

Refrigerated transportation: bottlenecks and solutions





Foreword

¹ According to some estimates turnover of the industry is over INR100 billion, growing at 10-15% with a recorded capacity of ~30 mn MT



The cold chain sector is sizeable and fast-growing¹ with key industries including fruits and vegetables, meat, fish, poultry, dairy products, confectionery and pharmaceuticals, among others, being critically dependent on it. However, the sector faces several constraints in its growth, which not only limits its potential, but also results in wastage and loss of value in the industries that depend on it. The host of issues facing the sector must be addressed by the industry itself, given the domain-specific and skill-intensive nature of the business. However, there is a dire need for the Government to lend it additional support due to the significant influence of externalities on its performance and the fact that essential segments (including food and pharmaceuticals) are dependent on it. While the Government has been doing so over the years in the form of various initiatives, a structured and holistic view of the key determinants of success is required to achieve the full potential of the industry.

The cold chain integrates logistics activities in the temperature-sensitive storage and transportation segments, including in activities at the production-gate and point of sale. This integration is facilitated through product-specific protocols, industrial and communication technology and appropriate deployment of infrastructure. This necessitates coordinated development across all these essential segments. On the cold storage front, more than 10 million metric tonnes of capacity has been developed in the previous 10 years, and in all, the country has witnessed commissioning of around 30.4 million metric tonnes of cold storage capacity. However, the essential link between stored products and markets in the refrigerated transport sector has not developed at the same pace as the storage industry.

The National Centre for Cold-chain Development (NCCD), a nodal body set up by the Government of India with the aim of facilitating the development of the cold chain in India, organized a conclave on refrigerated transportation on 7 March 2013 as part of the process to enable this. Its intention was to understand the bottlenecks and issues faced by and the concerns of various stakeholders (including service providers, end users, the Government, equipment and technology providers, and advisors) in the refrigerated transportation sector and identifying potential solutions for them. Stakeholders from the end-user base, equipment providers, OEM industry, policy-makers, technology providers, cold storage owners and logistics service providers from the road, rail and air sectors participated at the conclave. The event included the presentations of the panel speakers, followed by the interactive participation of the audience.

Ernst & Young believes strongly in the potential of the sector, having worked with multiple clients and enabled them to effectively leverage the growth potential that can be exploited from the challenges facing the sector. As part of this commitment to the sector, the firm was the Knowledge Partner for the conclave, which also received support from multiple stakeholders in the cold chain industry, including the National Horticulture Board, the National Horticulture Mission, Carrier Transicold, Invest India, among others.

This report captures the proceedings of the conclave with a focus on bottlenecks and potential solutions, as highlighted by the various participants. The key recommendations for industry participants and policy-makers have been summarized at the end as takeaways from the conclave.

Inaugural session

Panel: Pawanexh Kohli (Chief Advisor, NCCD), Shailendra Kumar (Secy Government of J&K, Ex-Director, NCCD), Sanjay Bandhopadhyay (Jt. Secretary, Ministry of Transport and Highways), Sanjeev Chopra (Jt. Secretary, Department of Agriculture and Cooperation), JP Meena (Jt. Secretary, Ministry of Food Processing Industries)



Key points of discussion

The Indian Government is cognizant of the poor state of cold chain logistics and has identified several areas of concern, a key one among them being inadequate road connectivity. The Ministry of Road Transport and Highways (MORTH) has outlaid its plans for disbursement of funds for construction and upgrading of 45,000 kms of roads, to ensure improved connectivity with remote areas in the country.

While India's national and state highways span more than 71,000 kms, the crucial first and last mile road links are grossly inadequate. Significant quantities of perishable goods are wasted, with the x` estimated loss amounting to around INR1,000 billion at current prices. Apart from the entire system suffering monetary losses, this results in unavailability of food for those for whom it is intended at a time when malnutrition among children is as high as 45% in the country.

To address the lack of technical skills in the labor force, there is the urgent need to train personnel through certification courses, to not only enhance skills in handling the goods but also in operating and managing equipment used for refrigerated transportation.

The Government has implemented lenient tax regulations and is actively seeking the opinions of industry players to encourage the growth of cold chain logistics in India. It has provided refrigerated transport the benefit of 100% Foreign Direct Investment (FDI) and has waived levy of Excise Tax on domestic production and customs for import of ready-to-use reefer equipment.

Among the major difficulties faced by service providers are the long queues at check-posts on their routes, which significantly increases their waiting time, reduces their efficiency and results in wastage. MORTH plans to introduce the use of Radio Frequency Identification (RFID) tags on reefer vehicles and implement this initiative by the beginning of the next financial year to encourage the growth of refrigerated transportation in the country. This is expected to reduce the long waiting time and enhance the efficiency of the supply chain.

