

Transforming Logistics: Sustainable Solutions for India's Warehousing and Supply Chain

2nd National Conference on Logistics and Warehousing for Viksit Bharat

New Delhi, India | 24th April 2025

Knowledge Paper | ASCELA Insights

ASCELA India | Singapore | UAE


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— Ideate · Innovate · Impact —

Foreword



The logistics and warehousing sector is crucial in supporting the vision of Viksit Bharat @2047 by enhancing the efficiency of India's supply chain. Efficient logistics is at the heart of a strong economy, ensuring seamless movement of goods, reducing costs, and enhancing ease of doing business across sectors.

As India accelerates its growth trajectory, the logistics and warehousing sector has emerged as a key pillar for enabling this transformation. Government-led initiatives such as the PM Gati Shakti National Master Plan and the National Logistics Policy are driving integrated infrastructure development, improving multi-modal connectivity, and reducing logistics costs. The development of Dedicated Freight Corridors (DFCs), Multi-Modal Logistics Parks (MMLPs), expressway-based warehousing, and the integration of coastal shipping with inland waterways reflects a comprehensive strategy to create a synchronized logistics network for Viksit Bharat.

The future of logistics and warehousing lies in innovation, sustainability, and digitalization. The integration of AI, IoT, and automation is reshaping supply chains, enhancing efficiency, ensuring transparency, and driving agility. The focus on green logistics practices, energy-efficient warehousing, and sustainable transport solutions is paving the way for India's commitment to achieving its Net Zero targets.

Rural connectivity and last-mile delivery remain critical to unlocking India's full trade potential. Strengthening rural logistics infrastructure will not only reduce wastage and improve market access for the agricultural and artisan sectors but also integrate rural producers into national and global value chains.

ASSOCHAM, in collaboration with ASCELA, presents this knowledge paper with the objective of providing valuable insights into India's rapidly evolving logistics and warehousing sector. The paper highlights key developments, emerging investment opportunities, sustainable practices, and technological advancements that are driving greater efficiency and resilience across supply chains. With a special focus on unlocking the potential of rural logistics, promoting green infrastructure, and strengthening multi-modal connectivity, this paper aspires to play a pivotal role in shaping India's logistics ecosystem and advancing the vision of a Viksit Bharat.

We hope this paper will serve as a valuable resource for policymakers, industry leaders, academia, and other stakeholders committed to driving the growth and development of India's logistics and warehousing sector.



Manish Singhal

Secretary General
ASSOCHAM



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India's logistics and warehousing sector is undergoing a generational transformation. Today the sector is defined by the convergence of policy vision, technology innovation, and a shared national ambition. It is no longer viewed as a cost center, it is a strategic advantage. As we collectively move toward the goal of India@2047, the sector will play a foundational role in shaping a future that is efficient, sustainable, and globally competitive.

Initiatives like the PM GatiShakti National Master Plan, the National Logistics Policy, and multimodal infrastructure development across ports, railways, and air cargo corridors are yielding tangible results. We are witnessing the emergence of a new era of infrastructure integration, supply chain digitization, and sectoral maturity. Warehousing, in particular, has evolved into a high-performance, technology-led enabler of speed, sustainability, and scalability. From automated storage systems and IoT-enabled monitoring to cold chain expansion and green logistics adoption, the transformation is both visible and vital. And with growing demand across Tier 2 and Tier 3 cities, the opportunity for inclusive growth has never been stronger.

ASSOCHAM and I, through the Logistics Council, remain committed to facilitating dialogue, shaping actionable policy recommendations, and creating platforms that bring together the public and private sectors. This paper "Transforming Logistics" captures the pulse of this evolution. It brings together insights across infrastructure, technology, sustainability, and investment, offering stakeholders a directional view of the road ahead.

I invite all the stakeholders - policymakers, investors, developers, and logistics operators, to come together in co-creating the systems, partnerships, and platforms that will power our freight ambitions. Together, we have the opportunity to build an ecosystem that is not just efficient and resilient, but also a true pillar of Viksit Bharat.



Anshul Singhal

Chairman,
National Council on Logistics and Warehousing,
ASSOCHAM
Co-Founder and Managing Director
Welspun One

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Industry Outlook

Sustainable logistics is not just about reducing emissions — it's about redesigning movement to create long-term value for business, society, and the environment alike.



Anand Mimani

Co- Chairman, Logistics and Warehousing Council, ASSOCHAM
CEO, Greenline Mobility Solutions



India's logistics sector stands at the cusp of transformation. As the Indian economy faces new challenges, the resilience and adaptability of logistics industry will be tested to its fullest. With a focus on sustainability, technology, and multimodal integration, we have a unique opportunity to shape a resilient and future-ready ecosystem. Collaboration between government and industry will be the key driver for growth and our success in world trade.



Sanjay Bajpai

Mentor and Advisor, National Council on Logistics and Warehousing,
ASSOCHAM
Former Executive Director, CONCOR



Logistics Sector shall play a very important role as our country marches towards being विकसित भारत by 2047. Technology-enabled transformation x skilled human resources of the Transportation, Warehousing and Digital Supply Chains shall be fundamental to this growth momentum



Prof. Manoj Choudhary

Vice Chancellor
Gati Shakti Vishwavidyalaya



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The logistics and warehousing space has come a long way. It's no longer just an emerging opportunity, it's becoming a serious, institutionally-backed asset class. We're seeing an elevated focus on compliance, scalability, and real, long-term value. Today, investors are looking beyond individual assets, they want platform plays that are tech-ready, ESG-aligned, and built for operational depth. Segments like cold chain, in-city warehousing, and multimodal infrastructure are attracting strong capital interest. As the sector matures, its execution, governance, and consistency will separate winners from the rest

Sudeep Mehrotra

CEO, Asset Management
Welspun One



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India's logistics sector is experiencing a transformation, with sustainability at its core. Government initiatives, the adoption of new technologies, and eco-friendly practices in warehousing are essential to building a more resilient supply chain. Sustainable solutions like energy-efficient infrastructure and PEBs will be key to India's progress towards Viksit Bharat.

Sanjay Singhania

MD & CEO
EPACK Prefab



Contributors



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Over two decades of strong experience in the transport and mobility sector



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Infrastructure consultant specialising in transportation, logistics, and supply chain

Preface



As we progress into an era defined by rapid economic growth, technological disruption, and sustainability imperatives, India's freight and logistics sector is emerging as a cornerstone of national development and global competitiveness. The conference "Logistics and Warehousing for Viksit Bharat" is our dedicated effort to explore innovative pathways within India's logistics ecosystem, focusing on sustainable and scalable solutions for industry leaders, policymakers, and investors.

The year 2024 marked a watershed moment for India's logistics landscape, characterised by notable advancements across multimodal transport, warehousing infrastructure, and supply chain digitisation. These developments were driven by key policy enablers such as the National Logistics Policy and Gati Shakti, supported by public and private investment aligned with long-term sustainability goals. As these reforms take shape, we see 2025 as a defining year for building resilience, efficiency, and global alignment in logistics and warehousing.

As Knowledge Partner, ASCELA is proud to support this dialogue through strategic insights and industry research that highlight the evolving dynamics of freight movement, multimodal logistics, and warehousing. Our knowledge paper, "Transforming Logistics: Sustainable Solutions for India's Warehousing and Supply Chain", underscores this effort by presenting actionable insights and frameworks for driving sustainable transformation across the sector. Our contribution reflects a commitment to enabling data-driven decisions and fostering meaningful collaborations that align with national priorities and global benchmarks.

At ASCELA, we understand that sectoral transformation requires foresight, innovation, and collaboration. Through this platform, our aim is to provide clarity in a complex ecosystem, connecting the dots between policy vision, operational challenges, and the imperative for sustainable logistics.

We extend our gratitude to our team, collaborators, and stakeholders who have contributed to shaping this dialogue. I firmly believe that this conference will serve as a vital forum for those looking to engage with and shape the future of India's logistics and warehousing sector in 2025 and beyond.



Nivesh Chaudhary

Co-Founder and Managing Director

Head, Strategic Advisory - Mobility and Supply Chain, ASCELA



CONTENTS



**AN OVERVIEW:
THE BIGGER PICTURE
OF INDIAN FREIGHT**



**GREEN LOGISTICS
AND CIRCULAR
ECONOMY IN
WAREHOUSING**



TRANSFORMING WAREHOUSING IN INDIA



SMART SOLUTIONS IN WAREHOUSING



COLD CHAIN AND PERISHABLE LOGISTICS



MULTIMODAL CONNECTIVITY AND INFRASTRUCTURE DEVELOPMENT

An aerial photograph of a large industrial or logistics facility. In the upper half, there are several large white semi-trailers parked in a designated area. To the right, a curved road or ramp is visible. In the lower half, a multi-lane road with white directional arrows is shown, with several cars driving or parked. The entire image has a dark, semi-transparent overlay, and a white vertical line is positioned on the left side, partially obscuring the text.

