issues which increase operating costs, delay timely deliveries and reduce the efficient utilization of fleets.

Chapter 2-Rajasthan Scenario

The total production of horticulture crops in Rajasthan is 43,24,249 M. T by utilising the area of 12,14,812 hectares.The analysis of the production profile for vegetables is given below concluding with key crops being highlighted as Onion, Potato and Tomato comprising of 63.4%, 12.9% and 5% of share in total vegetable production.

Table 6: Vegetable Production Analysis

Crop	Production (MT)	% Share in Total Veg.	Yield (Prod MT/ Area Ha)	AREA (Ha)	% Share in Total Veg.	Rajasthan as % of India (%)
Onion	1,149,291	63.4%	18.4	62,499	36.7%	6.9%
Potato	234,552	12.9%	16.1	20,366	12.0%	0.5%
Tomato	90,224	5.0%	4.4	14,552	8.6%	0.4%
Cauli flower	58,404	3.2%	5.3	13,831	8.1%	0.6%
Pea	36,375	2.0%	2.6	10,964	6.4%	0.7%
Brinjal	31,715	1.7%	5.4	5,881	3.5%	0.2%
Spinach	20,808	1.1%	4.9	5,514	3.2%	0.2%
Carrot	19,771	1.1%	5.3	4,673	2.7%	0.7%
Green Chilli	16,154	0.9%	2.9	4,274	2.5%	0.3%
Okra	15,379	0.8%	4.2	3,865	2.3%	0.2%
Total		**92.3%**			**86.1%**	

Source: NHB 2016-17

After a glimpse of the vegetable profile, we further analyse the production of fruits in the state of Rajasthan. Orange, Kinnow and Mango comprise the three key crops of the state with 55.5%, 22.8%, 9.9% of the total vegetation respectively.

Table 7: Fruit Production Analysis

Crop	Production (MT)	% Share in Total Veg.	Yield (Prod MT/ Area Ha)	AREA (Ha)	% Share in Total Veg.	Rajasthan as % of India (%)
Orange	496,950	55.5%	21.3	23,349	44.0%	4.1% (Citrus)
Kinnow	204,260	22.8%	21.4	9,547	18.0%	0.5%
Mango	88,837	9.9%	17.2	5,164	9.7%	0.4%
Guava	27,176	3.0%	6.5	4,171	7.9%	1.0%
Lime	16,659	1.9%	5.7	2,947	5.6%	Citrus
Aonla	13,747	1.5%	8.6	2,857	5.4%	1.5%
Malta	12,816	1.4%	128.2	1,603	3.0%	Citrus
Pomegranate	10,379	1.2%	3.6	743	1.4%	0.4%
Papaya	8,708	1.0%	11.7	695	1.3%	0.2%
Ber	4,697	0.5%	6.8	546	1.0%	1.6%
Total		**98.7%**			**97.2%**	

Source: NHB 2016-17

The analyses of horticulture production of Rajasthan and the optimistic trajectory of horticulture in India, we estimate the same growth for state of Rajasthan and the increasing crop with lack of storage will be the obstacle the government will face. While

a segment of population starves, the wastage of food due to lack of proper infrastructure is unaffordable for the country. For a better shelf life and preserved and intact quality, the activity of bringing in the infrastructure of Cold Chain will curb the losses and enhance the food availability and food security.

Cold Chain Segmentation Based on Storage Temperature

Each crop has a different temperature requirement due to which the requirement of cold storage also changes.

Temperature Range	Crops/ Products
Chill (0 degree to 10 degree C)	• Fresh Fruits Orange, Pears, etc. • Fresh Vegetables potato, cauliflower, etc. • Dry Fruits/ Nuts • Dry Chillies
Mild Chill (10 degree to 20 degree C)	• Sub-tropical fruits i.e. Mango, Banana, Papaya, etc. • Seeds
Frozen (Below – 18 degree C)	• Frozen vegetables, Fruit Pulp, Pineapple Slices, etc.
Normal (Above 20 degree C)	• Whole Onion • Dehydrated foods • Roasted foods • Sun-dried products • Pickle, Jams & Jellies • Ready-To-Eat (RTE) foods

Chill storage is suitable for commodities which should be stored within the temperature range of 0degree C to 10degree C. The cold storages with chambers capable of maintaining the chill range of temperature are used for storage of produce in this category. The majority of fruits and vegetables, fresh meats, dairy and pharmaceutical goods fall in this category. Mild-Chill storage keeps the products at an ambient temperature range of 10degree C to 20degree C. Frozen refers to products which are required to be stored at extreme cold ambient, at below -180C. Normal refers to uncontrolled ambient conditions or those non cold-chain products which are stored at a temperature of higher than 20degree C.

Chapter 3-Proposed Technology

We propose to install a cold storage infrastructure of around 500 MT which will be utilized by the sorted and graded fruits and vegetables produced in the region.

