

**Concept Note: Logistics Efficiency
Enhancement Program (LEEP)
Development of Multimodal Logistics
Parks**

1 Background

Logistics costs in India are a higher proportion of the total value of goods as compared to developed nations –13-14% in 2015¹, compared to other developed economies (7 – 8%)¹. Further, this proportion has significantly increased over last 15 years, indicative of structural inefficiencies in logistics. A comparison across India and USA highlights the difference in road freight cost per ton per km (ptpk)—the cost in India (adjusting for Purchasing Power Parity) is INR 1.9 per ton per km², almost double that of USA.

In addition, the average speed of freight vehicles on Indian roads is about 25 - 30 km/hr⁽³⁾, which is 50 – 60% lower as compared to USA, adding to the freight cost. While factors like topography do play a role in daily distance covered, the magnitude of difference is indicative of the inefficiencies present in logistics movement in India. In addition, variability and unpredictability of time required for freight movement adds to the logistics problem. Moving across the same route has time variability as high as 15-20%³. Further, there is a ~50% variability in average speed across Indian states (with average speeds ranging from 37 – 40 km/hr in states like Gujarat and Rajasthan to 18 - 20 km/hr in states like Orissa and West Bengal), driven by differences in infrastructure and documentation complexity. This results in a need for higher inventory holding across the supply chain, in turn further increasing the logistics costs.

Higher logistics costs in India are primarily driven by five key factors

1.1 Unfavorable inter-modal mix

Road transport in India carries ~60% of total freight movement – a jump of 2x compared to 20 years ago⁴. Coastal movement and inland waterways are in its nascent stages and hence, the only viable alternative to road freight movement in the immediate term is to move freight by rail. In spite of lower freight cost of rail

¹ As per ISID report on Freight Logistics and Intermodal transportation, TCI - IIM C report on Operational Efficiency of freight transportation by road in India, 2014-15

² For a 20 MT Payload truck; Bottom up costing developed based on transporter interviews

³ For a non-express logistics player. Based on GPS data collected on different routes and transporter interviews

⁴ OECD Database, World Bank

compared to road (45% cheaper than road freight on a per ton per km basis)⁵, adoption of rail for freight movement has been limited, primarily driven by:

- Adverse pricing and rake booking policies adopted by the railways
- Lack of intermodal facilities to enable easy freight transfer between rail and road, needed to ensure seamless first mile and last mile connectivity.

1.2 Inefficient fleet mix

India's fleet mix is characterized by smaller, inefficient trucks. Historically, 16T and 25T GVW trucks have been the highest selling categories in India, as compared to China where 26-39.9T truck categories lead the market. Trucks with higher payload are more efficient than the trucks with lower payloads (Freight cost on a per ton per km basis for a 9 MT truck is INR 3.5⁶, 2.5x that for a 40 MT truck). Absence of logistics hubs to act as zones for freight consolidation and disaggregation results in higher point to point freight movement on lower sized vehicles, compared to more efficient line haul freight.

1.3 Under-developed material handling infrastructure

Warehousing landscape in India is characterized by the presence of large number of private/ unorganized warehouses, with an average size significantly lower than that of USA. Unorganized and fragmented nature of the industry has resulted in smaller sized warehouses with very low investment in this sector. Adverse banking policies (limitations in higher tenure loans for warehouses) and the indirect taxation on goods movement, restricts larger sized and consolidated warehousing with mechanized material handling facilities. Smaller sized unorganized warehouses with limited mechanization results in higher storage and handling losses, thereby increasing the supply chain costs.

1.4 Under-developed road infrastructure

Limited presence of 4 / 6 lane national highways adds to the freight transit times and hence the freight cost. In addition, inconsistent infrastructure along key routes adds to congestion on Indian roads. Also, India ranks 61 in the global road quality

⁵ Bottom up costing developed based on transporter interviews; Comparison is for average freight transportation cost by road accounting for cost differences between different truck sizes

⁶ Bottom up costing developed based on transporter interviews

competitiveness assessment by the World Economic Forum, indicating the need for better quality roads to ease movement across corridors.