Key Focus Sectors

Warehousing Sector



Warehousing



Logistics



Supply Chain

Air Cargo Sector



Air Cargo Operations

Railways



Rail Freight Operations



High Speed Rail
Connectivity

Multi Modal Logistics Parks



MMLP Operations

Rapid Rail



Freight Movement



TOD Development

Key Focus Parameters



Cold Chain
Services



Technological
Advancements



Green
Logistics



ESG



Rural
Logistics



Setting New Standards in Trade, Technology, and Sustainability

01 The Bigger Picture of Indian Freight

75

Million

India is moving towards “Sustainability”

IFC Anchors First Sustainability-Linked Bond in India issued by NDR InvIT, an Infrastructure Investment Trust to Bolster Green Warehousing, Drive Green Growth in the Warehousing Sector

Key Growth Drivers

Green Logistics Push

The 2025 Union Budget emphasises sustainable logistics with incentives for EVs and renewable energy in warehousing.

Foreign Investment

India’s improving infrastructure, and policy push, including 100% FDI allowance in transport infrastructure are making it attractive investment destination.

Merchandise Exports

PM Gati Shakti initiative, backed by a budgeted increase of 11.1% for infrastructure, is helping develop logistics ecosystem and digital supply chain solutions.

Future of Logistics in India

Adoption of Digital Twins for Warehouse Optimisation



Growth in Last-Mile and Quick Commerce Logistics



Expansion of Cold Chain Infrastructure



Integration of IoT, Robotics & Blockchain in Logistics

Stronger Sustainability Initiatives

Striving towards Data-driven Decision Making – National Logistics Policy, 2022

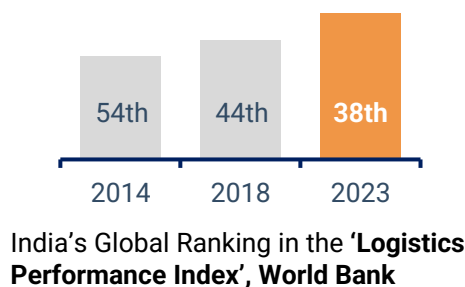
Target 1

Reduce Logistics Costs

- Turant, Customs, SWIFT, e-Sanchit, and Coordinated Border Management
- Railway Track Electrification and NLP Marine
- Reduced release times by the Land Ports Authority of India (LPAI)

Target 2

Improved Logistics Performance



Target 3

Data-driven Decision Support

Integration on 'Unified Logistics Integrated Platform (ULIP)'

43	Digital Systems
11	Ministries
1,800	Data Fields

Gati Shakti Masterplan

Network Planning & Congestion Projections

Big Data Leverage



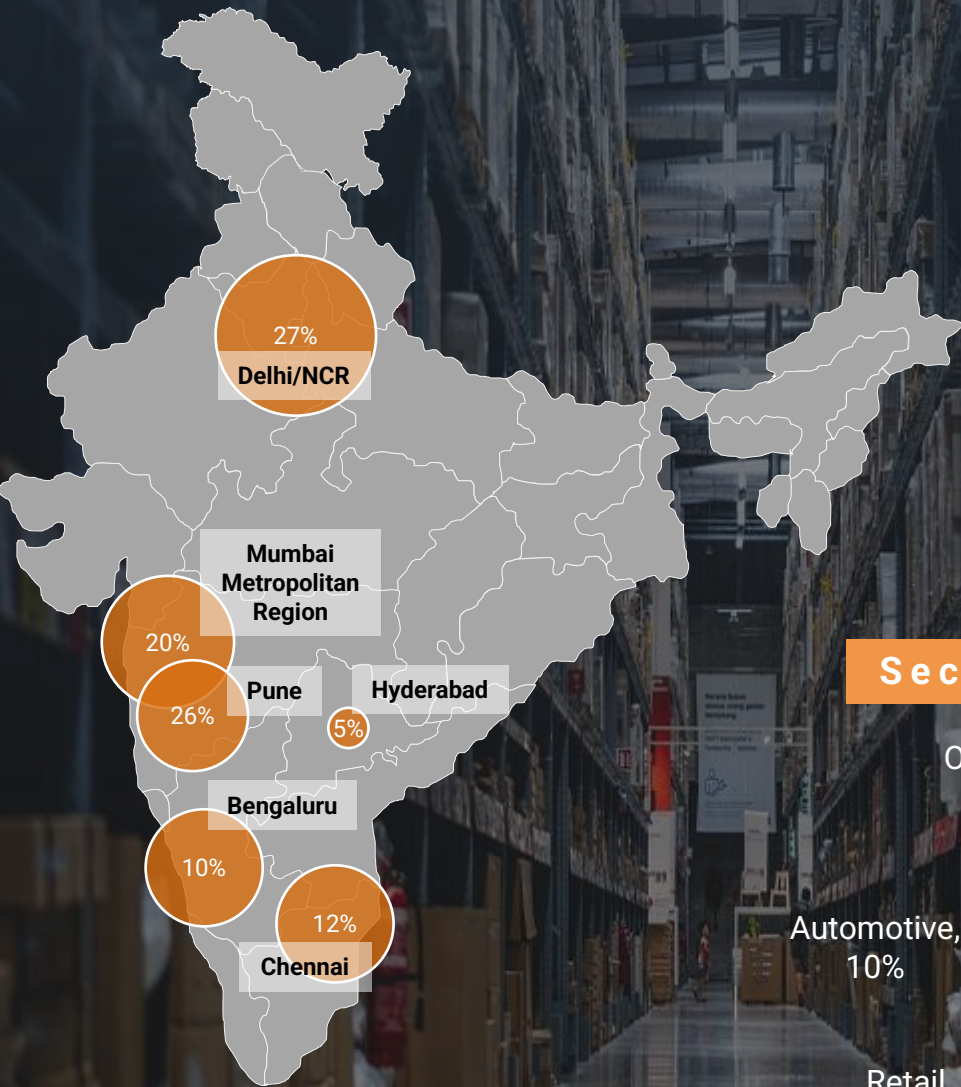
Logistics Efficiency

- 23 State/UT Logistics Policies
- Land Port Management System (LPMS)

Automation and Technology Integration is Fueling Unprecedented Growth in Indian Warehousing Market



India's Grade-A Warehousing expected to increase to 300 million sq.ft by 2025



% Share of Grade-A warehouses available across India

Source: CREDAI; Warehousing Association of India

Sector-wise Occupancy



02 Transforming Warehousing in India

Factors Driving Growth in Modern Warehousing

Evolution of Business Model



To 3PL and 4PL Players

Evolution of Futuristic Warehouse Facilities

By companies

For balancing faster and cost-effective approach



India's manufacturing growth, driven by global shifts and the PLI scheme encompassing 14 key sectors

Port upgradations and trade reform-driven containerisation, has surged demand for warehouses



Rise of organised food retail and healthcare is driving demand for robust cold chain infrastructure

Requirements for Developing Futuristic Warehouses in India

Themes	Highlights	Details	Investment Opportunities Within
01 Future Readiness	More than 80% warehouses to incorporate some degree of automation	Automation typically delivers a higher RoI in larger warehouses with high package volumes.	<ul style="list-style-type: none"> Expansion of warehouses in Tier 2 and Tier 3 cities Local service providers Cost effective technology Competitive differentiation
02 Enhancing Efficiency and Sustainability	IFC partnered with NDR InVIT to launch India's first sustainability-linked bond for the warehousing sector	Facilitate existing warehouses to achieve EDGE Certification by reducing GHG Emission and water consumption	<ul style="list-style-type: none"> AI-driven energy management Renewable energy integration Zero waste warehouses

Warehousing Challenges - Existing Scenario in India

<h3>Land Availability</h3> <p>Higher land cost and zoning restrictions around the hubs make expanding warehousing infrastructure difficult</p> <p>More than 70% of demand for Grade A warehousing comes from Delhi-NCR, Mumbai, Bengaluru, Chennai, Pune</p>	<h3>Fragmentation</h3> <p>Small-scale warehouse format may constrain the financial feasibility of certain automation solution</p> <p>Extended payback period for automation often conflicts with shorter lease term offered by 3PL provider</p>	<h3>Transport Infrastructure</h3> <p>The rural warehousing mainly comprising of Agri warehouses. Most of these faces challenges of poor road and rail connectivity</p> <p>Congestion around warehousing hubs adds to the overall operational cost</p>
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Industry View

Led by Delhi/NCR, Mumbai, Bengaluru, and Pune, driven by e-commerce, manufacturing, and industrial demand, Indian warehouse and logistics market is growing rapidly. Tier-2 and tier-3 cities are also emerging due to the infrastructure upgrades. The Government's focus on logistics efficiency and business ease is turning these regions into key hubs for warehousing, last-mile delivery, and integrated supply chains.

