Government's Role in India's Ailing Cold Storage Sector

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ABSTRACT

Every year, India wastes about 18 per cent of fruits and vegetables, due to lack of post-harvest storage facilities. The cold storage sector has been one of the most undermined sectors in India, devoid of investment, in spite of various government policies and subsidies. The paper analyses what has gone wrong with the policies and what needs to be done to develop a robust cold storage sector in the country.

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Executive Summary

Every year in India, roughly 18 per cent of fruits and vegetables are wasted[i] due to the lack of post-harvest storage infrastructure. The UN's Food and Agriculture Organisation (FAO) found that 40 per cent of India's fresh fruits and vegetables worth an annual $8.3 billion perish before reaching consumers. This is despite the fact that India is the second largest producer of fruits and vegetables, producing around 83 million tonnes of fruits and 121 million tonnes of vegetables annually[ii].

In fact, only two per cent of produce in India are held or transported using cold storage facilities compared to 85 per cent in the US with an ensuing gap between supply and demand coming to 25 million tonnes[iii]. India is confronting the issue of malnutrition and poverty because of its inability to store or refrigerate food products. This is at a time when *The Lancet* magazine reports that three in four Indians are yet to taste vegetables[iv].

Across the globe, cold storages have been instrumental in linking farmers to end consumers and ameliorating the problem of malnutrition. However, restrictions imposed by the Central Government and other supply chain barriers have stifled the growth of cold storages, though 96 per cent of them run in the private domain. These barriers include poor roads, bureaucratic corruption and lack of electrical power supplies that are critical for cold storage facilities (Emerson Report). A state-wide scenario of the food system has been drawn by Yes Bank[v] in its 'Availability Map of Fruits and Vegetables', which shows how states like Punjab and Haryana are food surplus, while the state of Bihar is suffering from acute shortage of food. Through this report, Centre for Public Policy Research (CPPR) deciphers the complexities of the Indian agricultural sector, which have been the major reason for stifling investments in the establishment of cold storages. CPPR suggests the need to reassess the Government's role in India's food and agricultural sector through a revamp of the Agricultural Produce Marketing Committee (APMC) Act, stopping the perverted subsidy system, prioritising investments and initiating steps to encourage private players by ease of doing business in the cold storage sector. In this context, the report proposes the need of liberalising cold storage and food sector in India so as to feed its starving and malnourished millions.

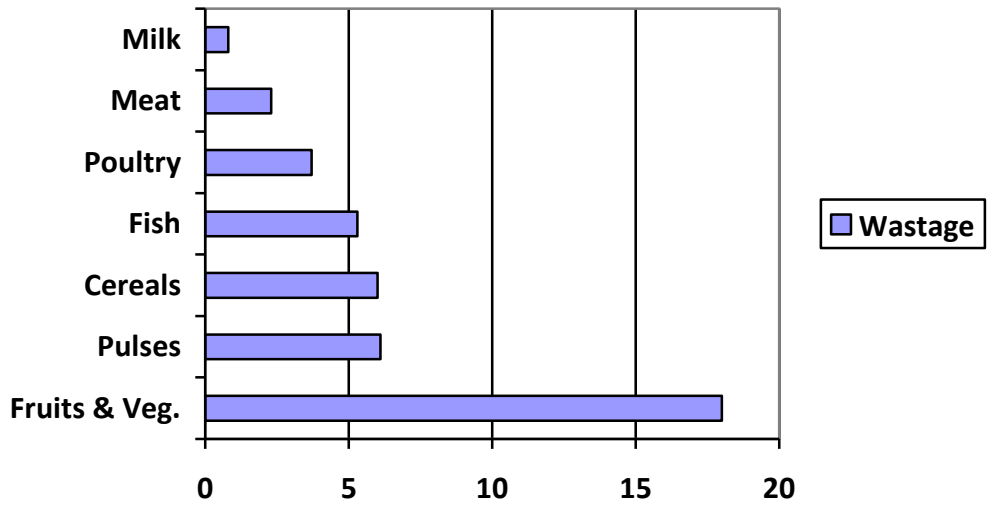
The Great Indian Horti-problem

The Government of India spent ₹750 billion in 2011, about one per cent of its GDP, on the food distribution system. Further, horticulture contributes 30 per cent of the agricultural

GDP even with less than 15 per cent landholding among all crops, pointing to its immense contribution to the economy and suggesting the need of priority investments. In fact, only two per cent of vegetable production and four per cent of fruit production are being processed. This is in sharp contrast to the extent of processing of fruits in several other developing countries such as Brazil (70 per cent), Malaysia (83 per cent), Philippines (78 per cent) and Thailand (30 per cent)[vi]. As on 2013, India ranks fifth in the world in terms of the value of food processing, which forms a crucial component in the food consumption patterns of the country. The industry is expected to grow to ₹1,26,840 crore by 2016, growing at 13 per cent each year since 2012. These estimations are based on the demand for processed foods in the country. This is, however, in stark contrast to the fact that a large population has shown relatively small consumption pattern of fruits and vegetables, which is considered an important component for fighting malnutrition and eliminating poverty (FAO). *The Lancet* points out that in low-income countries, including India, only 27 per cent of the population could have more than one serving of fruits per day, suggesting the need of market intervention.

Of the total production of fruits and vegetables, nearly 76 per cent are consumed in fresh form. The per capita consumption of fruits and vegetables is low in India, between 149 and 152 gm a day[vii], when the recommended consumption, according to FAO and WHO, stands at 400 gm a day[viii]. At the supply side, India's productivity in vegetables is one of the least at 17.3 (tonne/hectare) compared to the US (23.6), China (22.5) and Brazil (31.4) with Philippines leading the pack (37.2). India therefore faces the problem of plenty in the midst of poverty and malnutrition.

Figure 1: Annual Wastage as a Percentage of Production across Commodity Classes



Source: Emerson, The Food Wastage & Cold Storage Infrastructure Relationship in India

Government intervention in the horticultural and agricultural sectors posits negative consequences on end consumers. The cold chain industry is touted to bring about the second wave of Green Revolution in India (National Centre for Cold Chain Development [NCCD], 2015). A well-established cold chain industry in the country could potentially solve existing problems such as wastage and price volatility, and improve consumer access to products with better quality.

It has been noted that inherent defects in the supply chain, government intervention in the system and a regulated market for cold storages have been impeding the growth of fruits and vegetables sector. India's cold chain industry regulations and cold storage policies are formulated by the Ministry of Food Processing. Meanwhile, the Ministry of Agriculture and the Ministry of Commerce and Industry are also involved in developing various initiatives related to the cold chain industry in India. Investments in cold storages are limited, with only 10 per cent of horticulture production covered. Current spending on organised warehousing in India constitutes nine per cent of total logistics spending, as against 25 per cent in the US, suggesting the low prioritisation of the sector[ix]. During the peak production period, the gap between demand and supply of cold storage capacity is approximately 25 million tonnes, which posits the immense strain on the existing system.

Through this report, CPPR aims to identify the existing flaws and explore the development of cold storages as a game changer in achieving a sustainable and self-sufficient horticultural sector in India. India faces the challenge of growing demand and higher production against the critical issues of malnutrition, low intake and low productivity. This report shall analyse the causes, role of the Government and potential solutions for stimulating investments in setting up cold storages across India, thus benefiting farmers and market.