The Ministry of Food Processing Industry (MOFPI) recognizes the need to address issues and concerns relating to other areas of the supply chain, and is working on 63 projects on integrated food chains. In the next two years, it plans to implement another 75 projects with an investment of INR15 billion.

Plenary session

Key points of discussion

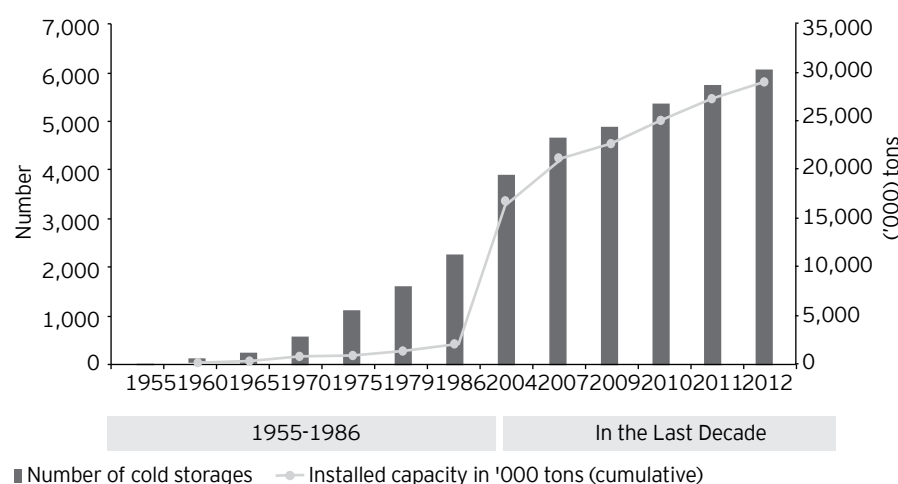
India's cold chain sector is fragmented with more than 3,500 players, with most of them being in the unorganized sector. On the other hand, consumers increasingly prefer scaled and integrated service providers, who can provide end-to-end solutions.

US, 80%-85% of fruits and vegetables are transported within the country by using cold chain logistics. This percentage is negligible in India.

Other key challenges faced in India's cold chain include power outages and high costs on account of increased transit and waiting time. In most Indian airports, the availability of cold rooms,

The domestic reefer market is large and could prove to be a catalyst in the growth of transportation of fruits and vegetables, fish and other horticultural products. However, a further boost needs to be given to the development of suitable refrigeration systems including temperature controllers. End users also need to be involved in this by closely coordinating with the refrigeration industry.

Figure1: Cold Storage Capacity in India



Sources: NCCD

The cold chain infrastructure for several temperature-sensitive goods, including horticultural produce, is in an abysmal state in India, with almost 30%-40% of these perishables being wasted. This is, to a large extent, due to the limited use of cold chain logistics for transport of perishable products. According to a study conducted in the

despite advance notices given for the unloading of large consignments of temperature-sensitive products, is a challenge. There is a critical need for provision of dollies at international airports for movement of temperature-sensitive cargo from airport warehouses to the tarmac where aircraft are parked.

Investment in facilitating rail movement of reefer containers is the need of the hour. To achieve this, the transport industry, shippers and the Government should create a task force to decide on strategic locations where inland pre-cooling and cold storage facilities can be developed, since these are currently grossly inadequate in India.

The Government as well as private bodies should promote organized retailing in the country, since that will encourage investment in the cold chain sector, including in reefer transport. Furthermore, technical standards and specifications followed in India are also often unsuitable for Indian conditions, which results in the low performance of standard refrigerated systems. Moreover, lack of connectivity between distribution centers adds to the woes of service providers as well as consumers.

The Government needs to accelerate implementation of Goods and Services Tax (GST), since the current tax regime is a major deterrent to organized and optimized warehousing. It should also initiate training on produce-specific best practices.



Panel: RS Bedi (Chairman, Task Force on Logistics, PHDCCI), RK Sharma (Director, NHB), Anupam Srivastava (MD, Invest India), Pawanexh Kohli (Chief Advisor, NCCD)

Figure 2: Illustrative example: Wastage of perishables on account of multiple handling not only causes waste, but also significantly increases final prices for consumers.



Souces: E&Y analysis

There are several incentive schemes that have been implemented by the Government to promote the reefer industry as well as the standards created by NHB. The lack of domain-specific skills sets is clearly evident from the state of domestic movement of mangoes, as highlighted by NHB. The sheer quantum of horticultural produce and the associated wastage presents an attractive opportunity for service providers and the food industry.