03 Warehousing for Rail Cargo Sector

Rail-Cargo Sector Developments



Planned Freight EMUs (Vande Cargo Trains) aim to revolutionise parcel transport with operational speed of up to 160 kmph, significantly reducing transit time, alongside aligning with India’s commitment to sustainable transport.

Industrial Corridors

Delhi/NCR RRTS

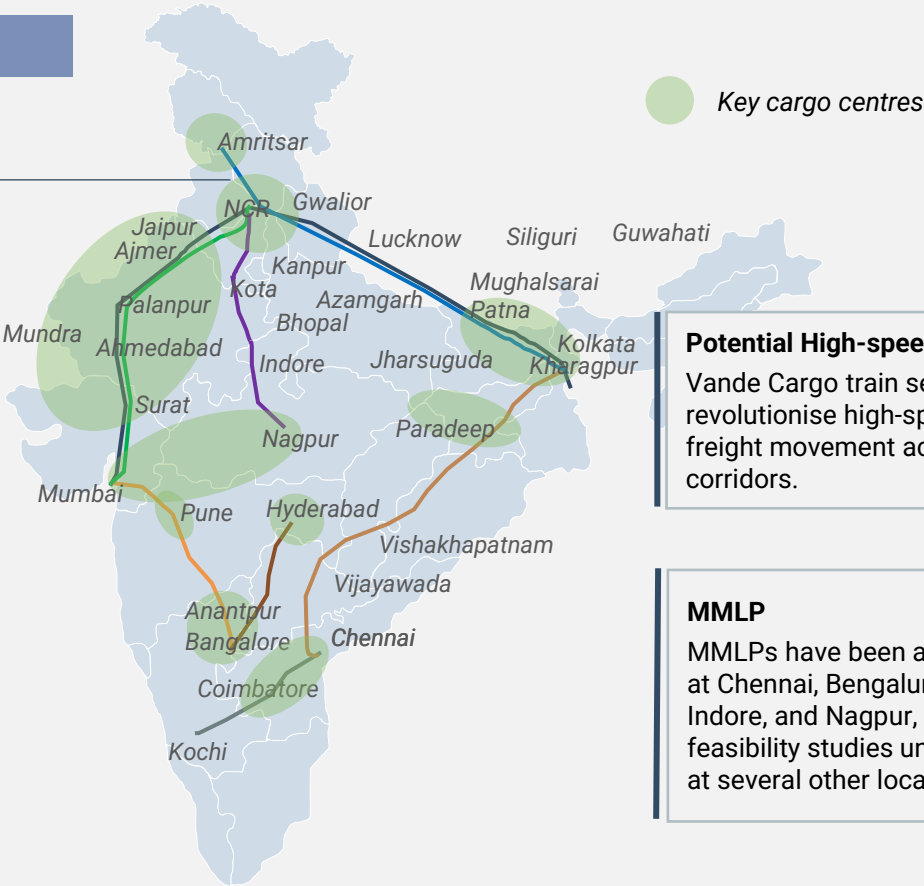
NCRTC is planning private operations of Rapid Rail cargo handling in Delhi/NCR with operations to begin soon.

Potential Rapid Rail

Potential for developing high-speed rail networks to enhance connectivity across major locations.

GCTs

As of March 2025, 97 GCTs have been commissioned, with 277 more approved in principle to boost rail freight capacity.



Potential High-speed EMU

Vande Cargo train set to revolutionise high-speed freight movement across key corridors.

MMLP

MMLPs have been awarded at Chennai, Bengaluru, Indore, and Nagpur, with feasibility studies underway at several other locations.

Warehousing Investment Opportunities related to Rail-Cargo Sector



Delhi Metro Handling Cargo in Non-Peak Hour

- Investment in set up of micro fulfilment centers around Warehouse
- EV last mile delivery fleet and infrastructure
- Develop standardised, secure, and lightweight cargo pallets for metro use

Cargo Aggregator Transportation Product Initiative

- Build aggregation centers near RRTS nodes or freight terminals and micro-hubs inside industrial estates
- Launch a tech platform that offers cargo aggregation as a service



Market Outlook	Highly fragmented	
Entry Barrier	Slower privatisation	
Investment Gestation Period	Lower gestation period due to high demand	

Potential Rural Investment Opportunities

- 01 Farmer Producer Organizations (FPOs) Rail Linkage
- 02 Agro-industrial Parks in Rail Hinterlands
- 03 First-Mile Feeder Services

Industry View

Rail-cargo-linked warehousing offers strong investment potential, especially in metro cargo handling, EV infrastructure, and micro-fulfilment centers. Key hubs like Delhi/NCR, Hyderabad, and Bengaluru show high promise, while tier-2/3 cities open new opportunities. Smart warehousing near RRTS and Gati Shakti terminals can position us as a key logistics enabler.



3rd
Largest
Freight Handling
Railway System

Set to achieve 1.6 billion tonnes
freight loading in FY-25

29%
Growth

Freight carried by Indian Railways has jumped
from 1,233 MTPA in FY-21 to 1,591 MTPA during
FY-24

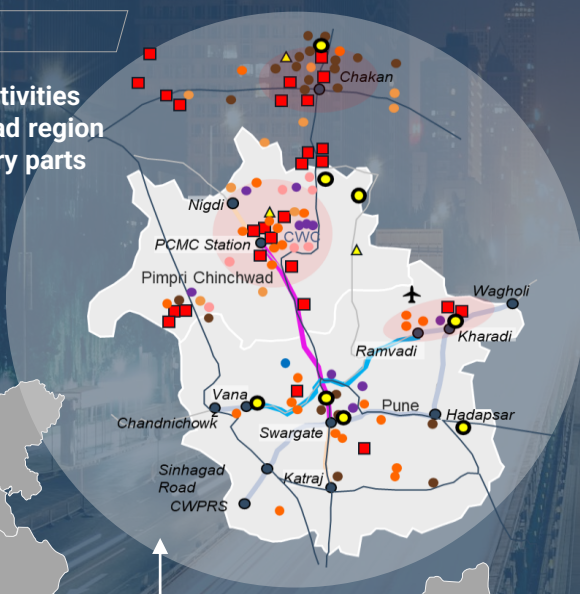
**Gati Shakti
Multi-modal
Cargo Terminal**

Encourage the private sector to develop the modern rail freight terminals
and augment the infrastructure at railway-owned goods sheds

04 Accelerating Logistics with Rapid Rail

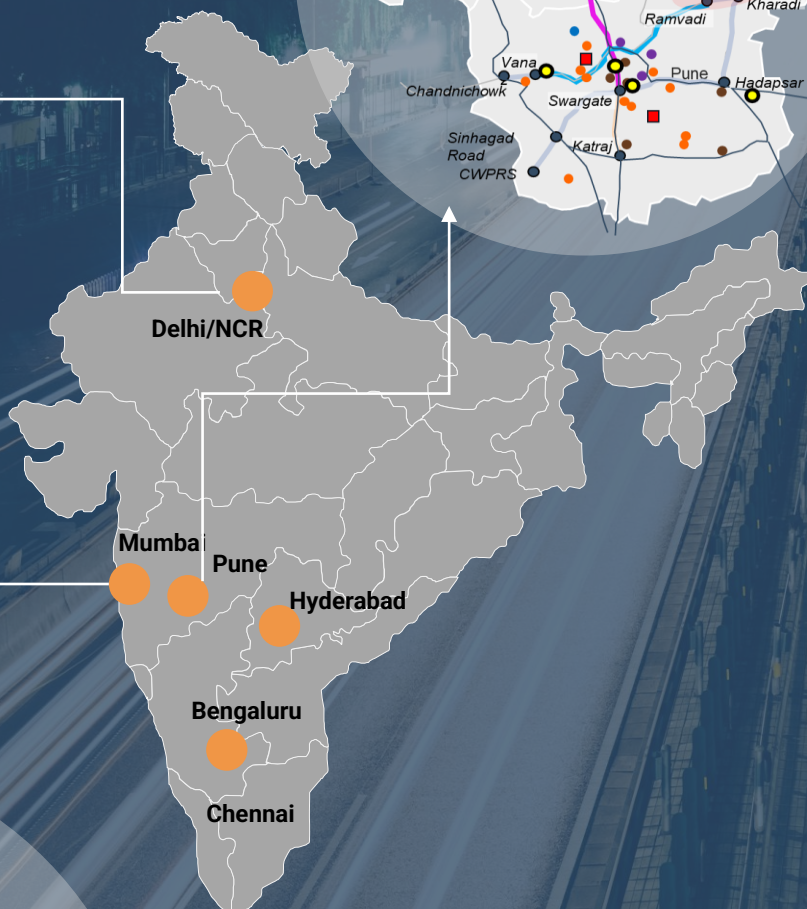
Pune - Chinchwad

Heavy warehousing activities around Pune – Chinchwad region and automobile ancillary parts around Chakan