India's Cold Storage Scenario – Leading India's Second Green Revolution

The total horticulture and non-horticulture produce is estimated to be around 500 million Metric Tonnes (MT) a year[x]. The country, hence, requires a strong cold storage system. India has an estimated 7,129 cold storages with a cumulative installed capacity of 32 million MT (NCCD, 2015). About 96 per cent of the cold storages in India are privately operated. Government institutions and co-operatives run the rest. About 5,000 storages were built before 2004 and most of them are standalone cold storages without pack

houses or any other ancillary unit[xi]. Government run-NCCD estimates that cold storages are expected to grow by 3.57 per cent with a capacity increase of 5.19 per cent. The cold chain market of India is anticipated to grow at the Compounded Annual Growth Rate (CAGR) of 28 per cent during 2012–2017, which will make it a $11.6 billion (₹6,400 crore) market.

According to industry estimates, approximately 104 million MT of perishable produce are transported between cities in India every year. Of this, about 100 million MT moves via non-reefer (non-refrigerated) mode and only 4 million MT are transported by reefer (refrigerated) method. India has not more than 10,000 actively refrigerated vehicles as estimated by NCCD[xii]. As per industry estimates, there are around 25,000 vehicles in India, taking into account the unorganised nature of the service operated by private players. It has to be noted that the number includes those reefer vans that carry milk and milk products, ice creams, chocolates and so on, which link to retail shops and retail markets. The number of vans left for carrying fruits and vegetables is considered quite low at around 15 per cent.

The Emerson Report on 'The Food Wastage & Cold Storage Infrastructure Relationship in India' mentions the requirement for India to double its capacity to 61.3 million MT to minimise food wastage. Other reports have identified the lack of an integrated supply chain system[xiii], concentration of cold storages in a few states[xiv] and lack of emphasis on developing cold chain systems as major factors affecting the food and vegetable sector in India. Organised markets constitute only eight to 10 per cent of the entire cold chain industry. According to Ashok Gulati, leading Indian agricultural economist and former chairperson of the Commission for Agricultural Costs and Prices, the advisory body of the Government of India on food supplies and pricing policies, "The whole food supply chain need to have cold storages. Currently, there is no linkage of cold storages with distribution centres. Because of the unorganised nature of the sector, most of the players are not able to invest much to build high tonnage cold storages."

This report is based on a premise that the function of the agricultural sector and food industry extends to reducing wastage, dealing with price fluctuations and making seasonal produce available at all seasons, thereby fetching higher profits for farmers/growers. For example, when there is a bumper harvest, the price of the commodity crashes. Hence, farmers face huge losses, despite realising a good yield. Cold storages help farmers capitalise on the excess production. They can choose to store the produce and sell it when prices soar[xv]. At a macro level, to cite the example of Kerala, the state requires around three million tonnes of vegetables a year and transports tonnes of fruits and vegetables

for consumption from the neighbouring states on a daily basis[xvi]. These are done through non-reefer vehicles or trucks, which are open at the top and affected by the vagaries of heat and rain. Thus, in the event of Kerala, having a robust cold chain system equipped with reefer carriers, will enable savings from huge post-harvest losses and transportation costs. In order to achieve this, the status of the industry is to be studied, factors that impede the growth of the industry are to be identified and ways to fix these issues are to be discussed.

Analysis of the Underperforming Horticulture and Cold Storage System in India

Figure 2: Agriculture Market in India and its Stakeholders

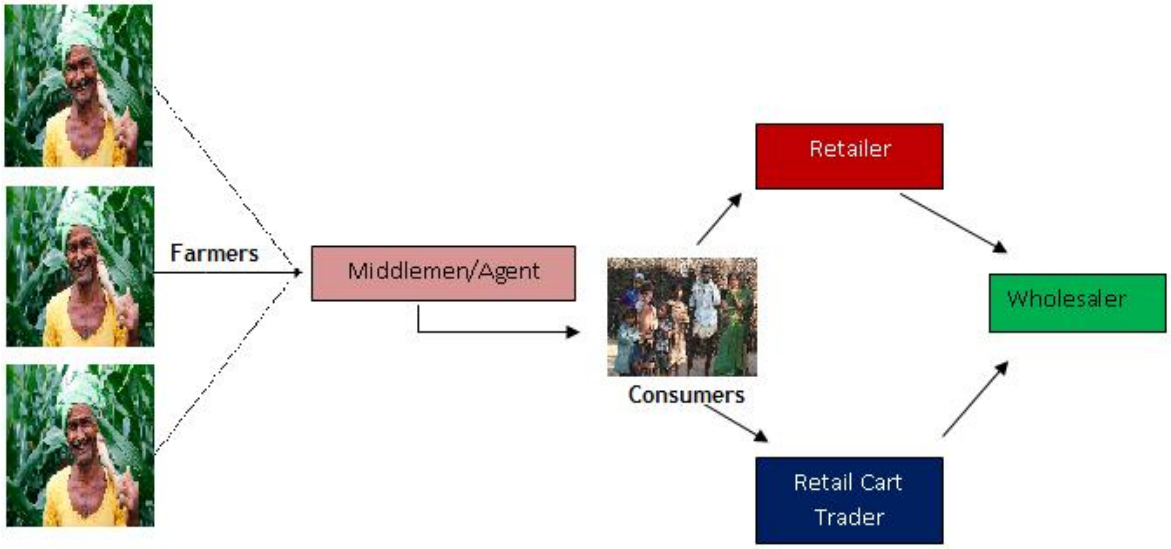
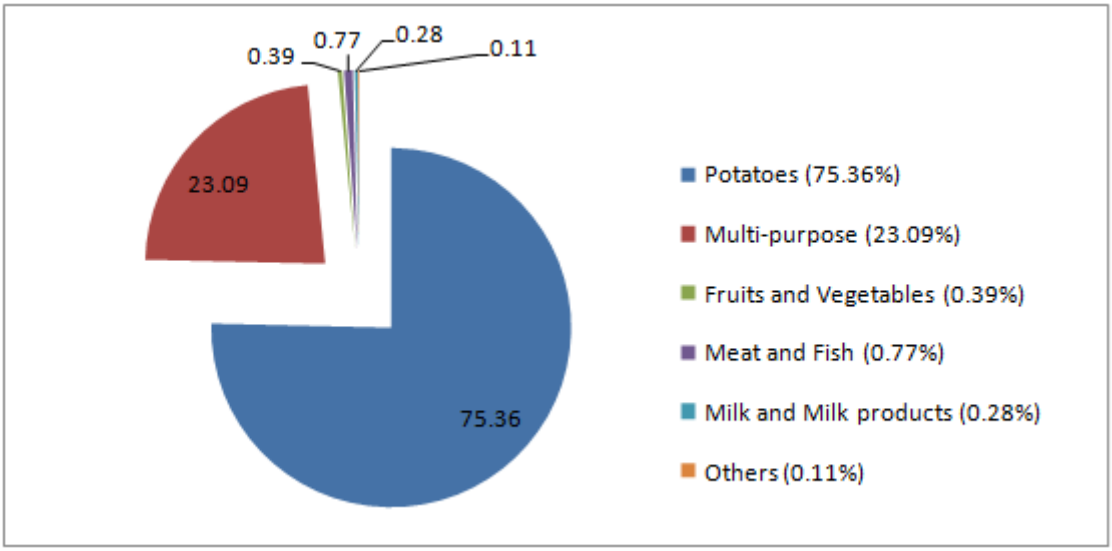


Figure 2 shows the linkages existing between the farmer and consumer, with middlemen/agents calling the shots on matters related to availability of food products and pricing. It is therefore significant to understand the role played by them in developing cold storages. In fact, a major part of the total wastage of fruits and vegetables occurs between the farm and *mandis* (local fruit/vegetable markets)[xvii]. This is largely attributed to the poor packing of the produce and lack of cold storage/refrigerated transport in addition to controls over the supply chain by middlemen/agents. Inefficiency in handling multiple products in the distribution stage further hampers the product quality at the retailers' end, states Ashok Gulati. The estimated loss in terms of economic value of the harvest and post harvest comes to around ₹7,437 crore for fruits and ₹5,872 crore for vegetables, due to the above factors. Among the fruits, the estimated loss for mango is

10-12 per cent, while potato accounts for around half the total loss in the vegetable category.