Invest India is attracting the increasing interest of international players in this industry. This has been given a boost by a series of investment roundtables that have been mainly focusing on the food processing and cold-chain sector. In addition, NCCD's role as the facilitator between the Government and private industry has been significant.



Technology user's perspective

Panel: Pawanexh Kohli (Chief Advisor, NCCD), Alok Dubey (DGM, Fieldfresh Foods), Ashok Mirchandani (MD - APAC, Carrier Transicold India), Devendra Jain (Director & Innovator, Pluss Polymers), Aman Rekhi (National Supply Chain Manager, Baxter (India) Pvt. Ltd.), Howard J Scott (MD, Big Bear Supply Chain Management), VP Vargheese (MD, Surakhsha Transport Systems)



Key points of discussion

There is a dearth of reefer vehicles and service providers with a cross-regional presence. The lack of India-specific designs, including multi-zone refrigerated transport, is also a serious bottleneck. Moreover, standardization of vehicle boxes is critical, since this would enable effective carriage of goods. Furthermore, inability to fully fill up boxes due to non-standardization leads to higher costs.

Another challenge the user industry routinely faces is the lack of availability of skilled operators of reefer transport vehicles. This leads to significant wastage during loading and unloading of trucks as well as due to improper management during transit. Structured training of operators through certification courses would go a long way in reducing this wastage.

Amendments to the Central Motor Vehicles Rules (CMVR), 1989 to provide more vertical space in the cabins of multi-axle motor vehicles (to make an allowance for tilting) is required, since the overall height currently specified is still based on the limited types of commercial vehicles that were in use earlier. However, the technological changes that have taken place in such vehicles since then necessitates this change.

While refrigerated and insulated trucks perform similar functions, a different tariff head applies to them. The Government should consider bringing both under the same tariff head.

A key issue often faced by service providers is technology that is useful for minimizing losses and increasing efficiencies is not adopted due to end users' reluctance to pay a premium for this.

Passive cooling options to service the last-mile and portable delivery mechanism are required. Furthermore, the use of phase change material and eutectic cells would free internal capacity on trucks, and reduce risk and dependence on connected power for pre-determined periods.

Implementation of the following steps could lead to significant improvements in India's cold chain space:

- ▶ Introducing plug-in power points to recharge refrigerators at petrol pumps, since they carry goods and have a limited charge while in transit.
- ▶ A fast-track lane for perishables should be introduced at check points near toll booths. This would cut down on the amount of time reefer containers need to stop currently, and thereby, reduce wastage and delivery time.
- ▶ The Government needs to bring down the import duty on the components of reefer vehicles in the country. Currently, this is less for a finished reefer vehicle and than its components. Reducing the import duty on components would enable these to be assembled in India and would help the overall growth of the segment.
- ▶ Allowing non-hazardous drugs in passenger aircraft would also substantially bring down the time taken to deliver products.
- ▶ Furthermore, there is a need for an integrated packaging solution that will ensure the longevity of products.

Logistics provider's perspective

Panel: RK Sharma (Director, NHB), P Alli Rani (CEO FEHL and Director (Finance), Concor), KK Mitra (Vice President, Lloyd Insulation India Limited), Amitabha Chaudhari (MD, APL IndiaLinx (NOL Group)), SK Sarkar (COO, Crystal Logistics), Siddharth Mishra (CEO, HLM India Pvt. Ltd.)



Key points of discussion

The major constraints faced by suppliers include end users' reluctance to pay for implementation of technology that can help to reduce losses and minimize waste.

The use of rail for refrigerated cold chain is not currently feasible for many commodities due to dearth of railway's facilities for loading and unloading of goods at intermediate stations.

The workforce, especially drivers, need to take certification courses to ensure that they are aware of the requirements of the products they carry and understand the importance of maintaining stringent standards.

Furthermore, the imposition of additional AC tax on reefer vehicles entails an additional tax burden on farmers and adds to their difficulties, since in many cases, they are unable to afford this extra cost to transport their goods.

Reefer trucks containing temperature-sensitive cargo being unnecessarily detained not only leads to additional fuel consumption, but also damages perishable food products.

Added to this is the fact that vehicle insurance does not cover financial losses due to power failure, which is a frequent occurrence. Insurance bodies should consider amending this clause.

Lack of knowledge of specifications is another key constraint. There are cases where customers may not be aware of the best size of vehicle needed to transport their goods, and consequently, may order a vehicle that is either too small or large to meet their needs. A proper understanding and assessment of the needs of customers is therefore essential for service providers.

Furthermore, there are no specific guidelines that set the standard for refrigerated transport. Regulatory authorities should therefore consider formulating standards that are similar to the NHB Technical Standard for Cold Store Construction.