Advantage of the facility: In context of agriculture, cold storages are large warehouse buildings. In addition, the producer can store the bulk quantity of raw materials in a reserve. Raw materials include all the agricultural produce. It works on the principle of refrigeration. We use refrigerants in order to cool the warehouse. Mostly, it will in use to store fruits and vegetables. The storehouse keeps them fresh for a period of time. It will use them in order to decrease the post-harvest losses of economic produce.

Technology Description: A cold storage unit incorporates a refrigeration system to maintain the desired environment for the commodities to be stored. A refrigeration system works on two principles;

1. Vapour Absorption System (VAS).
2. Vapour Compression System (VCS).

The technology used in this project is the VCS with Fin coil type systems. This system although slightly costlier is energy efficient with low operational cost and higher space availability for storage of produce.

In a refrigeration system, refrigerants are used to absorb the heat from the stored produce by evaporation at a lower temperature and pressure and release the heat by condensation at a higher temperature and pressure in a condenser. The cooling system in this project uses Ammonia as the refrigerant. The essential components of refrigeration plant are the compressor, condenser, expansion valves, cooling tower and cooling coils. The selection of plant and machinery i.e., compressor, condenser and evaporator is based on the maximum cooling load during peak summer.

Following factors are considered while selecting the cooling equipment:

- Heat transmission (conduction and radiation) through the structure.
- Infiltration of air into the space during frequent opening of doors and fresh air charge.
- Heat emission from occupants.
- Heat from fans, motors, lights etc.
- Product load i.e., heat to be extracted from the stored produce.

The pull down time is considered as 24 Hrs. for freezer and 72hrs for chillers. Hot air defrosting for freezer and hot water for chillers is proposed for the refrigeration system.

Chapter 4- Business Model

4.1. Business Assumption:

The business plan has assumed that the business model operates as leasing model where revenue will be generated by providing the cold storage facility on lease to the third party.

We have assumed that the facility will have initial one year for the construction of the facility, followed by growth in the operation utilisation:

Table 8: Assumptions for Operating Capacity

Business Case - Assumptions	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Operating Capacity	0%	60%	80%	90%	90%	90%	90%	90%	90%	90%

4.1.1. Project Cost

The total cost of the project is estimated at Rs.172.4 Lakhs, out of which civil cost constitutes Rs 50.4 Lakhs, plant and machinery constitutes Rs.77.2 Lakhs, utilities & support of Rs. 7.4 lakhs and miscellaneous fixed assets of Rs. 30.2 Lakhs. The detailed description of each component of project cost is depicted in the tables below.

Table 9: Project Cost Summary

Capex Components	Year 1
Land and Land Development	-
Civil Cost	50.4
Plant & Machinery	77.2
Utility & Support	7.4
Mis. Fixed Assets	30.2
IDC	7.2
Pre-operative/ Preliminary Expenses	-
Total Capex	**172.4**

Note: We have not considered the land cost in this business model

4.1.2. Proposed Means of Finance

The promoter's equity in the project is Rs. 86.2 Lakhs which is 50% per cent of the total project cost. The term loan considered for the project is estimated at Rs. 86.2 Lakhs which is 50% of the total project cost.

Table 10: Means of Finance Summary

Means of Finance (INR Lacs)	Year 1
Total Project Cost	**172.4**
Funding	
Equity (Promoters Cost)	86.2
Debt	86.2
Total Funding Required	**172.4**

Note: We have not considered grant in aid being offered by National Horticulture Board or any other government entity/ institutions. Which may have an impact on the overall profitability of the project in a positive way.

4.1.3 Civil Work

The total cost of civil work has been estimated to be Rs 50.4 lakhs, which includes technical civil work and non-technical civil work. Cost of civil work comprises of the cost of process building, Raw material warehouse, Finished goods warehouse, transformer house & Utility building. The total cost of technical civil works has been arrived at on the basis of the estimates provided by the Chartered Engineer (Civil) and are substantiated with the requisite certificate.

Table 11: Civil Cost Summary

Civil Cost	Total Area Req (SQM)	Civil Cost (Per SQM)	GST Rate (%)	Total Civil Cost (Lacs)
Cold Store	600	8,000	5.0%	50.4
Non-Core Area				
Utilities and Support Infrastructure	-	8,000	5.0%	-
Other (Mis Area)	-	8,000	5.0%	-
Total Civil Cost	**600**			**50.4**

4.1.4 Utilities and Mis. Fixed Assets

The total cost of Utilities has been estimated to be Rs 7.4 lakhs, which includes water storage of 20,000 LT, generator set of 80 KW and Weighing Scale of 500 KG. The total expenditure towards miscellaneous fixed asset in estimated at Rs. 30.2 Lakhs which

comprises of 3,000 crates, 4 SS tables, 300 pallets to keep crates and 4 hand pallets trucks.