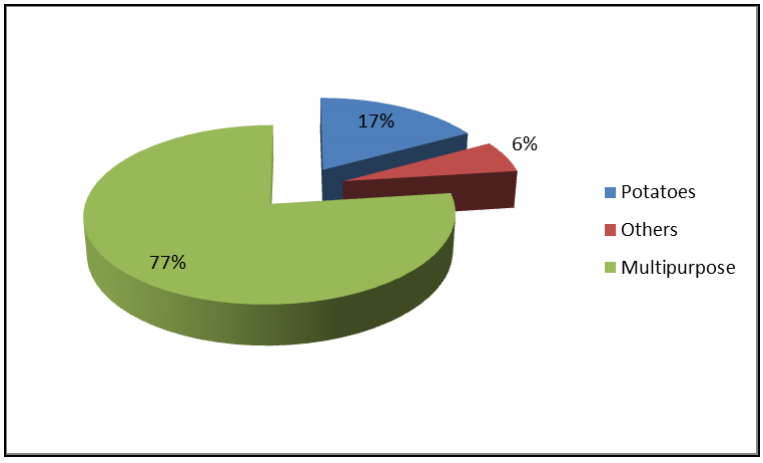
Figure 3: Capacity of Cold Storage based on Type of Commodity



Source: 2010 Global Capacity Report by International Association of Refrigerated Warehouses

As can be seen from the chart, more than one-third of the storage capacity is used for storing potatoes and a mere 0.39 per cent goes for the storage of fruits and vegetables. Of the 23.09 per cent used for multiple commodities, the share of fruits and vegetables is unknown, while the value of potatoes is found to be much smaller than those stored in multi-storage.

Figure 4: Value of Commodities stored (based on type) of Cold Storage in India



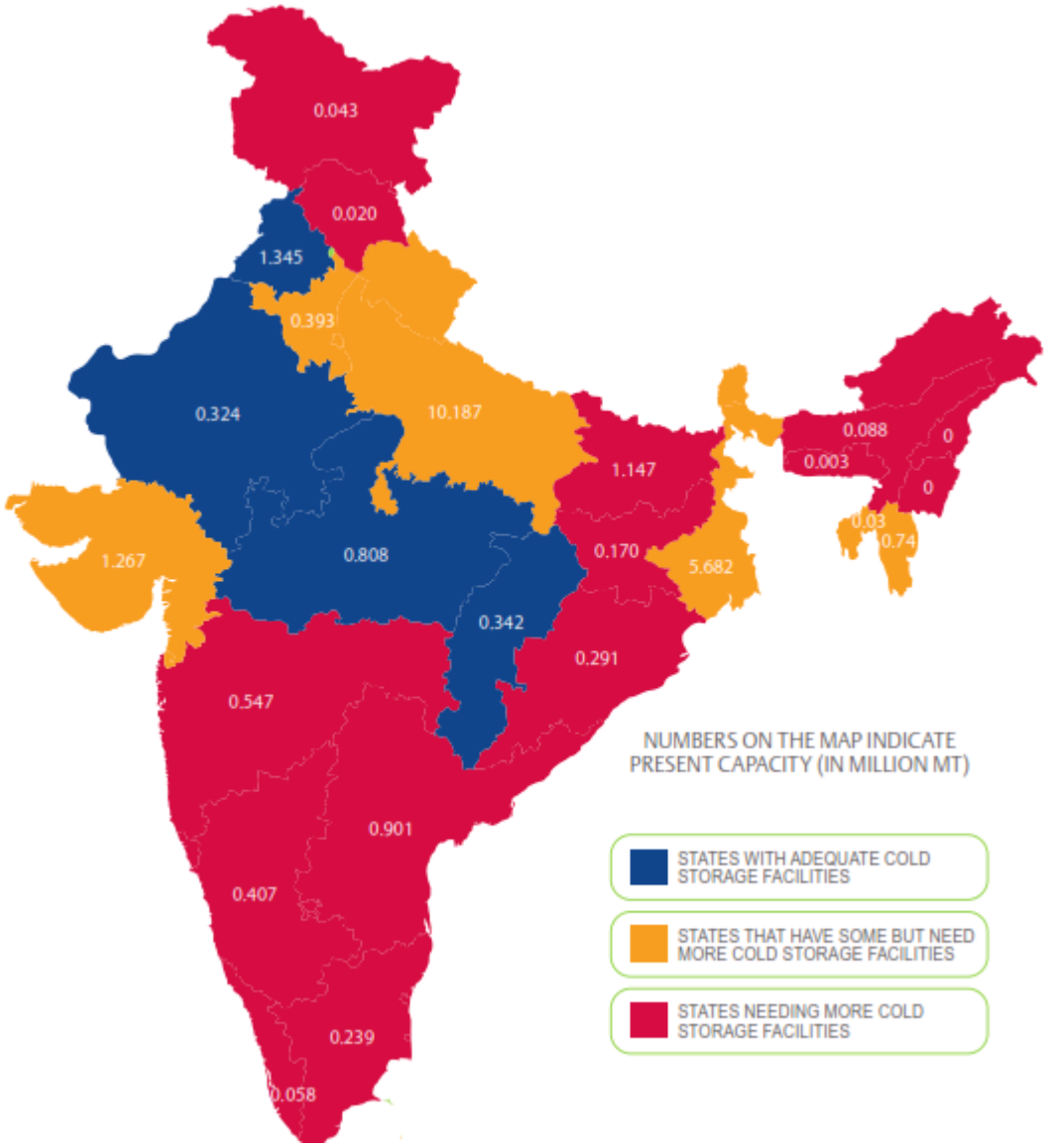
Source: Yes Bank, Cold Chain Opportunities in India, 2016

In the present scenario, among the seasonal crops, only those fruits and vegetables that have a longer shelf life are stored (using primitive methods), due to the absence of cold

storages. The producers, therefore, have no choice but to sell their produce as soon as they harvest it, in spite of foreseeing price rise in the near future, owing to its seasonality. This can be gauged from the fact that only 11 per cent of what is produced in India can be stored (Emerson, 2015). These facts affirm how integral cold storages are in the entire cold chain system of fruits and vegetables.

Data shows (See Figure 5) that about 60 per cent of the cold storages in India are located in four states – Uttar Pradesh, West Bengal, Punjab and Gujarat. About 75 per cent of the cold storage units in India are single commodity storages, which store only potatoes and potato seeds, 23 per cent are multipurpose storages and the remaining two per cent store marine products, drugs and so on.