RRTS Corridor in Delhi / NCR

Both, ADB and the World Bank, are trying to utilise the upcoming Namo Bharat trains (RRTS) network for moving freight during off-peak hours



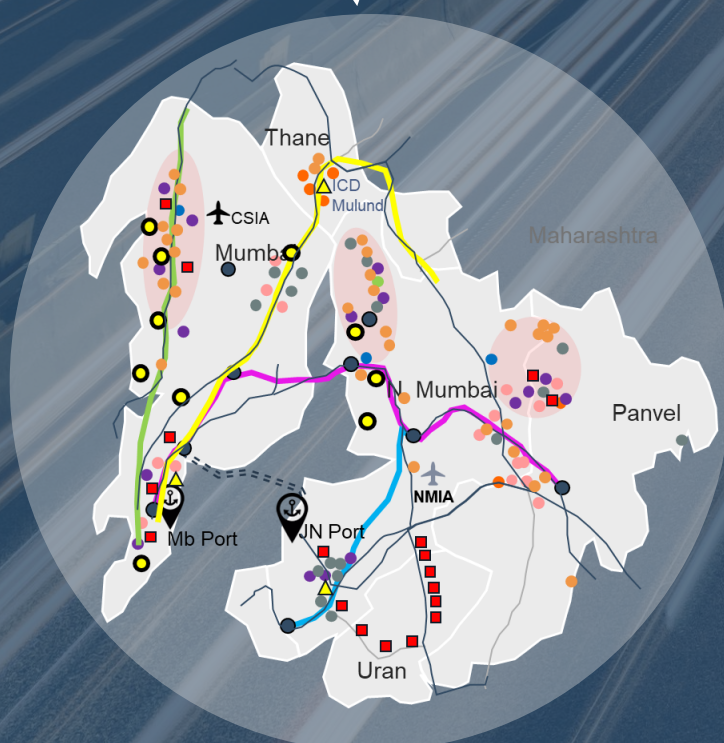
Mumbai Transport Challenges

Linear Systems, less alternative route options

Only Mumbai-Satara Highway connects Mumbai and Navi Mumbai

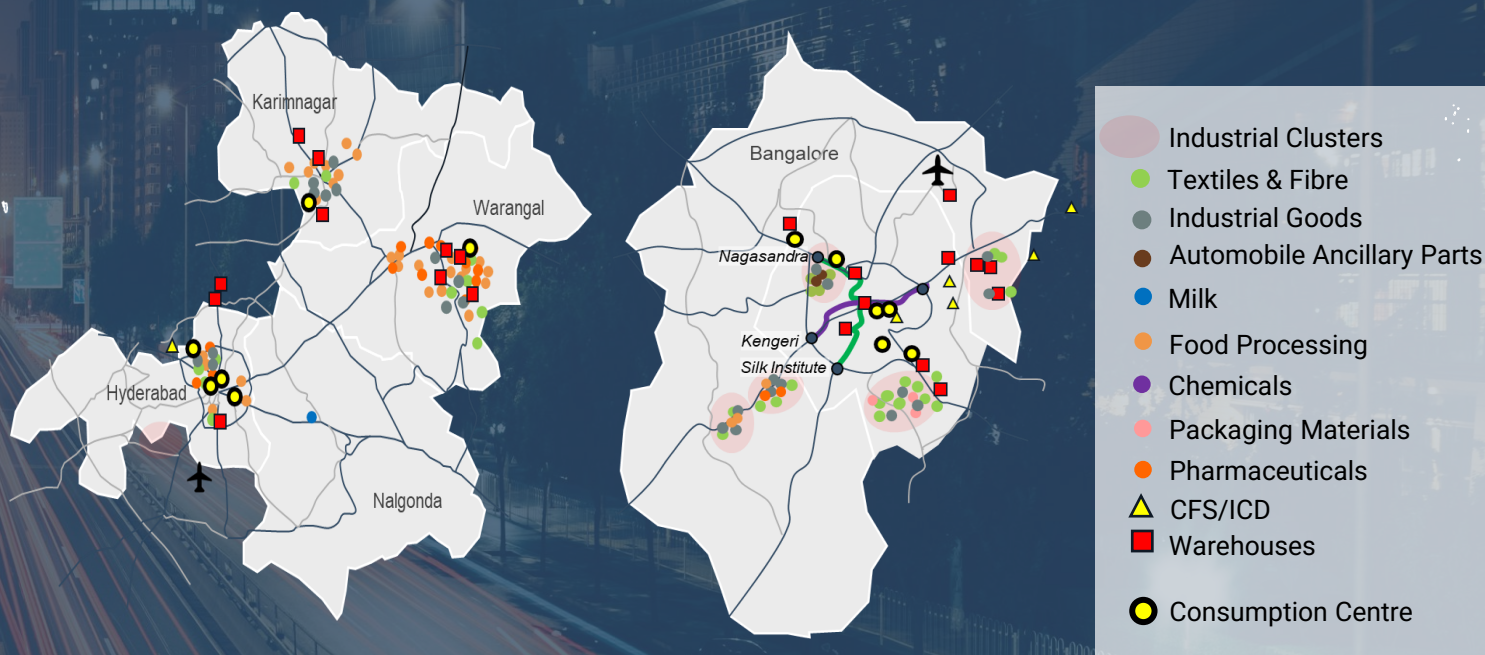
Development Potential

- Utilisation of existing urban passenger tracks for freight movement
- Connectivity between existing and upcoming Airports with key industrial sectors for movement of time and temperature sensitive cargo
- Possibility of freight track along upcoming Trans Harbour Link to increase cargo at Mumbai Port from industries located in Navi Mumbai
- Explore possibility of connecting Ahmedabad – Mumbai Bullet Train further to Mumbai Port, JN Port and the Airports.



Heavy concentration of food processing industry around Mumbai

Source: Census, AQI Dashboard, Tom Tom Congestion Ranking 2025



Hyderabad

With a strong cold chain infrastructure in Hyderabad, the pharmaceuticals industry is a major growing sector in the region

Bengaluru

Bangalore is known as the country's garment capital. Textiles and local handicrafts are also key contributor to the city's economy.

Development Potential Overview

	Mumbai	Pune	Hyderabad	Bangalore
Urban Agglomeration Population in 2011 (Million)	18.39	5.05	7.67	8.52
Congestion Global Ranking	109 th	127 th	NA	65 th
Pollution ($\mu\text{g}/\text{m}^3$)	121	113	70	72
Key Opportunities				
Mass Transit System	✓	✓	✓	✓
Other Proposal				
Regional Rail	✓		✓	

ASCELA's View

Strong potential in aligning warehousing clusters with the upcoming RRTS/Namo Bharat corridors, particularly Delhi-Meerut, to enable faster, off-peak freight movement. This integration can ease urban congestion, improve supply chain efficiency, and support sectors like pharma and perishables. Cities like Pune, Hyderabad, and Bengaluru show how warehousing growth around transit nodes can boost regional connectivity. With targeted investments in last-mile and multimodal infrastructure, RRTS-linked warehousing can drive a more resilient, sustainable and future-ready logistics ecosystem.

Value Addition for Cities



Cost share for Cargo and Passenger Infrastructure



Develop Mode Integration Infrastructure (ecosystem around MMLPs)



Reduce Congestion and Pollution by shifting trucks on Ro-Ro



Decongest cities with efficient last-mile services



Addition to Cold Chain Supply Infrastructure



**Annual Air Cargo
Handled**



**10 MTPA by FY-
2030.**
185% growth
from FY-2024



Development of
Tier-2 and Tier -3
Cities



**Cargo
Hub**

Expansion of
freighter fleet
capacity



**Dedicated Freight
Services for Pharma,
Perishables, E-
Commerce**



**Human
Resource
Development**



**PPP in
development of
Air Cargo Hubs**

**Multimodal
Integration**

Gati Shakti Terminals



Enabling
**Govt.
Institutions**

**Investment in
Warehouse
Automation**

Source: Ministry of Civil Aviation

05 Warehousing for Air Cargo Sector

Air-Cargo Sector Developments



Union Budget 2025-26 has announced facilitation of upgradation of infrastructure and warehousing for air cargo including high value perishable horticulture produce.

Key ongoing trends

Increasing demand for A-321 for freight operations.

Large potential for using ATR freighters for freight operations in hub and spoke arrangements.