1.5 Procedural complexities

Documentation and procedural complexities related to toll collections, inter-state freight movement and EXIM impact the time taken for freight movement in India, leading to a time loss of 15% of the trip time⁷ on key freight routes, hence adversely impacting the freight cost.

Developing multimodal logistics parks will address three of the aforementioned five issues viz., unfavorable modal mix, inefficient fleet mix and under-developed material handling infrastructure. Impact of multimodal logistics parks on India's freight transportation have been detailed in the subsequent sections.

2Proposal

Development of multimodal logistics park is proposed to improve the logistics efficiency of the country, enabling reduction in logistics costs. It is proposed to develop logistics parks in 15 cities with highest freight movement (covering more than 40% of the total road freight movement in India)⁸ in Phase I of the program. Logistics parks in the next 20 nodes (accounting for ~20% of the total road freight movement in India) can potentially be developed in the next phase. Details of potential locations for Phase I of the program are provided in Annexure 1.

These multimodal logistics parks are expected to serve four key functionalities as highlighted in the figure below

⁷ Based on truck GPS data and transporter interviews; Includes only the Engine time and doesn't include the driver rest time

⁸Planning Commission – RITES Total Transport System Study(2008) updated for FY15 and projected for FY 25

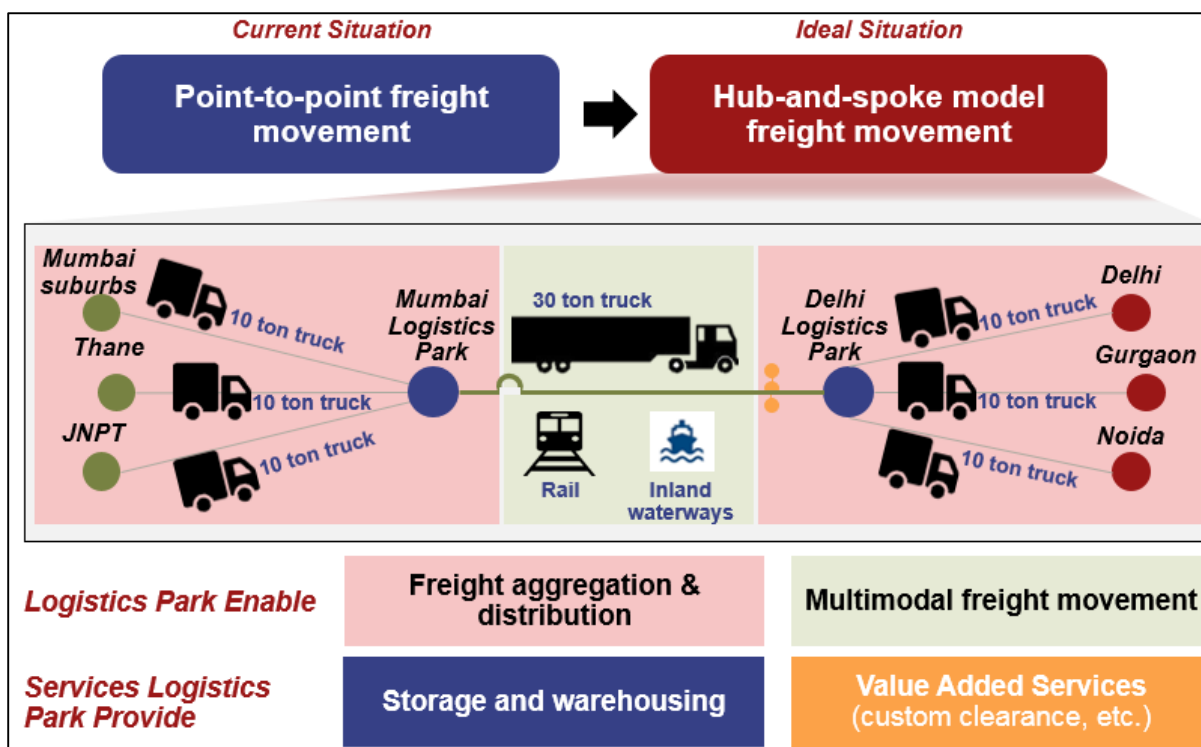


Figure 1: Key functionalities of logistics parks

2.1 Freight aggregation and distribution

Logistics parks act as hubs for freight movement enabling freight aggregation and distribution. Logistics parks will typically be developed outside the zones of urban agglomeration. Freight from production zones will be shipped to nearby logistics parks, where it will be aggregated and shipped to a logistics park near the consumption zone on a larger sized vehicle. Freight arriving at the destination logistics park will be disaggregated and distributed to the consumption zones inside the city. Logistics parks acting as freight aggregation and distribution hubs enable line haul freight movement (between hubs) on larger sized trucks and thereby aiding in reduction of freight transportation cost.

2.2 Multimodal freight transportation

Logistics parks with road and rail connectivity enable multimodal freight transportation. This aids freight transportation on line haul (between hubs) to shift from road to rail and waterways (wherever possible), thereby reducing the freight cost. In addition, completion of the proposed rail dedicated freight corridors (Delhi to Mumbai, Ludhiana to Kolkata) and focus on developing Coastal and Inland