Figure 5: State wise Capacity of Cold Storages in India



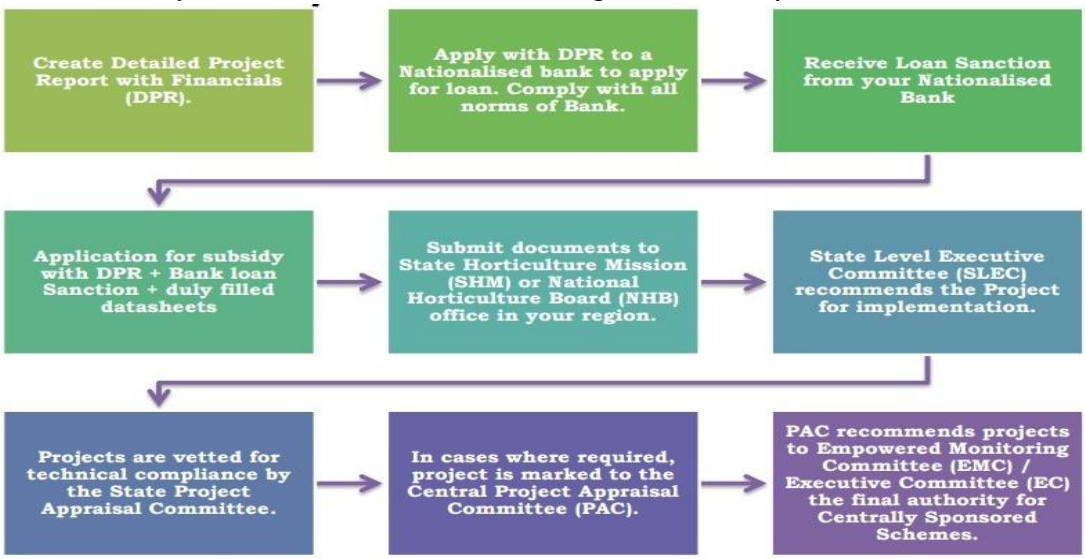
Source: Directorate of Marketing and Inspection, Ministry of Agriculture, GOI

The Role of the Government

Through social welfare initiatives, the Government has been making major interventions in the agricultural sector in production, collection, storage, markets (*mandis*) and even marketing of farm products. The 1991 economic liberalisation re-strategised the Indian agricultural sector and allowed the entry of private players, though more visible signs emerged only by 1997. Government intervention had limited private investments in the agricultural sector, including cold storage, which required huge investments. The National Horticulture Mission, the flagship scheme of the Department of Agriculture, has been vigorously aiming for private partnerships in the sector with a slew of subsidies and exemptions provided. Check Table 1 for a detailed list of various subsidy schemes provided by the Government. After providing infrastructure status to cold storages, the Ministry of Food Processing has been providing assistance for cold chain infrastructure development, including that of cold storages under the scheme for Cold Chain, Value Addition and Preservation Infrastructure.

An assessment of the storage sector will help us understand how the Government still plays a major role in the cold chain industry. Government players like the Food Corporation of India (FCI) and Central and State Warehousing Corporations (CWC & SWC) dominate the storage of grain, wheat and sugar in warehouses, storing around 90 MT of the total installed capacity of 118 tonnes. The perishable sector has, on the other hand, a large number of private players but each small in size. Nearly 35 per cent of the cold storages have capacity below 1000 MT. The '*mandi*' systems are largely controlled and monitored by the Government, which intervenes indirectly in food pricing to check inflation, prevent hoarding and ensure supply. These interventions also influence the existence of storage systems and affect private operated cold storages.

Table 1: Subsidy Process under Mission for Integrated Development of Horticulture



Government Support Systems for Cold Chain and Cold Storages in India

- Section 80–IB of the Income Tax Act,1961, provides deductions in respect of profits from industrial undertakings related to cold chain. For the first five years, the deductions are at 100 per cent and then at 25–30 per cent for the next five years
- Under Section 35–AD of the Income Tax Act, deduction at 150 per cent is permitted for expenditure incurred on capital investment in setting up a cold chain facility
- Concessional rate of custom duty at five per cent on imported equipment for cold chain facility under project import benefits
- All refrigeration machineries and parts used for installation of cold storage, cold room or refrigerated vehicle are exempted from excise duty
- Centrally sponsored scheme of cold chain, primary processing centre and reefer trucks under National Mission on Food Processing (NMFP)

The Subsidy Path

The Government has developed various schemes to push cold storages and warehousing in India through forms of tax exemptions, subsidies and an instrument called the Negotiable Warehousing Receipt (NWR)[xviii]. A host of government institutions like the National Horticulture Board (NHB), National Horticulture Mission (NHM), Agriculture Promotion Exports and Development Authority (APEDA), Ministry of Food Processing Industry (MoFPI), Ministry of Integrated Development of Horticulture (MIDH) and Department of Agriculture and Co-operation currently operate in the cold storage sector. About 1,066 government cold storages/Controlled Atmosphere (CA)/Modified Atmosphere (MA) projects were developed through subsidies between 2009 and 2012, running up to a total of ₹659.33 crore. One of the major agencies that supports cold storage is NABARD, which has invested to the tune of ₹2,252 crore in the period of 2011-12 alone, through loans and subsidies. The subsidy percentage was enhanced in the same financial year from 25 per cent to 40 per cent in general area and 55 per cent in hilly and scheduled area. NHB's Capital Investment Subsidy Schemes for construction/expansion/modernisation of cold storages prescribe a maximum storage capacity limit of 5000 MT per project, which thereby puts a restrictive condition on financing.

Since all subsidies are routed through government institutions, corruption and cronyism have been reported, aimed at benefitting a few influential players than majority of the small farmers. While there is no empirical evidence suggesting the reasons for the dominance of cold storages in a few locations like Agra in the state of Uttar Pradesh,

vested interest in the disbursal of subsidies and chances of political influence cannot be overruled. Interviews with entrepreneurs point to the fact that there exists information asymmetry with regard to subsidies available at the state level. The reach of Central support is limited and lacks transparency in process. This has worked to the disadvantage of genuine entrepreneurs, who prefer to avail loans from banks than enrol in any Government schemes. This is in addition to the issue of NWRs to farmers, which is carried out in an unstructured and non-transparent manner. The number of cold storages enrolled in the NWR scheme is limited, and hence access to such systems is not uniform.

Has the FDI shot misfired?

The Government had allowed 100 per cent Foreign Direct Investment (FDI) in the cold storage sector[xix] in 2013 and external commercial borrowings in 2011. The FDI policy mandates "minimum investment of USD100 million with at least 50 per cent of total FDI being invested in 'back-end infrastructure' within three years of the first tranche of FDI, where ''back-end infrastructure' will include capital expenditure on all activities, excluding that on front-end units". While figures are not available for FDIs in cold chain, according to the Department of Industrial Policy and Promotion (DIPP), FDI in food processing stood at USD6.3 billion between April 2000 and May 2015[xx]. About 98 per cent of FDIs are under automatic route, which has minimal government intervention but they did not cover multi-brand retail until recently. As per US Trade Departments Report, 2016, despite India's cutback on certain FDI restrictions, businesses often remain reluctant to invest in the market due to poor infrastructure, a complex tariff regime (one of the highest in the world), protectionist policies, bureaucratic inefficiencies and intellectual property theft[xxi].

Moreover, the restrictions on retail have a corresponding effect on the growth of cold storages, since they are highly capital intensive. A traditional cold storage of multi-tier walk in with a capacity of 6,000 tonnes is estimated to cost ₹50 million, excluding the cost of land[xxii]. Typically, a cold storage unit with a storage capacity of 5000 MT would require at least an acre of dry land. It is estimated that the price of land alone constitutes 10 to 12 per cent of the total project cost. According to Ashok Gulati, there has been around 280 per cent increase in land prices in the last decade. High level of investment is therefore required for building a modern storage infrastructure. This is especially true in rural areas, where electricity supply is erratic and largely runs by diesel power engines. The costs involved thus prevent the spread of cold storages to distribution centres located

in towns and villages. This is also an attributing factor for the absence of cold chain in the retail network.