Technical and supply chain perspective

Participants: Aman Khanna (Associate Director, Ernst & Young), Purvin Patel (COO/ Business Head, Radha Krishna FoodLand), BT Gorti (Saradiro E Service Pvt. Ltd.), Cosima Klinger-Paul (Managing Director, Lamilux India Pvt. Ltd.), Anil Chopra (MD, Field Fresh Vegfru Pvt. Ltd.), Jag Mohan Gupta (Director, APC Polycoat India Pvt. Ltd.)



Key points of discussion

It is important for all the stakeholders in the industry to recognize the fact that incentives provided by the Government are not intended to help service providers survive in their existing state, since this would imply that it is funding the system's inefficiencies. The objective must be to leverage government support to become more efficient and relevant, and thereby drive growth and profitability, and consequently, reduce the requirement for sustained government support.

In the fruit and vegetable supply chain, the solution is to eliminate (or at least minimize) wastage. The bulk of the current 30%-40% loss witnessed in the segment at present is not due to the lack of a cold chain (or refrigerated trucking) in the country, but on account of multiple structural factors larger than the cold chain. These include the following:

- Improper post-harvest handling and storage
- Unsuitable harvesting practices
- Improper packaging
- Inappropriate handling during transportation and storage
- Multiple handling points due to a large number of intermediaries
- Unorganized and small-scale intermediaries, who have little

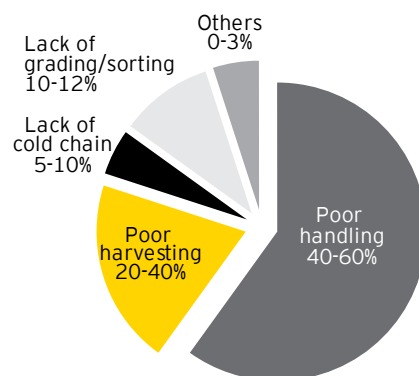
incentive or vision to invest in large-scale and sophisticated infrastructure that can yield scale and scope advantages

- Absence of grading or sorting (leading to loss of value)

Enabling value by eliminating waste and redistributing this among producers, service providers and end users should be the aim, and any government initiative that leads to this will be good for all stakeholders, including transporters of refrigerated vehicles.

Figure 3: Key factors accounting for wastage of perishables

What are the reasons for wastage?



Sources: E&Y estimates

In the processed foods supply chain, the key is to maximize efficiencies by implementing efficient distribution networks. Large hub warehouses servicing smaller spoke or satellite warehouses close to consumption hubs, as compared to smaller scattered godowns, will further improve the efficiency of the system and minimize waste, damage and pilferage. It will enable enhanced utilization of fleets of large trucks between production centers and hubs as well as deployment of smaller (but more fuel efficient) trucks between the hubs and spokes to the retail shelf. Larger warehouses will also enable scale economies, investment in improved equipment and improve overall standards of warehousing and significantly reduce wastage.

The government permit granted to reefer trucks needs to be renewed annually and is typically not re-issued after eight years, after which a vehicle is permitted to only run on intra-state routes. Regulatory bodies should reconsider this provision, since it limits the operating life of reefers.

Non-availability of two-way cargo or back-haulage and interstate barriers contribute significantly to sub-optimal standards in reefer transport. This not only increases their operating costs, but also adversely affects timely delivery of products and optimum utilization of fleets.