Jewar Airport

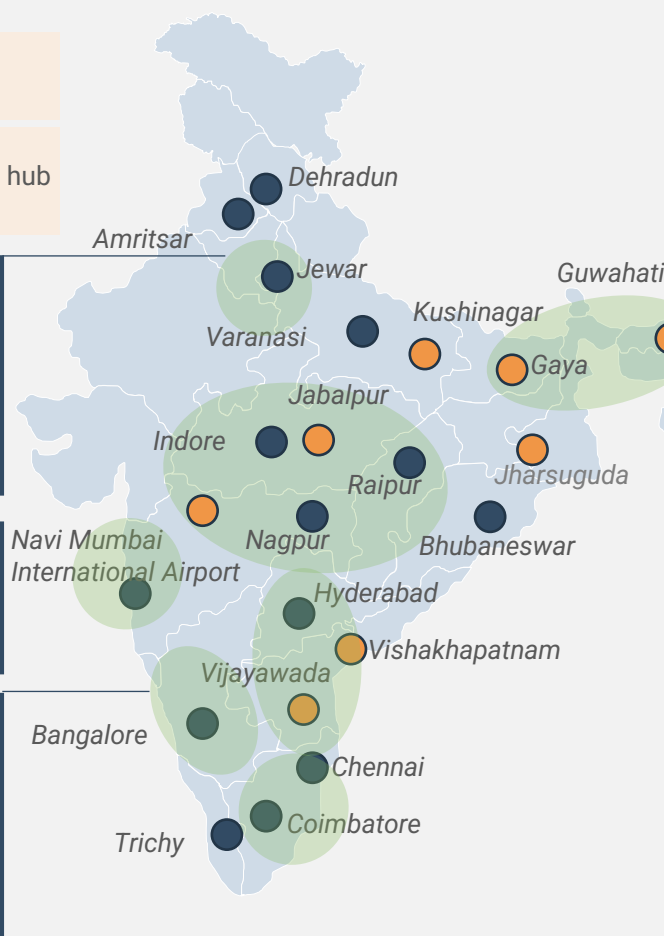
Sectors: Warehousing, cold chain, and Value-added services
Growing focus on development of 5 new cities focusing on industrial development and warehousing

Air Cargo Terminal

Growing focus on Tier-II and Tier-III cities

Smart AFSs and warehouses at JIC

High demand for e-commerce single-window management system at Bangalore airport has enhanced the perishable handling capacity



MROs Growth Potential

Thales will open an avionics MRO in Delhi by 2025 with Safran and AIESL aims to meet 35% of India's engine MRO needs with upcoming LEAP facility in Hyderabad.

Smart AFSs and warehouses

Growing e-commerce demand in eastern and North-Eastern India catered by Amazon's latest smart fulfilment centers in Guwahati and Patna

Increasing Policy Support

For Air cargo terminals and smart AFS

- Major Airports
- Smaller Airports
- Key development regions

Warehousing Investment Opportunities related to Air-Cargo Sector



Green Pharma City, Hyderabad

PPP structuring, sustainable logistics planning, and investment promotion to develop integrated, future-ready infrastructure

Navi Mumbai International Airport

The connectivity with JN Port opens avenues for warehousing, industrial parks, and transportation services



Market Outlook	Highly fragmented		Shipping Corporation of India and CONCOR plan to launch Bharat Container Shipping Line to develop a shipping model integrated with CONCOR's logistics network.
Entry Barrier	Slower privatisation		
Investment Gestation Period	Lower gestation period due to high demand		Amazon launched Freight and Shipping services in India to offer end-to-end logistics and boost its transport network.

Industry View

Air cargo-linked warehousing is expanding rapidly, with infrastructure upgrades supporting high-value perishables and e-commerce growth. Smart AFSs in cities like Guwahati, Patna, and Bangalore boost regional connectivity, while hubs like Hyderabad and Jewar integrate cold chains and pharma logistics, enhancing multimodal efficiency and last-mile delivery for Tier-II/III cities.



Budget 2025: India Post to be transformed into large public logistics organisation



1.5 lakh rural post offices to drive logistics



Rural post offices to be supported by India Post Payment Bank



Boosts rural economy, connectivity, MSMEs, and self-help groups



Smart warehousing ensures faster, accurate rural parcel delivery



Joint Parcel Service: India Post and Railways partner to reduce logistics cost and transit time.

06 Smart Solutions in Warehousing

Major Developments in Application of Smart Solutions in Warehousing

Key Development		Smart Solutions Introduced	Overall Outlook
Revolutionising Port Based Logistics	Welspun One has launched India's largest single-location warehouse at JN Port SEZ, Navi Mumbai, with an annual throughput of 36,000 TEUs.	Optimise operational efficiency <ul style="list-style-type: none"> Automated inventory management systems Integrated analytics tools Benefits derived <ul style="list-style-type: none"> As per some unofficial estimates, expected cost savings of up to 15% for occupiers 	Market Outlook Adoption of AI, robotics, and tech-led infrastructure—especially near ports and emerging air cargo hubs like Jewar Entry Barrier Challenging for smaller investors to invest in automation without assured volumes or long-term contracts to ensure returns Investment Opportunities Opportunities for startups providing AI driven fleet, warehouse management software, integrated automation tools
AI Based Fleet and Warehouse Safety Mechanism	CJ DarclLogistics has partnered with Netradyne to provide AI based safety technology for its leased Narasapura warehouse space.	Optimise safety through <ul style="list-style-type: none"> AI-powered dashcams for real-time communication Route optimization Benefits derived <ul style="list-style-type: none"> Provide real-time insights and automated driver coaching 	
Development around Noida International Airport (Jewar)	5 Industrial Parks (EV, Plastic Processing, Footwear, Handicraft and Transport Hub) to come up YEIDA has also proposed developed of a Aerotropolis	Warehouses especially for EV and Pharmaceutical to introduce semi – automation to reduce dependency on manual labour	

Smart Warehousing : Case of JD.com 3PL Warehouse

Key Development in Warehousing	Challenges	Circular Economy Principles to Implement
<ul style="list-style-type: none"> High labour-intensive operation High turnover rate Seasonal increase in demand required additional recruitments and training 	<ul style="list-style-type: none"> Introduced automatic sorting centre Deployment of 12 Max 600 Autonomous Mobile Robots (AMRs) integrated with warehouse control systems 	<ul style="list-style-type: none"> 133% UPH increase within the initial seven days 30% Reduction in operational costs while fulfilling orders for both B2B and B2C eCommerce More than 99% Inventory accuracy

Key Takeaways



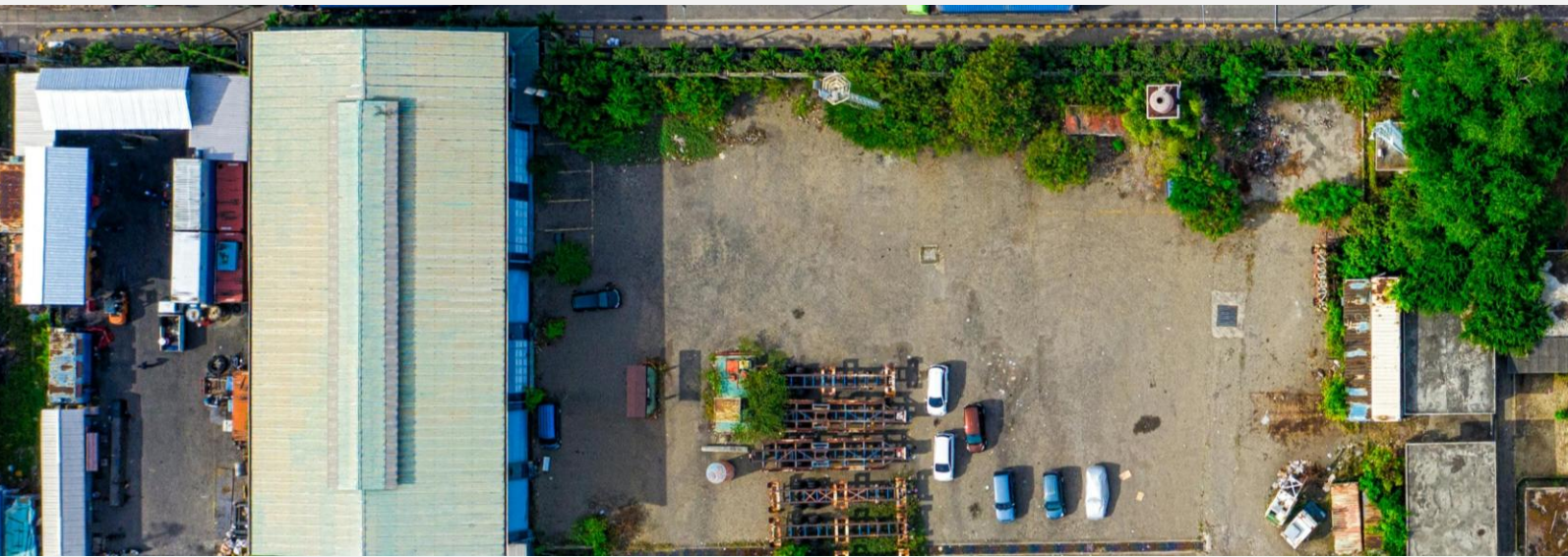
Partnership of large warehouses with automation companies to introduce AMRs as pilot programs

Promote adoption of cloud-based WMS/ WCS across 3PLs



07

Green Logistics and Circular Economy in Warehousing



Green Logistics in India



CONCOR-TERI Centre of Excellence

CONCOR and TERI signed an MoU to establish the CONCOR–TERI Centre of Excellence for Green and Sustainable Logistics.