In addition to this, the nature of the Indian retail market, where small players are larger in number and highly fragmented, prevents the scale of capital investment necessary to create a modern logistics system. As per the World Economic Forum[xxiii], the Government has been highly protective of small retailers, which acts as a disadvantage for major investments in cold storages that are large entities and require to be organised. A study for the NCCD by Ernst and Young recommended the Government to promote more organised retailing to encourage investment in the cold chain sector[xxiv]. Currently, approval is required from the Foreign Investment Promotion Board (FIPB), Department of Economic Affairs and Ministry of Finance for foreign investments in multi-brand retail, which were increased from 51 per cent to 100 per cent recently. This is however subject to conditions set for investments and mandatory procurement of minimum 30 per cent from Indian Micro, Small and Medium Enterprises (MSME). The UK based Tesco Plc is the only company to operate through this route as a joint venture with Tata Groups' retail venture Trent Hypermarkets Ltd., throwing light on the restrictive nature of the sector[xxv].

This proposes a scenario of a fully liberalised investment regime for cold storage development but a control system for retail in India. The Central Government left the decision of permitting investments in the retail sector to State Governments, which brings the anomaly of a fragmented policy. The question therefore is this: Will this work in favour of cold storages? Can we visualise an open economy based on market competition with minimal government intervention? Let us analyse why these steps alone will not determine the growth of cold storages in India and probe ways to tackle it.

Trade Barriers and their Effects on the Industry

In order to tap the advantage of a market economy, it is highly important to allow a competitive market system, which can only work with least government intervention. There are certain policies adopted by the Government (which have an indirect effect on the industry) that have been creating supply chain distortions and trade restrictions of fruits and vegetables. These have caused major impacts on the food sector and have an adverse effect on the cold chain industry.

(i) APMC Act:

The APMC Act was adopted by most State Governments in the 1970s to regulate the trading of agricultural produce. APMCs were established across the states of India. The

primary objective of APMCs was to ensure that farmers were not exploited by middlemen or moneylenders so that they get a fair price on sale of their produce.

APMC is a 21-member body with 18 of them being farmers, voted by farmers, and one being the representative of the traders. Farmers belonging to a particular area that is marked under the purview of an APMC bring their produce to the APMC *mandi*s (markets) and sell it off through an auction. The Act mandates, with certain exemptions introduced lately, that the produce be brought to the *mandi* for its first sale with only licensed traders allowed to bid and buy the produce. Since exchange happens in regulated markets rather than in farm gates, it was anticipated that farmers would get better price for their produce. In due course, the law that was meant to protect farmers from exploitation turned out to be the one that promoted exploitation. There is little transparency in the auctions held in APMC *mandis* and the price at which the produce is auctioned is reported to be predetermined[xxvi]. It curtailed the freedom of farmers to sell their commodities to traders of their choice. APMCs are bereft of competition, as more than one *mandi* is not allowed in a territorial market area. The process of obtaining trading licenses too has become opaque and the license can be denied without stating any reasons.

APMC is cited as a major reason that has stifled the growth of cold storage of fruits and vegetables. The *mandi* system has, therefore, centralised markets and disincentivised stakeholders. APMCs are controlled by traders, who are few in number. The farmers allege that traders act like cartels and bring down the price by not bidding a higher price than that which they have agreed upon among themselves. This is a case of ineffectiveness of price control by the Government, as argued by Fiona Morton of Cato Institute. Citing examples of the rationing system in France and directions for selling in local markets, Fiona explains how it has led to chaos in the French economy, leading to corruption[xxvii]. APMC has, therefore, allowed a State-sponsored cartelisation to exist in the agricultural sector and hence discouraged genuine stakeholders.

The APMC Act allows State Governments to intervene in the markets, as in the case of the West Bengal Government. The State of West Bengal, on a number of occasions, imposed restrictions on the supply of potatoes to the neighbouring states. In August 2014, the Government fixed the wholesale price of potatoes at ₹12 and the retail price at ₹14 a kilogram, whereas the market price of potatoes was around ₹50 a kilogram[xxviii]. Later, in March 2015, potato prices crashed and the State Government offered subsidy to help promote inter-state potato trade up to 2 lakh tonnes. A fund of ₹10 crore was proposed to be created to subsidise transport cost to other markets[xxix]. This is a classic example of

inconsistent policy action. It has to be understood that a threat to the profits of farmers acts as a disincentive to storage and therefore, is a threat to the cold chain industry itself. The State of West Bengal licenses the establishment of cold storages through the West Bengal Cold Storage (Licensing and Regulation) Act, 1966[xxx], where a license has to be obtained from the Director of Agriculture and District Magistrates, and even goes to the extent of giving preferences to farmers co-operatives. These regulations further disincentivise market players and restrict the growth of cold storages. It is the imperative of the Government to reform these policies, if it aims to develop the cold chain industry.

Some States have started delisting fruits and vegetables from the APMC Act. They propose to enable the commodities to be free of government intervention. Though the effect of such delisting is yet to be analysed, it has been touted to demolish cartels developed by middlemen.

(ii) ***Essential Commodities Act:***

The Essential Commodities Act, 1955, enables State Governments to control the price, storage and movement of those commodities listed as essential commodities. The Central Government on July 2, 2014 revised the essential commodities list by adding potatoes and onions, after having removed these vegetables from the list in 2004, owing to a rise in the price of these commodities, considered to be politically sensitive. Under the legislation, a storage cap is imposed on these commodities. This gives State Governments the power to conduct raids to check hoarding and any storage exceeding the stock limit would be considered as hoarding and legal action taken against 'hoarders'. When a stock limit is imposed, a farmer is forced to release the excess stock into the market, irrespective of whether the price is high or low, and the cold storage owner is disadvantaged because the farmer withdraws his stock from the storage. Stock limits are revised from time to time. As per reports, this has caused distortions in the market that affect the farmers adversely.

(iii) Ease of Doing Business:

Entrepreneurs, who want to conduct business in cold storage, have to endure a host of regulatory barriers, which thwart the growth of the sector. Around 17 licenses need to be procured from different departments for establishing a cold storage in India. With the Ministry of Food Processing serving as the nodal ministry, the entrepreneur has to obtain licenses from the central to the local level, as cold storage is still considered a commercial establishment under the State Shops and Establishment Act. This mandates the cold storage unit to get municipal license for registration and upkeep of commodities. Most of the entrepreneurs, who venture into cold storage business, have a food processing

unit and attach the cold storage with it to overcome the regulatory barriers. Standalone cold storages units are scarce, due to the many restrictions imposed on the sector. One of the preconditions is the requirement of dry land for setting up a cold storage, ideally of one acre, given the nature of the unit. With highly fragmented landholdings, acquiring an acre of dry land could be an issue. Therefore, the entry process naturally gets tough. The land ceiling law of various States disallows major landholdings and disincentivises entrepreneurs to expand their units.

Cold storage is not a viable option for entrepreneurs, owing to the regulatory barriers and costs involved. This has discouraged private investment, despite 100 per cent FDI being allowed in the sector.

Table 2: Ranking of India's Cold Chain Industry under the WEF Competitiveness Index

Competitiveness Index	Score
Government/Regulatory	**4.1**
Labour Force	**4.1**
Infrastructure	**3.8**
Demand	**4.5**
Industry Interest	**4.0**

Source: World Economic Forum and Cold Chain Alliance

Tim Worstall, in his article 'Why the Indian Economy needs Deregulation: Discussing FDI in Multi-brand Retail'[xxxi] in the Forbes, explains the scenario by bringing the end benefit to consumers, "So, the question is, will foreign direct investment increase the consumption possibilities of the Indian public in general? If so, then there should be no laws against it."