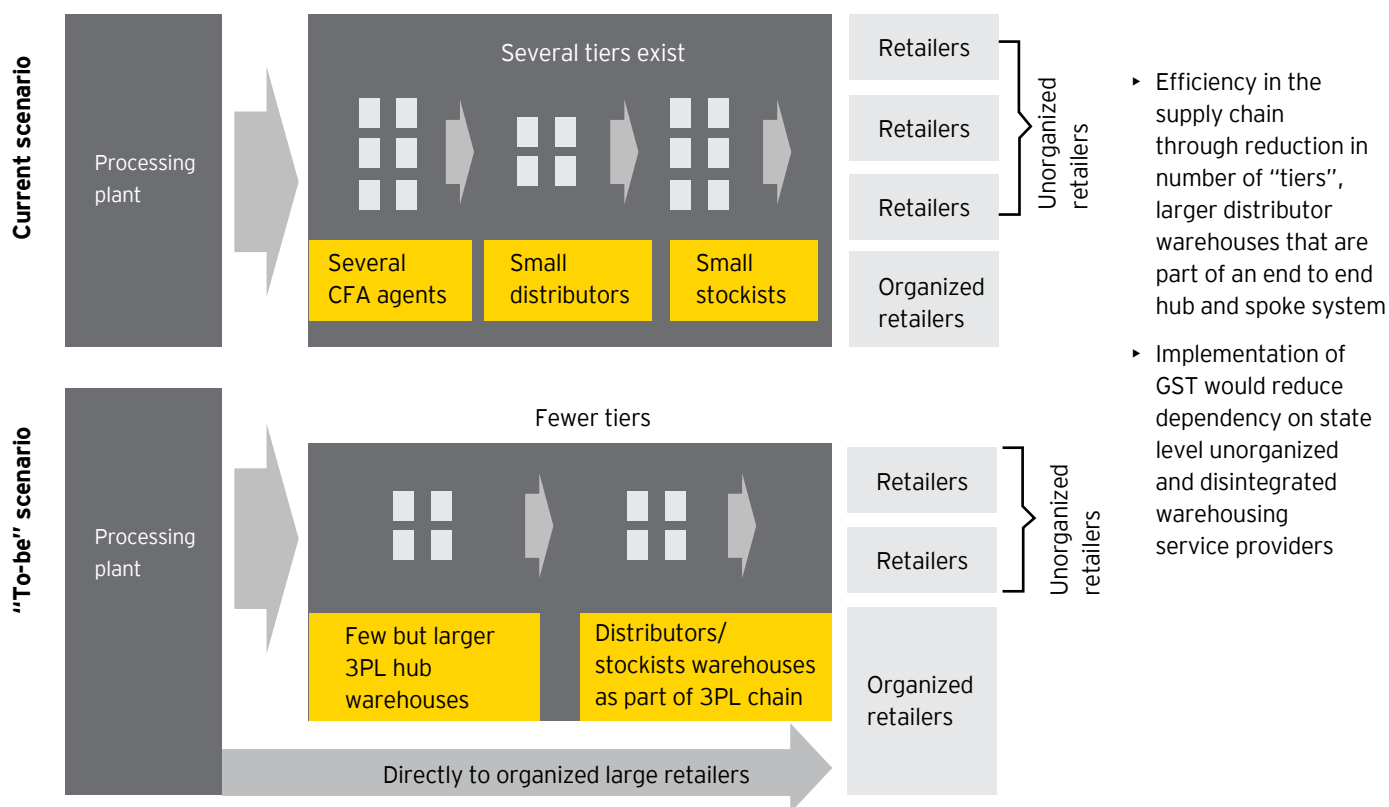
Furthermore, the lack of backward and forward linkages to supplement cold chain results in the absence of a

complete solution to address quality and marketability issues relating to perishable products.

Additionally, the cost of a permit license should not be charged to carriers of food products, since this resource is already critically depleted, and the gap is expected to increase further.

It is imperative that specific policy interventions are undertaken to facilitate the use of data loggers and operational monitors to stringently support the traceability and quality norms of food products. Moreover, the import duty on Glassfibre Reinforced Plastic (GRP) sheets needs to be reduced to facilitate their usage, given their strength and potential for energy saving.

Figure 4: Inefficiencies in the processed foods supply chain



Sources: E&Y analysis

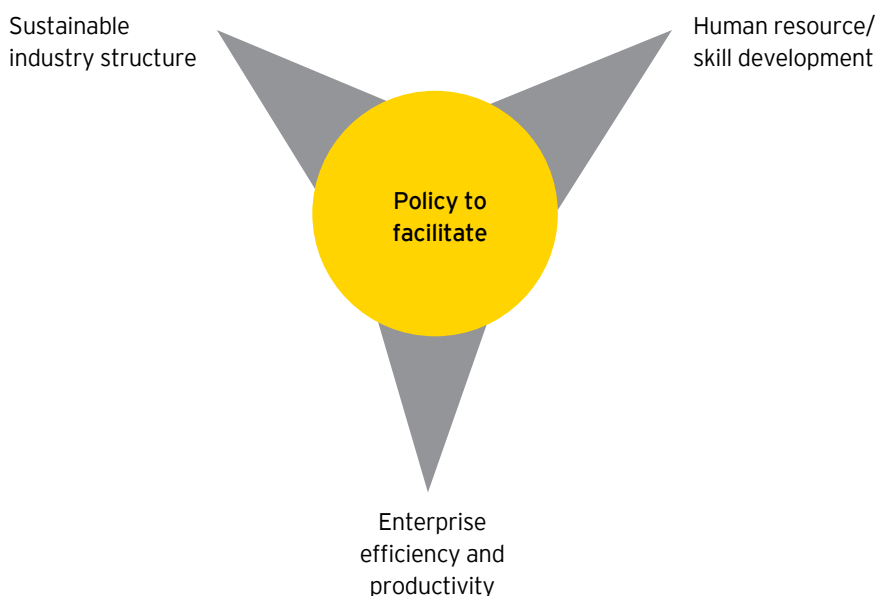
Conclusions and recommendations

A large number of factors that influence the performance of refrigerated transportation businesses and the larger cold chain are not within the control of service providers and end users. For example, as a refrigerated trucking service provider, one is dependent on the quality of roads on which one's trucks are plying, the check posts these trucks will find on their way and the ethics (or lack thereof!) of police personnel deployed on the route.