Table 12: Utilities and Mis Fixed Assets Summary

Utility & Support Infrastructure	Capacity (No. of Units)	Per Unit Cost (INR Lacs)	Freight/ Other Cost (%)	Taxes/ Duties (%)	Overall Cost (INR Lacs)
Transformer, Electrical Panels, Cable wire etc.	63 kva	3.0	1%	18%	3.6
Water Storage	20000Lit	0.2	1%	18%	0.2
Generator	80 KW	2	1%	18%	2.4
Weighing Scale	500 KG	1.0	1%	18%	1.2
Total Utility & Support					**7.4**
Mis Fixed Assets	**Quantity**	**Per Unit Cost (INR Lacs)**	**Freight/ Other Cost (%)**	**Taxes/ Duties (%)**	**Total Cost (INR Lacs)**
Crates (Rs. 275 per unit)	3000	0.0	1.0%	18.0%	9.8
SS TABLE (8*4*3 ss304)	4	0.3	1.0%	18.0%	1.2
Pallets (Rs. 2,100 per unit)	300	0.0	1.0%	18.0%	7.5
Racking System (Rs. 3,000 per unit)	300	0.0	1.0%	18.0%	10.7
Hand Pallets Trucks	4	0.2	1.0%	18.0%	1.0
Total Mis Fixed Assets					**30.2**

4.1.5. Plant and Machinery

The total cost of plant and machinery has been arrived on the basis of quotation received from various suppliers of equipment and machinery. The total cost of P&M is considered as Rs. 77.2 Lakhs (including IGST). The following table captures the distribution of P&M and utilities.

Table 13: Plant and Machinery

Plant & Machinery	Capacity	Total Cost (Lacs)
Cold Store	500 MT	77.2
Total Cost		**77.2**

4.1.6 Income Statement

The below mentioned is the income statement for the cold storage infrastructure:

Table 14: Income Statement

INR Lacs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Financial Snapshot - Income Statement										
Revenue	-	43.1	78.4	101.8	104.3	106.9	109.6	112.3	115.1	118.0
EBITDA	-	14.7	40.9	58.7	59.4	60.3	60.9	61.8	62.4	63.2
Depreciation	-	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9
EBIT	-	3.8	30.0	47.8	48.5	49.4	50.0	50.9	51.5	52.3
Interest Cost	-	8.4	6.8	5.3	3.8	2.3	0.8	0.0	-	-
EBT	-	(4.6)	23.2	42.5	44.7	47.0	49.2	50.9	51.5	52.3
Tax	-	-	6.8	12.4	13.0	13.7	14.3	14.8	15.0	15.2
PAT	-	(4.6)	16.4	30.1	31.7	33.3	34.9	36.0	36.5	37.1
Profitability Ratio (%)										
Revenue Growth		N/A	82.2%	29.7%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
EBITDA Margin	-	34.2%	52.2%	57.7%	57.0%	56.4%	55.6%	55.0%	54.2%	53.5%
EBIT Margin	-	8.8%	38.3%	47.0%	46.5%	46.2%	45.6%	45.3%	44.7%	44.3%
EBT Margin	-	(10.6%)	29.6%	41.7%	42.8%	44.0%	44.9%	45.3%	44.7%	44.3%
PAT Margin	-	(10.6%)	20.9%	29.6%	30.4%	31.2%	31.8%	32.1%	31.7%	31.4%

4.1.7. Balance Sheet

The below mentioned is the balance sheet statement for the Low end waxing line:

Table 15: Balance Sheet

INR Lacs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Shareholders' Equity										
Equity Share Capital	86.2	114.6	128.3	128.3	128.3	128.3	128.3	128.3	128.3	128.3
Reserves & Surplus	-	(4.6)	11.9	42.0	73.6	107.0	141.8	177.9	214.4	251.4
Quasi Receipt (Grants)	-	-	-	-	-	-	-	-	-	-
Total Shareholders' Funds	86.2	110.0	140.2	170.3	202.0	235.3	270.2	306.2	342.7	379.8
Liabilities										
Trade Payables	-	22.7	31.4	36.6	37.9	39.4	40.9	42.4	44.0	45.7
Total Current Liabilities	-	22.7	31.4	36.6	37.9	39.4	40.9	42.4	44.0	45.7
Long Term Borrowings	86.2	71.8	57.5	43.1	28.7	14.4	-	-	-	-
Total Non-Current Liabilities	86.2	71.8	57.5	43.1	28.7	14.4	-	-	-	-
Total Equity and Liabilities	172.4	204.5	229.0	250.0	268.6	289.0	311.0	348.6	386.7	425.4
Assets										
Cash and Cash Eq.	-	-	-	8.6	35.6	64.3	94.5	140.3	186.5	233.2
Total Inventories	-	-	-	-	-	-	-	-	-	-
Trade Receivables	-	43.1	78.4	101.8	104.3	106.9	109.6	112.3	115.1	118.0
Total Current Assets	-	43.1	78.4	110.3	139.9	171.2	204.1	252.6	301.6	351.3
Net Block	172.4	161.5	150.5	139.6	128.7	117.8	106.9	96.0	85.1	74.2
Total Non-Current Assets	172.4	161.5	150.5	139.6	128.7	117.8	106.9	96.0	85.1	74.2
Total Assets	172.4	204.5	229.0	250.0	268.6	289.0	311.0	348.6	386.7	425.4