The major worry for the Indian Government is the opposition from small retailers, who oppose any form of huge investment and organised retailing. The fact that organised retailing and the entry of big retailers (be it Walmart or major Indian retailers like Big Bazaar, Reliance etc.) will eat into the pie of small retail shops selling vegetables and fruits is largely disproved. A study on FDI by the Delhi-based think tank, Indian Council of Research on International Economic Relations (ICRIER) belies this scenario. The study advocates FDI in multi-brand retail in food and grocery to boost food processing, as it is unlikely to pose any threat to local stores because around 54 per cent of Indian consumers

still buy fruits and vegetables from local markets and pushcarts (18.8 per cent). This is despite the presence of organised retail stores in select metros.

Deregulation has significant impacts on supporting the growth of cold storages even in rural areas. The case of two districts in Bihar, one of the most backward states in India, was highlighted in a paper on 'The Quiet Revolution in Agri-food Value Chains in Asia: Understanding the Fast Emergence of Cold Storages in Poor Districts in India' (Bart Minten, Thomas Reardon et al, 2012)[xxxii]. The Cold Storage Order, 1964, promulgated by the Ministry of Agriculture under Section 3 of the Essential Commodities Act had prescribed the usage of cold storage only for seed potatoes, which restricted choice for farmers. Further, limits were prescribed and quota was issued through the licensing officer at block level, based on land documents submitted by the farmer. The officer would verify the area of the farmer's potato cultivation and then assign a quota based on his seed requirement. In 2003, the Order was annulled based on the Central Government policy, and hence the process of storing vegetables was liberalised. Consequently, cold storages grew by 67 per cent in the two districts over the last decade. This case, however, is limited to a single commodity, namely potatoes, and hence need not necessarily reflect that of multi-storage systems.

Another factor that has debilitating effects on investments and growth in the cold storage sector is the high taxes on processed fruits and vegetables and variations in taxes across states. Currently, cold storages have to pay a service tax of 15 per cent for all services, in addition to customs duty, building tax etc. paid for the infrastructure. Service tax exemption is given to single commodity storage, contrary to the agenda of an integrated cold chain development. Such service tax exemptions are not applicable to modern cold storages reducing the incentives for entrepreneurs in the sector.

Apart from the restrictions mentioned above, there are other barriers like high investments, rising real estate prices, high operating costs and low awareness among farmers about post-harvest management that haunt the industry.

Dichotomy of Investments in Perishables – A Case of Priority

Agriculture as a capital-intensive sector is weighed against the interests of farmers, thanks to the policies developed by the Government, especially the misdirected APMC Act. Farmers do not have the incentive or wherewithal to invest in cold storages nor have access to cold storages, largely located in urban areas. Interestingly, the pesticide companies and the Government ably support them to use pesticides to increase the shelf

life of fruits and vegetables. Across the supply chain, use of pesticides is considered a cheaper and reliable option against investing in cold storages, which is costlier. The higher incentives attached to pesticides have worked against the larger requirement of developing cold storages. This can be seen as fallout of the Fertiliser Policy of the Government. Fruits and vegetables account for 18 per cent of pesticide usage in India, in a sector dominated by cotton[xxxiii]. The Federation of Indian Chamber of Commerce and Industries (FICCI) Report of September 2015 mentions that 30 per cent of pesticides used are spurious, thereby causing devastating effects on the health of end consumers.

The consequence of high pesticide usage has been debated globally. It has affirmed adverse health consequences, which could be minimised through cold storage support systems. The rise of organic market of fruits and vegetables, which is growing at 30 to 40 per cent annually[xxxiv], is a case in point. The organic sector can grow only with a strong cold storage push. Interestingly, Government policies are weighed in favour of subsidising pesticides and chemical fertilisers, which has distorted competition in the sector and limited choices to consumers. The high-priced organic food market has fewer takers and is more urban centric. Fertiliser subsidy formed 10 per cent of the GDP in 2014–15 without increasing agricultural productivity[xxxv], while the Government gave 50 per cent subsidy on pesticide for cotton growers[xxxvi]. This shows how Government interventions, largely due to political factors, are skewed, misplaced and distortive in nature. There has to be a rethink in the priorities of the Government, which should facilitate private players and support the cause of entrepreneurship in the sector.

Dr Richa Govil of Ashoka India provides interesting insights on why farmers do not grow more fruits and vegetables, despite increasing demand. She attributes the situation to the lack of support systems for cold storages. She also argues that the Minimum Support Price (MSP), a unique model in India provided for wheat and rice, disincentivises farmers to venture into cultivation of fruits and vegetables, which is prone to higher price volatility. In addition to this, stored crops are financial assets for farmers like fixed deposits that can be sold off whenever they desired, unlike fruits and vegetables. Cold storages could help them in these scenarios and minimise spoilage of produce, which has a chance of lower price realisation, due to poor quality of produce by the time it reaches markets[xxxvii].

Entrepreneurship in cold storage sector is limited through the licensing systems and regulated markets of APMCs and NWRs. As per interviews conducted with entrepreneurs, the average time to set up a cold storage varies from four to six months, depending on the state where it is established. Financing cold storages is routed through government institutions like NABARD, APEDA etc.

These arguments raise an important question on the priority of investments and support systems required for meeting the demands of the sector.

Conclusion

The cold storage system is poised to become a game changer for India's food and agricultural industry. While ensuring access to food for all, it will play a major role in boosting India's economy. Since infrastructure is still at a nascent state, cold storages could help reduce the burden on farmers and industries in transacting with other stakeholders. The apparent benefits of cold storages are so high that they could curtail inflation and reduce dependency on price sensitivity and volatility. A strong interplay of private players, markets and farmers is required for sustaining and developing the sector. Investments need to be attracted through right strategies, as the sector has a long-term effect on the health of the people and the economy of the state.

Price control measures and regulations have to be minimised and eventually stopped to tap the benefits of market in cultivating fruits and vegetables. The interlinkages developed between them will define the gross output of fruits and vegetables market in India and its contribution to the global market. With the advent of technology, it is only a matter of time before the warehousing systems are revolutionalised with increasing demands and pressure on supply chain. It is therefore pertinent to have the right strategies in place to support the need of building an efficient cold storage industry in India.

Policy Recommendations

Cold storage systems in India have been working in a controlled environment, due to the restrictive policies and the uncompetitive market. As the nature of the commodity is price sensitive and volatile, the growth in the production and export of fruits and vegetables needs to commensurate the growth in cold storages.

Repeal APMCs: APMCs need to be replaced with an open and competitive market system, which should replace intermediaries and agents who currently control the *mandis* or markets. Since intermediaries are able to influence pricing by controlling the supply, cold storages can assure farmers, markets and consumers of a continuous supply of fruits and vegetables. This will also protect consumers from inflated and manipulated prices, thereby ensuring a steady increase in consumption patterns. Proper storage of fruits and vegetables attacks distortions in the market and ensures farmers of fair prices, helping in increased returns of production. Farmers should have the freedom to sell their produce in

any market without any restrictions or unwanted controls. While delisting of fruits and vegetables is a welcome step, the APMC Act has to be scrapped.

Tap private sector efficiency, technology and integrate markets: Cold chain sector needs to be boosted through effective strategies and policies involving private players. Until recently, storage was considered a standalone entity rather than a major part of the supply chain of the agricultural sector. This has seriously affected the growth of cold storages and curtailed investments. In a country that produces more than what it requires, but is not able to reach out to all consumers, the importance of cold storage has become paramount for a successful food and agricultural policy. Private players can play an important role in bringing the much-needed efficiency that is missing in the food and agricultural sector in India. They should be involved in infrastructure development, logistics, supply chain system and most importantly, the *mandi*/market system.