However, although external factors such as the availability of adequate infrastructure and favorable policies that promote efficiencies will continue to influence performance, a large part of the woes faced in this industry will have to be addressed through its evolution – an evolution that will enable it to bring more and more of the requisite factors required to enhance the performance of the segment within its control.

The key to achievement of this evolution is bringing down waste in the fresh food supply chain and maximizing efficiencies in the processed food supply chain. This requires changes at the industry structure, human resource and individual enterprise levels. Policy support will only be meaningful in the long run if it supports and acts in conjunction with these changes.

Figure 5: Key areas of required policy support to enable all round development of the industry



Sustainable industry structure

The structural changes required include increased integration along the chain and enhanced scale in each of its segments. Produce should not change hands as many times as it does. Single ownership of produce along the chain will ensure minimal losses at the points at which these occur at present – these are the points at which the product changes hands. Furthermore, achievement of greater scale in each segment will enable investment, economies of scale and implementation of more organized working practices than at present (leading to less damage, pilferage, etc.).

As far as processed food is concerned, greater integration would mean a leaner supply chain as compared to a multi-tiered one which is partly on account of distortion of indirect taxes in the country and partly due to the fact that unlike in the developed world, organized retail penetration is very low in India. Retailers across the world seek to maximize their efficiencies by driving efficiencies across the chain, and they are only able to achieve this by controlling as much of it as possible.

Policies can facilitate these changes by removing or easing regulations that discourage scale and integration. Some specific interventions that can go a long way in facilitating the evolution of a sustainable industry structure are as follows:

- ▶ Bringing ancillary activities associated with refrigerated transport under the ambit of benefits currently available for larger cold chain (eg. investments in ripening chambers, grading and sorting, packaging, handling, etc.)
- ▶ Continuing liberalization of agri-marketing laws (revamping of Agriculture Produce Marketing Committee (APMC) Act)
- ▶ Accelerating consolidation or cooperation at the farmers' end by facilitating the Public Private Partnership in Integrated Agriculture Development (PPPIAD) program
- ▶ Considering amendments in regulations to permit an increase in the height in multi-axle reefer vehicles in view of technological advances
- ▶ Facilitating M&A, Venture Capital and Private Equity investments in the sector
- ▶ Limiting tax exemptions for Small Scale Industries
- ▶ Continuing to encourage investments through incentives in cold chains and aligning these incentives to ensure establishment of infrastructure that is aligned to the produce supply chain
- ▶ Encouraging value-added services including grading and sorting, and the use of crates for handling and transportation
- ▶ Developing and enforcing standards and certifications
- ▶ Accelerating implementation of GST

Industry participants can facilitate these changes by taking a long-term view when investing in development of capabilities (manpower and capital), which can help them reach the scale and network required for superior performance.

Human resource and skill development

Changes required in human resources include increased and enhanced training to develop technically competent personnel, who are capable of understanding the temperature and humidity control requirements of various perishables and operating sophisticated controlled atmosphere equipment. This would require uplifting the image of the industry from being a "last resort" for employment-seekers to that of a sector of choice that will help to shape the future of the country.

At the policy level, multiple initiatives can facilitate these changes:

- ▶ Exemption from Service Tax on services including education and training of transporters of perishable produce (as is the case for these services provided to farmers)
- ▶ Development and facilitation of Public Private Partnership models for the establishment and operation of specific training facilities for cold chain personnel (independently or as part of a larger logistics training infrastructure)



- Support provided to industry players or associations to establish certification and accreditation standards for skills

Industry participants can facilitate these changes by the following initiatives:

- Collaborating and proactively reaching out to the Government with workable models to set up infrastructure and resources for skill development
- Creating a certification and grading system and recognizing its importance in recruitment and progression of employees (This system could be developed by industry players coming together on a common platform, e.g., an industry association.)
- Introducing incentives for employees to enhance their skills by participating in such certified training programs
- Increasing credibility and enhancing perception of the importance of training through the implementation of training initiatives, e.g., apprenticeship programs: This would require that the training provided by institutions is complemented by hands-on practical practice sessions. Visible upgrading of skills in terms of gaining knowledge of the latest technology, work practices, and consequently, improved career opportunities for people undergoing training, would create a natural incentive for increased enrolment in such programs.
- Monetary and progression incentives for trained vis-à-vis untrained personnel by companies: For example, progression to certain levels could be linked to achievement of a particular certification.
- Undertaking initiatives to uplift the image of the industry to attract superior talent



Efficiency and productivity of enterprises

On the individual enterprise front, there is quite a bit service providers and users need to do. The latter should be more open and receptive to the idea of giving volume commitments to reliable service providers, who, in turn, need to take a long-term view with respect to investing in the right kind of equipment and technology infrastructure and becoming more efficient in their service delivery.