LNG Trucks Partnership

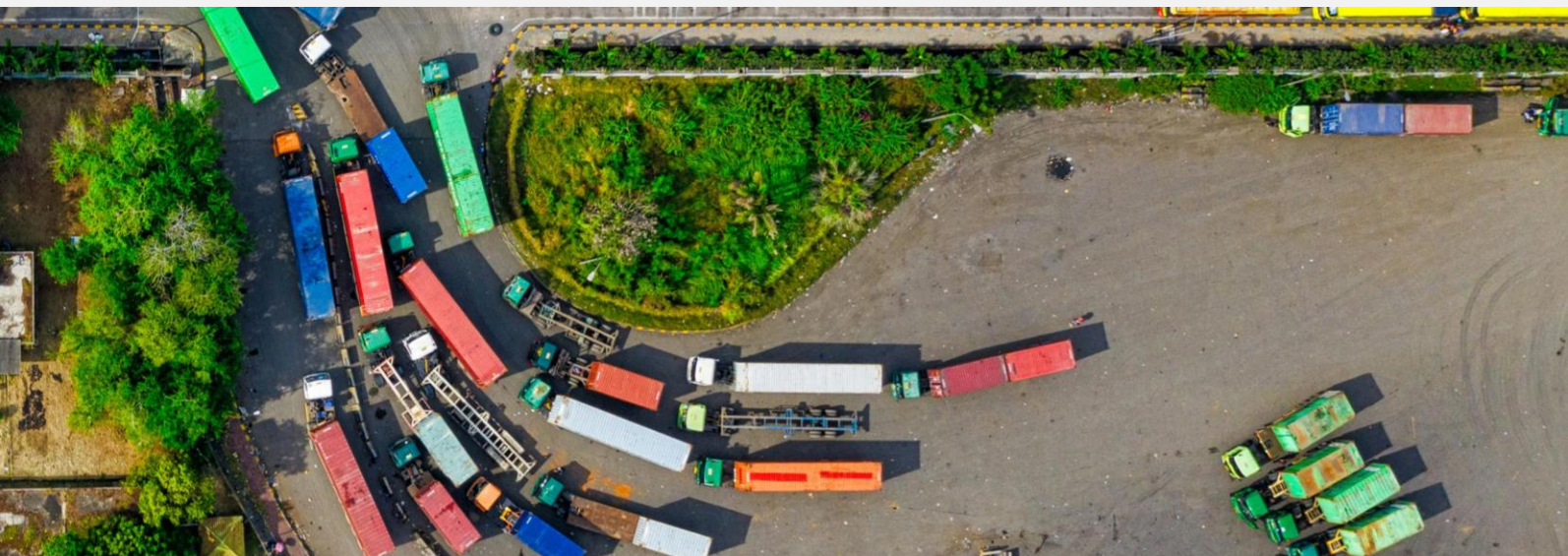
GreenLine Mobility partnered with Exide Industries to deploy eco-friendly LNG-powered trucks in Exide's logistics operations.



EV Charging Infrastructure

In March 2025, the Indian government allocated INR 2,000 crore towards the installation of EV charging stations across the country, focusing on ports.

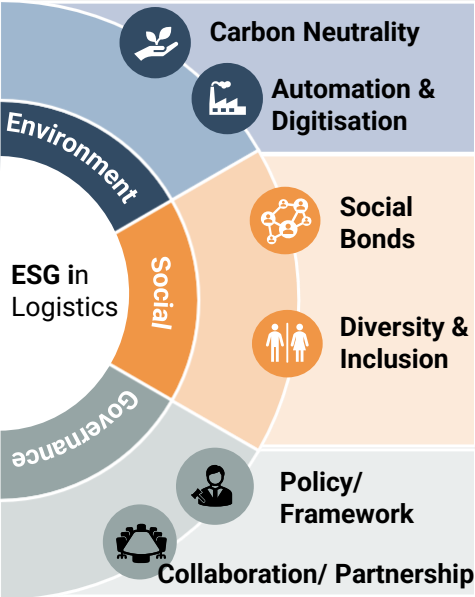
Company	Key Green Initiatives	Impact	Challenges	Key Takeaways
Mahindra Logistics	<ul style="list-style-type: none">Development of IGBC-certified green warehousesSolar energy adoption, water harvesting systemsEV deployment for intra-city logisticsESG-based monitoring & reporting	<ul style="list-style-type: none">Operational energy efficiency gainsCost savings from sustainable infrastructureEnhanced brand reputation for ESG compliance	<ul style="list-style-type: none">High capital cost for green building development in smaller citiesLimited battery range of EVs restricting inter-city logistics operations	<ul style="list-style-type: none">Build EV fleets with strong vendor and infra partnerships.Install solar panels to power warehouse operations.Switch to plastic-free, sustainable packaging.
Flipkart	<ul style="list-style-type: none">EV-based last-mile deliveryPlastic-free, recyclable packagingReverse logistics for returns & recycling	<ul style="list-style-type: none">Lower emissions from deliveriesReduction of packaging wastePromotion of circular economy practices	<ul style="list-style-type: none">Customer reluctance to return packagingLimited availability of EVs suited for rural and semi-urban markets	



Circular Economy in Logistics – A Way towards Sustainable Warehousing

Key Development in Warehousing	Challenges	Circular Economy Principles to Implement
Adoption of Grade-A Green Warehouses Example: IndoSpace's IGBC & EDGE certified facilities in Maharashtra, Tamil Nadu, Haryana	High Initial Investment Costs High upfront costs of energy-efficient technologies and sustainable materials remain a key challenge for SMEs.	Modular Construction and Renewable Energy Integration Utilise prefabricated modular components to cut construction waste and time. Integrate on-site solar energy to lower operational costs and reduce carbon footprint.
Cold Chain Warehousing for Pharma & Food Example: Snowman Logistics' facilities across India	High Operating Costs and Infrastructure Gaps Cold storage facilities face elevated energy expenses and often lack adequate infrastructure.	Phase Change Materials (PCM) for Thermal Storage Incorporate PCMs in storage units to maintain temperatures efficiently by absorbing and releasing thermal energy, reducing energy consumption.

Environmental, Social, and Governance (ESG) practices



Ongoing Environmental Practices
Logistics players are adopting "net-zero" warehouses, to offset emissions
Logistics firms in Mumbai and Chennai are piloting digital twins to optimise energy use, predicting peak consumption times and reducing waste by up to 18%
A logistics facility in Hyderabad uses ammonia-based cooling and solar power to cut energy costs by 25% and reduce spoilage rates by nearly 10%.
Ongoing Social Practices
Women make ~25% of workforce in organised logistics hubs, up from 10% in 2022
Ongoing Governmental Practices
Private Equity (PE) investments in logistics, which hit a record USD 1.54 billion in a single deal in 2024, are increasingly tied to sustainability metrics