The development of road, port, rail and air infrastructure corresponds to the need of streamlining and strengthening the supply chain. There is a need of concrete plans to focus on developing interlinkages between storage and products, not to mention the need of an integrated network of farmers, logistic companies, *mandis* and storage units. This is possible only through the adoption of technology. The e-mandi system mooted by the Government through its Digital India Plan is a welcome move. But it will fall short of the expectations, unless corresponding support is provided to private players. Tracking of vehicles through GPS devices have already been implemented by various players, though in a small scale. The challenge lies in integration with available markets and storage units, which are under the management of the Government or co-operatives.

The e-commerce warehousing model has shown the way forward with tie-ups and aggregated usage of spaces for products. The warehousing model followed by e-commerce units such as Grofers, Big Basket etc. is flexible, rewarding and ensures full capacity utilisation of spaces, especially in urban areas. The e-mandi[xxxviii] online market mooted by the Government has generated the need of linking farmers directly with markets. This has envisaged a single agricultural market, where the farmers can directly sell their produce to buyers or consumers. The challenge lies in integrating all the *mandis* into the system to make it swifter and more transparent, benefitting both farmers and end consumers. This is possible only through effective storage systems, which can support the needs and requirements of farmers and consumers alike. The current stakeholders of APMCs need to be tackled effectively to push this system[xxxix].

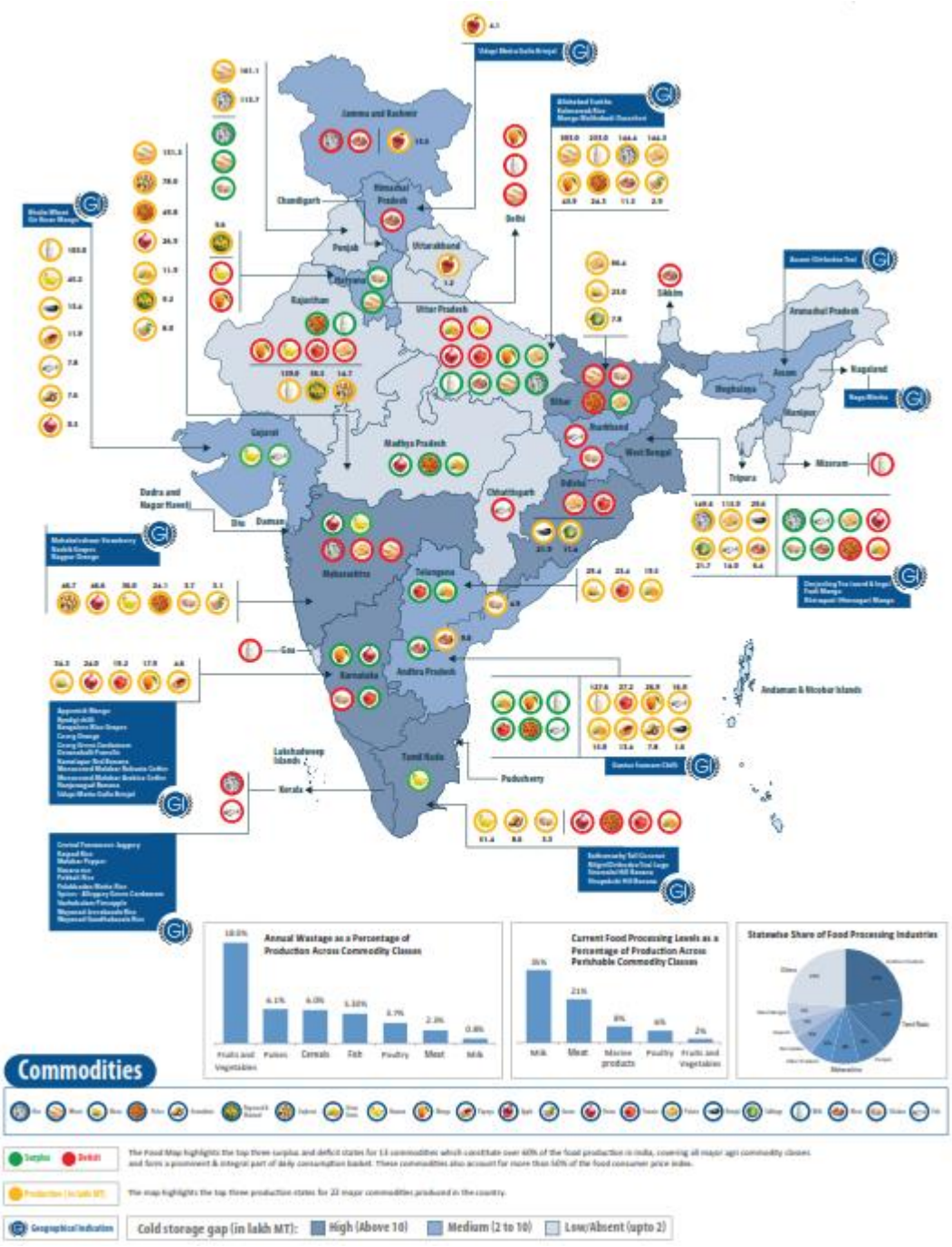
Ease landholding requirements: The landholding and ceiling requirements should be liberalised for cold storages, as it shall facilitate the effective utilisation of commodities. Current landholding systems are not in favour of building big storage systems and disallow land conversion, especially of agricultural land for industrial purposes in many states. Since cold storage is considered to be of commercial nature, finding land for cold storages, especially in rural areas, is a challenging process. A host of considerations exists in choosing the location for cold storages, such as accessibility to transport (roads, port etc.), land price and access to farms and *mandis*/markets. Hence, it is of utmost importance that entrepreneurs be allowed to establish cold storage units with ease through an effective land and infrastructure policy. It is to be noted that cold storages are heavily concentrated in a few states and cities because of these reasons. Changes in the Land Ceiling and Conversion Acts are mooted towards ensuring a steady supply of cold storages across the country.

Encourage more investments and enable competition: The conditions attached to FDI or any forms of investment should be removed to fully tap the potentials of the market. A competitive retail sector is paramount for a strong cold chain industry and hence, it is imperative to allow competition in multi-brand retail. Restrictive policies have to be eased for entrepreneurs, who want to establish cold storage units. This requires reducing the regulations, streamlining licensing procedures and minimising government intervention. The Government's role is to sanction approvals and simplify the processes involved through time based and single window systems. The transaction costs could be decreased in such a regime. The storage market has to be liberalised, allowing new entrepreneurs to enter into partnerships and agreements with farmers and other stakeholders.

Regulations should give way for an open and transparent system that can substitute subsidies. Subsidies distort market and hence need to be replaced through incentives and ease of entry, operation and exit. Subsidies are tied to vested interests, and hence benefit only few parties, which antinomies the Government's role in the food and agricultural sector of the country.