The obsessive focus of service users on bringing down unit costs on a piecemeal basis needs to be replaced by a holistic view of their own supply chains, to enable integrated service





providers to deliver savings at the system level. Service providers, in turn, need to be able to develop end-to-end propositions and build the business case for system-level cost savings for service users, instead of cutting corners (and compromising on quality) to meet cost-reduction targets at a piecemeal level while driving up the total costs in the form of administering multiple disjointed service providers, wastage, pilferages, etc.

There is currently lack of trust between service users and providers, with users demanding continuous cost reduction at individual routes and warehouse levels, partly because of lack of faith in providers' ability to deliver end-to-end solutions that can address system costs. Users therefore prefer to keep the administration cost of multiple service providers in-house, although this is a non-core activity for them. Service providers, on the other hand, need commitments on volume and integrated outsourcing contracts, to be able to invest in delivering the end-to-end services required. This "Catch 22" situation needs to be resolved, and the service provider and user will have to meet half way to make this happen.

Policy support for implementation of such initiatives can be in the form of the following:

- ▶ Incentives for service providers that facilitate investments in end-to-end and quality solutions and establishment of infrastructure that is aligned to the perishable supply chain instead of piecemeal infrastructure built at any location

- ▶ Innovative and unconventional incentive mechanisms to encourage service users to move away from piecemeal to end-to-end outsourcing, thereby releasing the pressure on costs at the individual level (Such pressures are responsible for low-quality services and leads to wastage, damage and overall poor service delivery.)

Some specific policy interventions that can enhance enterprise-level productivity and efficiency:

- ▶ Removal or reduction of customs duties on imported reefer equipment parts to encourage assembly of such equipment within India
- ▶ Formulation of standards for refrigerated transportation in line with the requirements of Indian conditions on similar lines to the NHB Technical Standards for Cold Store Construction
- ▶ MORTH considering allocation of fast-track lane for perishables to reduce the time reefer containers need to stop at toll booths in order to reduce wastage
- ▶ Increased use of data loggers and operational monitors to support stringent food traceability and quality norms
- ▶ Reduced import duty on GRP sheets to facilitate their usage, given their energy-saving potential
- ▶ Facilitated development and availability of Infrastructure at airports, e.g., cold rooms and dollies for the movement of temperature-sensitive cargo from airport warehouses to the tarmac

- ▶ Permission for movement of non-hazardous drugs in passenger aircraft
- ▶ Regulatory bodies reconsidering the provision that requires a national permit granted to reefer trucks to be renewed annually and permitting issue of a permit for more than eight years
- ▶ Removal of permit license fee for carriers of perishable products
- ▶ Inclusion of transportation of agricultural produce as part of priority sector in agriculture
- ▶ Extension of custom and excise duties for temperature/energy-monitoring and optimization of gadgets
- ▶ Appropriate amendments in regulations to eliminate unwarranted rise in the cost of reefer trucks²
- ▶ Additional incentives provided for vehicles with temperature logging/monitoring equipment
- ▶ Establishment of standards, protocols and guidelines that span first-mile preconditioning, last-mile delivery and ancillary activities associated with the cold chain, e.g., product-specific designs for packing houses, handling, monitoring equipment, etc.

Furthermore, insurance for vehicles does not cover any financial loss due to power failure, which is a frequent occurrence. Insurance companies need to consider amending this clause.

Industry participants can facilitate the changes mentioned above by implementing the following initiatives:

- ▶ Introducing passive cooling to service the last mile, and use phase change materials (PCMs) and eutectic cells to free internal capacity on trucks and reduce their risk and dependence on connected power for pre-determined periods
- ▶ Developing integrated packaging solutions that will ensure the longevity of products, even if they have to be transported over long distances
- ▶ Being aware of the specifications and sizes of transportation vehicles to ensure optimal solutions
- ▶ Standardizing vehicle boxes to ensure effective carriage of goods
- ▶ Developing cost-effective refrigeration systems with temperature controllers through research and development efforts
- ▶ Enforcing stringent food traceability and quality norms to ensure improved use of cold chain logistics to enhance the quality of food items

² Exemption from excise duty is available for completed reefer trucks, but not for individual components. Since reefer trucks are assembled according to specific requirements and are not sold off the shelf, availing of excise duty benefits is procedurally challenging. Availing intended benefits for the sector thus leads to unintended cost escalation that is unavoidable if one wants to gain from the benefits provided.