08 Cold Chain and Perishable Logistics

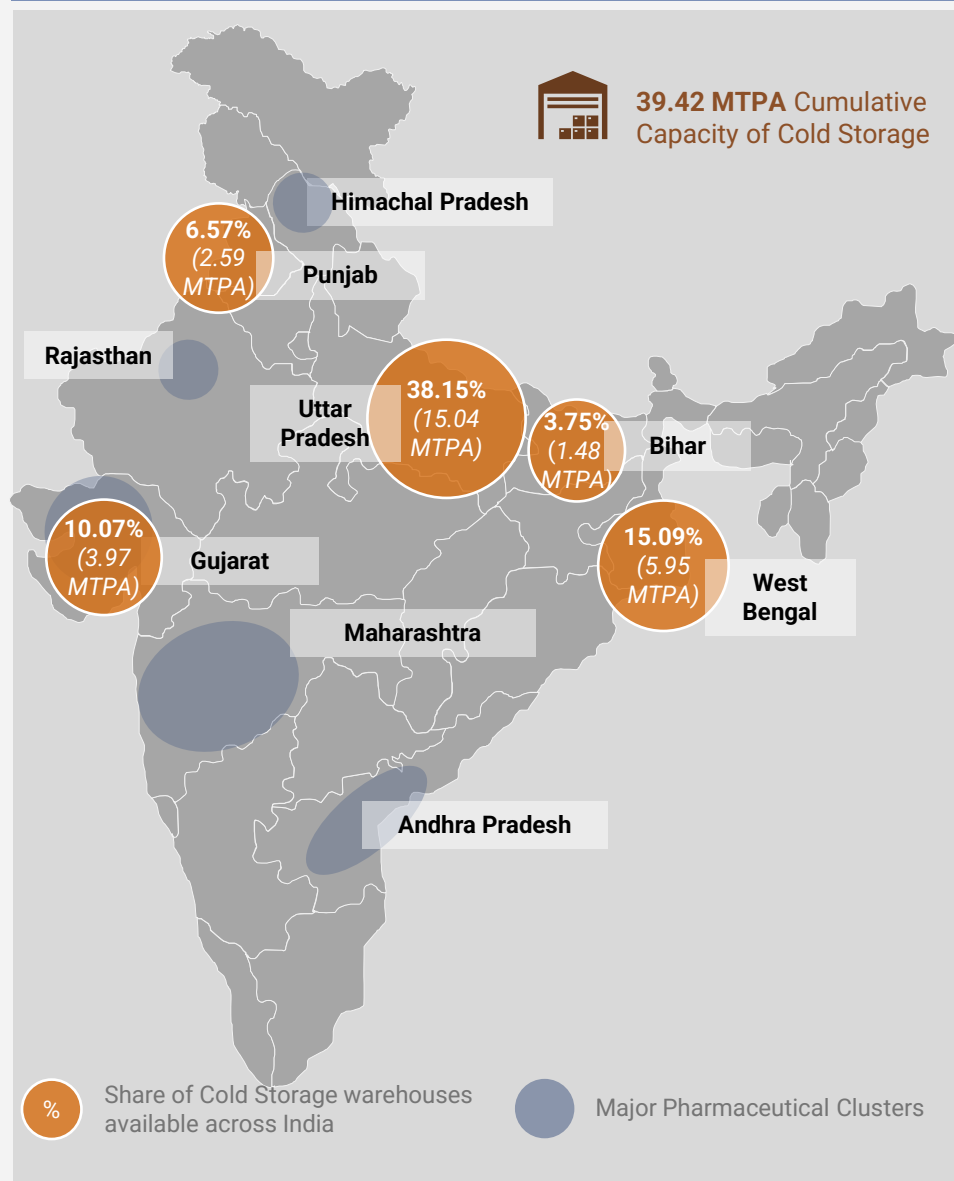
Cold chain and Perishable Logistics Sector Developments



Warehouse Subsidy scheme by NABARAD

- Financial assistance program to support development of warehousing infrastructure in rural areas.
- Aimed at reducing post harvest losses through better storage facilities including cold storage warehouses.

Existing Scenario of Cold Chain Logistics in India



1.28%

CAGR of number of cold storage warehouses between FY- 2019 and FY-2023

Characteristics of Cold Storages

> 80%

Capacity of Cold Storage Warehouse held by Semi-organized players

75%

Cold Storage Facilities dedicated to handling potatoes in the potato growing belt

10,000 Sq.ft.

Land requirement for most facilities near production points especially in rural areas

Challenges



4.58% to 15.8% Post-Harvest Losses for fruits and vegetables, as per ICAR



About 30% to 40% of perishable products spoil before they reach consumer



Disruptions in temperature-controlled logistics causes major losses to the pharma industry

Source: PIB, MoFPI, Ministry of Agriculture and Farmer Welfare, Ministry of chemicals and Fertilisers

Key Growth Drivers	Challenges	Sector Opportunities
Prime Minister Dhan-Dhaanya Krishi Yojana announced in Union Budget 2025	Lack of skilled workforce in the post harvest storage	Launch of 'Rural Prosperity and Resilience' will address the underemployment in agriculture through skilling of rural workforce. ✓ Investment in Post Harvest Storage Warehouse and Agriculture Aggregator Services
BharatTradeNet to be set-up as a unified platform for trade documentation and financing solutions	Lack of digital literacy amongst rural workforce and reluctance in transition	✓ Capacity building ✓ Development of export oriented cold chain ✓ Establishment of temperature-controlled warehousing hubs near pharma clusters



“

ASCELA sees strong growth potential in India's cold chain and perishable logistics sector, driven by the need for efficient storage, reduced agri-waste, and resilient supply chains. Policies like PM Kisan SAMPADA and NABARD's warehousing scheme aim to modernise rural logistics and cut post-harvest losses. Interest from organised players is growing, especially near agri-export hubs and pharma clusters. However, infrastructure remains uneven and crop-specific, limiting scalability. Addressing first-mile gaps, high spoilage, and lack of integrated cold transport through PPPs and alignment with the PM Gati Shakti plan can unlock sustainable, long-term growth.

"Why Large Logistics Parks Outperform Standalone Warehouses"



Cost Efficiency Driven
by Economies of
Scale



Operational Stability with
Risk Mitigation and
Seamless Performance



Scalable Growth at One
Location — No Supply
Chain Disruptions



Integrated Ecosystem
of Value-Added
Services



Sustainable, Smart &
Future-Ready
Infrastructure



Superior Multimodal
Connectivity & Dedicated
Transport Infrastructure

“

Logistics industry is expected to expand with the rise of e-commerce transactions in Tier II and Tier III cities. This creates huge demand for logistics hubs and facilities such as cold storage, high-density storage, and advanced distribution centers.

09 Multimodal Connectivity and Infrastructure Development

ADB-Funded SMILE Program to Boost India's Logistics Efficiency, Cut Costs, and Strengthen Multimodal Infrastructure

Aligned with Atmanirbhar Bharat



Strengthen Institutional bases for Multimodal Infrastructure

Standardise Warehousing and Logistics Assets

Improve External Trade Logistics

Adopt Smart & Low-emission Logistics

Boost Domestic Manufacturing

Improve Logistics Efficiency

Attract Private Investment and Digital Transformation

Opportunities- Logistic Hubs

MMLPs and GCTs

High concentration in Punjab & Haryana along E-DFC and A-D-KIC

Smart logistics parks

Increasing industries and transportation infrastructure (rail, port, and air cargo)

GCTs

Industries like Jindal Steel and Reliance setting up their GCTs

Project awarded for Jogighopa location with NHIDCL. Bids awarded for MMLP development at Chennai, Bengaluru, Indore & Nagpur.

Bids invited for MMLP development for 3 locations i.e., Anantapur, Nashik and Pune.

MMLPs and GCTs

Potential Region: Coimbatore, Tuticorin, Hosur, Salem

MMLPs and GCTs

High concentration along E-DFC and NW-1

- MMLPs Awarded
- MMLPs Upcoming
- MMLPs under Bidding
- GCTs
- E-DFC
- W-DFC
- Golden Quad.
- Amritsar-Delhi-Kolkata C

Logistics Parks

Increasing focus due to ACT East, Kaladan Project, and BBIN

MMLPs and GCTs

High concentration along Kolkata-Chennai side of Golden Quadrilateral

Feasibility Study/DPR is in progress for 6 other locations: Mumbai, Coimbatore, Hyderabad, Patna, Jammu, and Vishakhapatnam.

Market Outlook

Highly fragmented



Entry Barrier

High competition



Investment Gestation Period

Lower gestation period due to high demand



Potential Rural Investment Opportunities

- 01 Agri-Logistics & Cold Chain Infrastructure
- 02 Rural Warehousing & Storage
- 03 Rural MSMEs & Light Manufacturing

10

Investment Opportunities

Investment Outlook

Investment opportunities explored under the following headings:

Market Outlook	Focuses on the current trends, future growth potential, and key factors influencing the sector's development
Entry Barriers	Limitation of players from entering or competing effectively in the sector
Investment Gestation Period	Focuses on time taken for project to be operationally viable

Industry Outlook

Private sector involvement in India's logistics sector offers promising opportunities for enhanced efficiency, innovation, and infrastructure development. However, key challenges persist, including regulatory complexities, infrastructure gaps, high logistics costs, and the necessity for mergers and acquisitions to support capital-intensive projects. With the influx of foreign investments, the logistics ecosystem holds significant potential for modernisation and achieving global competitiveness.

Further, the chart below illustrates potential investment opportunities by private sector players across various sectors.

Investment Opportunities		Investability Heatmap (for Private Participation)	
Railways	Rail Freight Operations		Fairly Low Potential
	High Speed Rail Connectivity		Moderate Potential
Rapid Rail	Freight Movement via Rapid Rail/Namo Bharat and Metro		High Potential
	TOD Development		High Potential
Air Cargo	Air Cargo Operations		High Potential
Smart Warehouses	Automation in Operations		High Potential
Green Logistics	Green Fleet		Fairly High Potential
	Green Warehousing		Moderate Potential
Cold Chain Logistics	Rural Logistics		Moderate Potential
	Cold Chain Warehouses		High Potential
MMLP	MMLP Operations		Fairly High Potential







Unlocking Investment Opportunities in Logistics

A photograph of a large industrial warehouse interior. In the background, a semi-trailer is parked on the left. In the foreground, there are several pallets stacked high with boxes. The warehouse has a high ceiling with a corrugated metal roof and large vertical support beams. The lighting is somewhat dim, with a bright area on the left wall.