Annexure 1

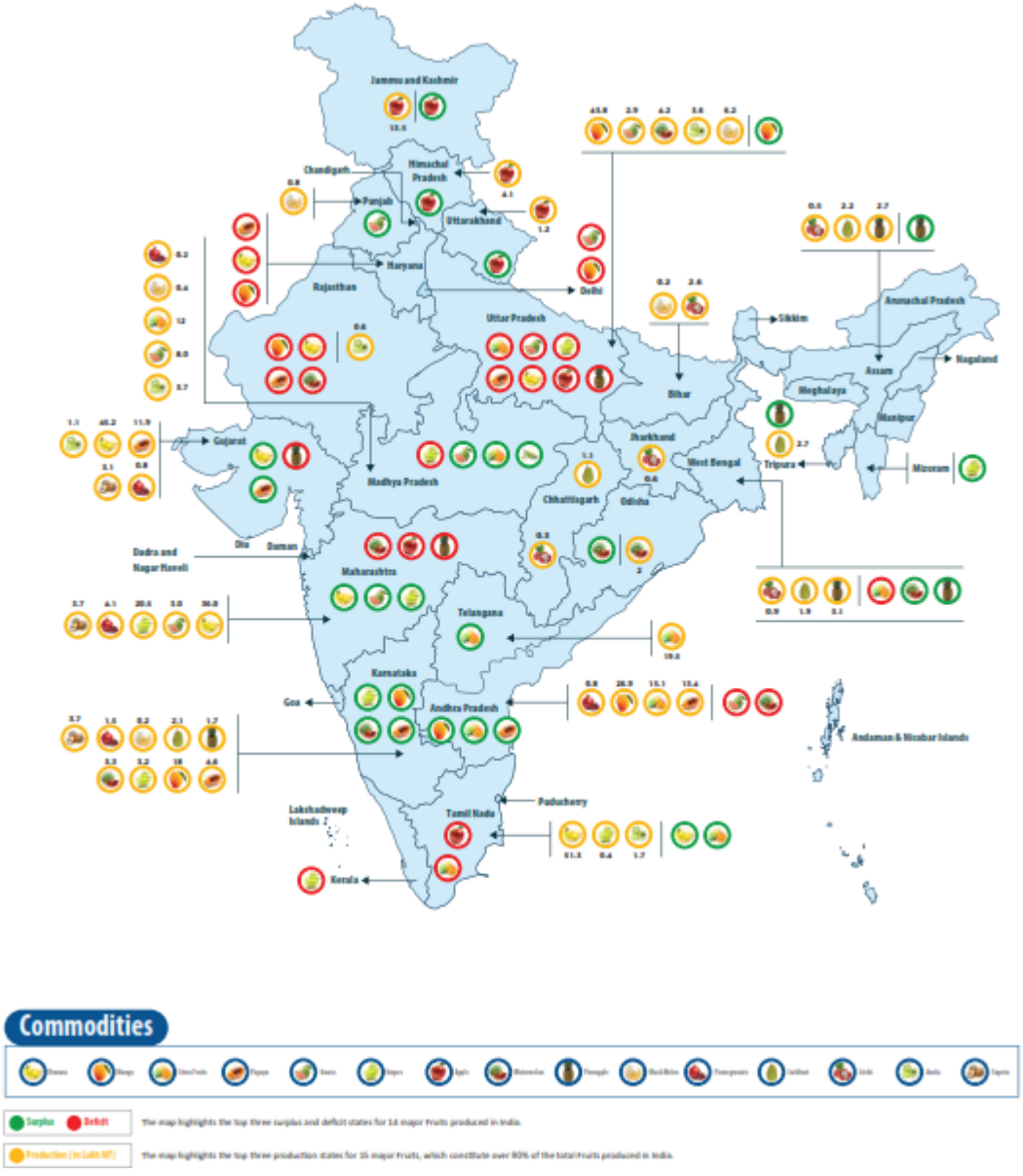
Food availability map of India



Source: YES Bank, MOFPI, 2014

Annexure 2

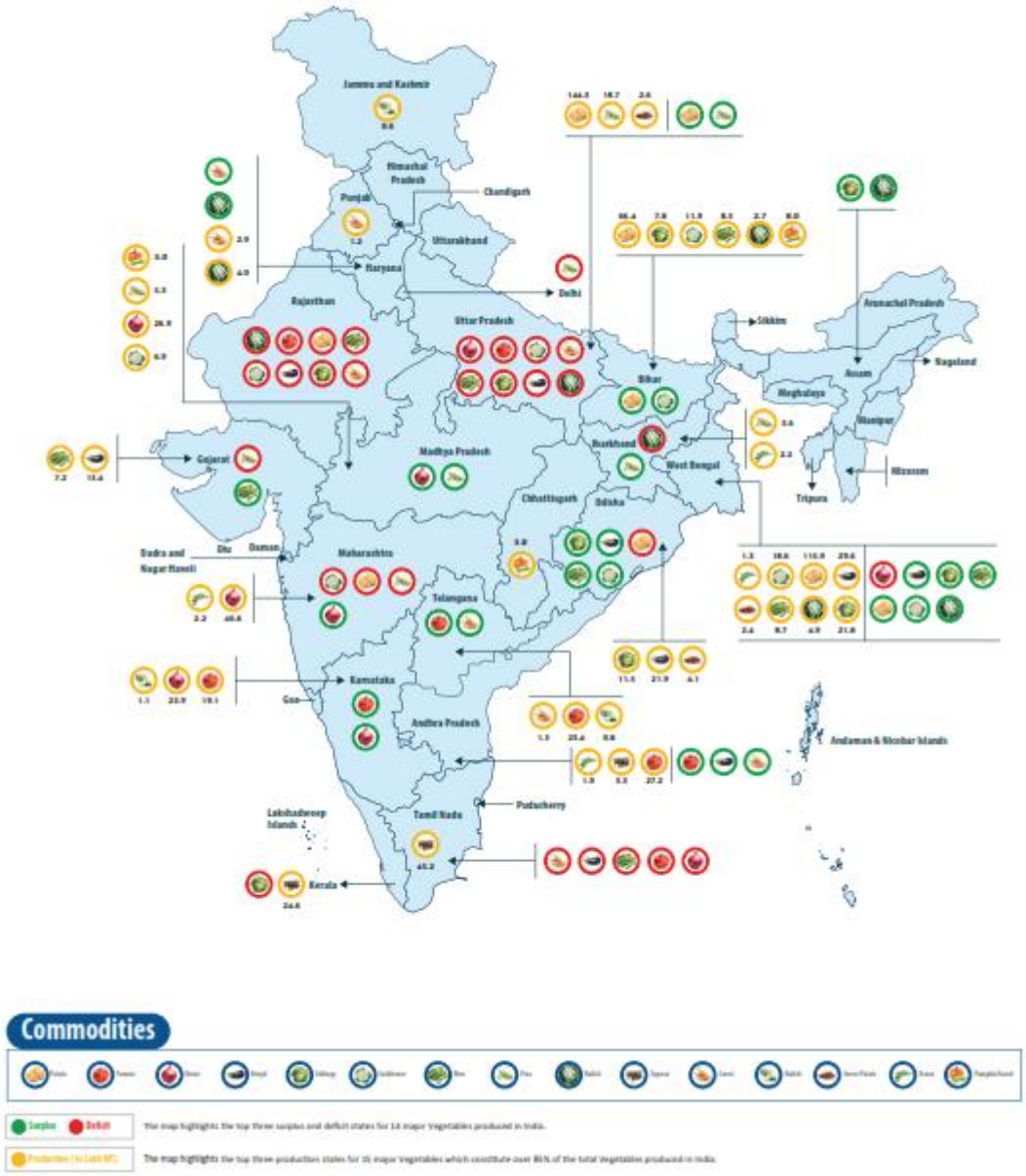
Fruits availability map of India



Source: YES Bank, MOFPI, 2014

Annexure 3

Vegetables availability map of India



Source: YES Bank, MOFPI, 2014

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