Glossary

APMC	Agricultural Produce Marketing Committee	NCCD	National Centre for Cold-chain development
CMVR	Central Motor Vehicles Rule	NHB	National Horticulture Board
FEHL	Fresh and Healthy Enterprises Limited	PPPIAD	Public Private Partnership for Integrated Programme
FDI	Foreign Direct Investment	RFID	Radio Frequency Identification
GST	Goods and Service Tax	SSI	Small Scale Industries
MOFPI	Ministry of Food Processing Industry		
MRH	Ministry of Road Transport and Highway		

About NCCD

NCCD is a nodal body set up by the Government of India with the aim to facilitate cold chain development across all user segments through policy intervention, capacity building, standardization and awareness programs. NCCD includes members from private industry, policy influencers, knowledge partners and other government agencies.

Strengthening Cold-chain Development

Industry, PSUs, Government, Investors, Entrepreneurs, Farming Associations & Knowledge Houses - All Working Together!



Our offices

Ahmedabad

2nd floor, Shivalik Ishaan
Near C.N. Vidhyalaya
Ambawadi
Ahmedabad - 380 015
Tel: + 91 79 6608 3800
Fax: + 91 79 6608 3900

Bengaluru

12th & 13th floor
"UB City", Canberra Block
No.24 Vittal Mallya Road
Bengaluru - 560 001
Tel: + 91 80 4027 5000
+ 91 80 6727 5000
Fax: + 91 80 2210 6000 (12th floor)
Fax: + 91 80 2224 0695 (13th floor)

1st Floor, Prestige Emerald
No. 4, Madras Bank Road
Lavelle Road Junction
Bengaluru - 560 001
Tel: + 91 80 6727 5000
Fax: + 91 80 2222 4112

Chandigarh

1st Floor, SCO: 166-167
Sector 9-C, Madhya Marg
Chandigarh - 160 009
Tel: + 91 172 671 7800
Fax: + 91 172 671 7888

Chennai

Tidel Park, 6th & 7th Floor
A Block (Module 601,701-702)
No.4, Rajiv Gandhi Salai, Taramani
Chennai - 600113
Tel: + 91 44 6654 8100
Fax: + 91 44 2254 0120

Hyderabad

Oval Office, 18, iLabs Centre
Hitech City, Madhapur
Hyderabad - 500081
Tel: + 91 40 6736 2000
Fax: + 91 40 6736 2200

Kochi

9th Floor, ABAD Nucleus
NH-49, Maradu PO
Kochi - 682304
Tel: + 91 484 3044000
Fax: + 91 484 2705393

Kolkata

22 Camac Street
3rd floor, Block 'C'
Kolkata - 700 016
Tel: + 91 33 6615 3400
Fax: + 91 33 2281 7750

Mumbai

14th Floor, The Ruby
29 Senapati Bapat Marg
Dadar (W), Mumbai - 400028
Tel: + 91 022 6192 0000
Fax: + 91 022 6192 1000

5th Floor, Block B-2
Nirlon Knowledge Park
Off. Western Express Highway
Goregaon (E)
Mumbai - 400 063
Tel: + 91 22 6192 0000
Fax: + 91 22 6192 3000

14, Mittal Chambers, 1st floor
Opp Inox Mall, Nariman Point
Mumbai - 400021
Tel: + 91 22 619 20040

NCR

Golf View Corporate Tower B
Near DLF Golf Course
Sector 42
Gurgaon - 122002
Tel: + 91 124 464 4000
Fax: + 91 124 464 4050

6th floor, HT House
18-20 Kasturba Gandhi Marg
New Delhi - 110 001
Tel: + 91 11 4363 3000
Fax: + 91 11 4363 3200

4th & 5th Floor, Plot No 2B, Tower 2
Sector 126, NOIDA 201 304
Gautam Budh Nagar, U.P. India
Tel: + 91 120 671 7000
Fax: + 91 120 671 7171

Pune

C-401, 4th floor
Panchshil Tech Park
Yerwada (Near Don Bosco School)
Pune - 411 006
Tel: + 91 20 6603 6000
Fax: + 91 20 6601 5900

Contact:

Aman Khanna

Associate Director
Transaction Advisory Services
Mob.: +91 9971166320
Direct: +91 120 671 7108
Email: aman.khanna@in.ey.com

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