Exploring Opportunities in Transport and Logistics Investments for 2025

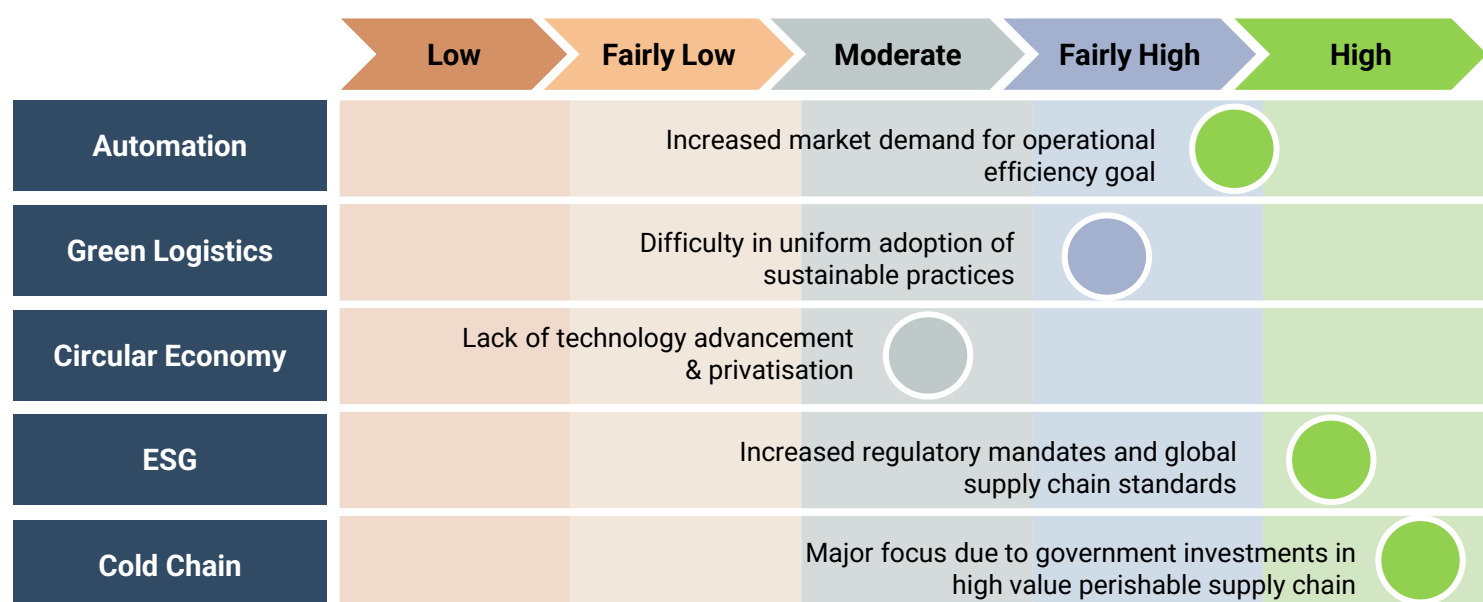
10 Investment Opportunities (Contd..)

Investment Outlook

Technology Adoption		Future Outlook
Robotics	Use of humanoid robots in warehouses <ul style="list-style-type: none"> Introduced to the sector by warehouse giants like Amazon and GXO 	Increased Efficiency Would result in better service offerings in lesser time but will affect employment generation 
Positive Outlook	Automated Storage and Retrieval Systems (AS/RS) <ul style="list-style-type: none"> Implementation already in process in Grade A warehouses. There is a scope for expansion in Grade B and Grade C warehouses 	Demand for AS/RS for various scales of implementation Opportunities in development of automated integration solution 
Carbon Capture and Offsetting Tools	Carbon Footprint Tracking Software <ul style="list-style-type: none"> Provides companies with tools for accurate carbon reporting and targeted reduction strategies 	Optimisation of logistics mode and route 
Positive Outlook	Focus on Sustainability <ul style="list-style-type: none"> Will reduce the overall GHG Emission of the logistics sector 	AI Driven Predictive Analysis Data analytics, machine learning, and AI-driven technology would help reduce emissions 

 Positive Outlook  Neutral Outlook

Investment Opportunities in India – Year 2025



Industry Outlook

Following an in-depth evaluation of key technological and investment trends within the Indian logistics ecosystem, the analysis identifies significant growth opportunities in the Automation, ESG, and Cold Chain sectors. While advancements in robotics, automated storage systems, and carbon tracking tools are driving efficiency and sustainability, challenges persist in the widespread adoption of green logistics practices and limited technological maturity in the Circular Economy space. Government support, regulatory pressure, and a strong push for operational efficiency continue to shape the sector's evolving investment landscape.



ASSOCHAM: The Knowledge Architect of India

About ASSOCHAM

The Associated Chambers of Commerce & Industry of India (ASSOCHAM) is the country's oldest apex chamber. It brings in actionable insights to strengthen the Indian ecosystem, leveraging its network of more than 4,50,000 members, of which MSMEs represent a large segment. With a strong presence in states, and key cities globally, ASSOCHAM also has more than 400 associations, federations and regional chambers in its fold.

Aligned with the vision of creating a New India, ASSOCHAM works as a conduit between the industry and the Government. The Chamber is an agile and forward-looking institution, leading various initiatives to enhance the global competitiveness of the Indian industry, while strengthening the domestic ecosystem.

With more than 100 national and regional sector councils, ASSOCHAM is an impactful representative of the Indian industry. These Councils are led by well-known industry leaders, academicians, economists and independent professionals. The Chamber focuses on aligning critical needs and interests of the industry with the growth aspirations of the nation.

ASSOCHAM is driving four strategic priorities - Sustainability, Empowerment, Entrepreneurship and Digitisation. The Chamber believes that affirmative action in these areas would help drive an inclusive and sustainable socio-economic growth for the country.

ASSOCHAM is working hand in hand with the government, regulators and national and international think tanks to contribute to the policy making process and share vital feedback on implementation of decisions of far-reaching consequences. In line with its focus on being future-ready, the Chamber is building a strong network of knowledge architects. Thus, ASSOCHAM is all set to redefine the dynamics of growth and development in the technology-driven 'Knowledge-Based Economy'. The Chamber aims to empower stakeholders in the Indian economy by inculcating knowledge that will be the catalyst of growth in the dynamic global environment.

The Chamber also supports civil society through citizenship programmes, to drive inclusive development. ASSOCHAM's member network leads initiatives in various segments such as empowerment, healthcare, education and skilling, hygiene, affirmative action, road safety, livelihood, life skills, sustainability, to name a few.



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About ASCELA

ASCELA is a professional service company providing advisory services to organisations to help them enhance efficiency by analysing market potential, competitive landscape, and operational, financial, economic, technical, and strategic challenges into Infrastructure and build environments.

About ASCELA Strategic Advisory – Mobility and Supply Chain

ASCELA's Strategic Advisory – Mobility and Supply Chain practice helps clients develop and leverage core competencies to deliver sustainable and tangible returns. We define strategies that help clients gain market share, enter new markets, regions, and products, improve the bottom line and reconfigure organisational/operational structures.

ASCELA is well placed to provide strategic inputs and analysis for assessing potential development opportunities in Infrastructure design and development space. Our in-depth knowledge of our focus transportation sectors, backed by intensive research and analysis of our client's specific contexts, helps define superior strategies, frameworks, and implementable action plans.

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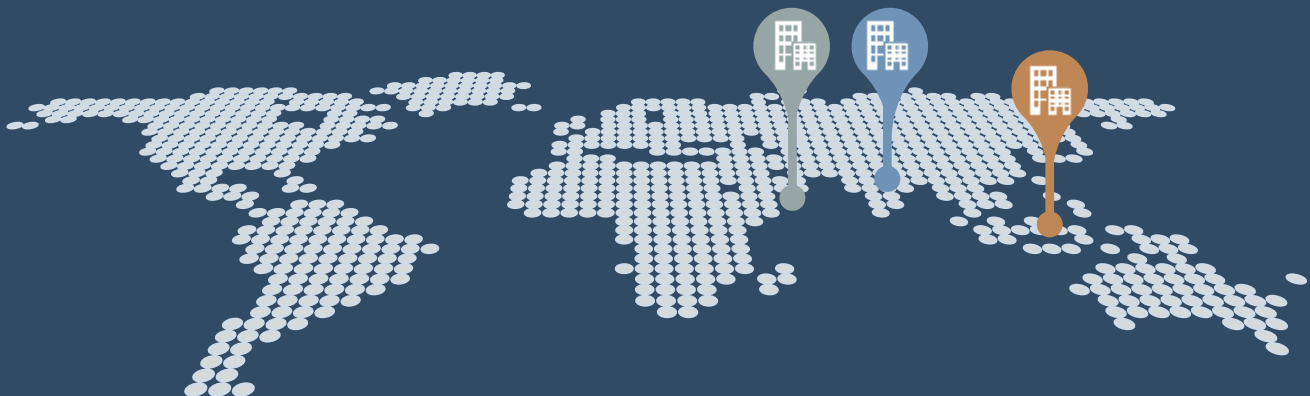
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