Waterways will accelerate adoption of rail and waterways for freight movement respectively.

2.3 Storage and Warehousing

Logistics parks provide modern mechanized warehousing space, satisfying the special requirements of different commodity groups – For example, Logistics parks will provide cold storage facilities required for perishables, racked warehousing space for storing palletizable cargo (Eg. Parcel, apparel, etc.). With higher proportion of mechanized material handling, warehousing in logistics parks will reduce storing and handling losses.

2.4 Value added services

Logistics parks also provide value added services such as customs clearance with bonded storage yards, warehousing management services, etc. Customs clearance at logistics parks enable the waiting time reduction at the ports and thereby reduce the freight transportation cost and time for export cargo.

With the aforementioned functionalities, logistics parks will be attractive for industries and commodities with a higher proportion of Business to Consumer (B2C) freight movement, which needs freight aggregation and distribution. Details of adoption of logistics parks for different commodities based on attractiveness of value proposition provided by logistics parks are highlighted in Annexure 2.

3 Expected benefits and costs

3.1 Expected benefits

Logistics parks drive reduction in overall freight cost by enabling freight transportation on higher sized trucks and rail. In addition, logistics parks enable reduction in vehicular pollution and congestion in key cities.

Logistics parks are expected to provide four key benefits as summarized below

- i. Transportation cost reduction:** Logistics parks will drive ~10% reduction in transportation cost for the top 15 nodes by enabling freight movement on higher sized trucks and rail. Larger sized trucks have ~60% lower freight cost⁹ on a per

⁹ Bottom up costing developed based on transporter interviews

ton per km basis compared to lower sized trucks. Further, freight cost by rail is ~45% lower on a per ton per km basis compared to average road freight cost.¹⁰

- ii. Pollution reduction:** Increased freight movement on higher sized trucks and rail will enable in ~12% reduction in CO₂ emissions for the top 15 nodes. Higher sized vehicles, on account of lower fuel consumption per ton per km, will result in lower CO₂ emissions. Further, freight movement by rail has ~ 65% lower CO₂ emissions compared to road freight on a per ton per km basis. Similarly, there will be a corresponding reduction in PM, CO and HC+NO_x emissions, driven by increased freight movement on higher sized vehicles and rail.
- iii. Congestion reduction:** Increased freight movement on higher sized trucks and rail will result in ~20% reduction in freight vehicles catering to the demands of the top 15 nodes. In addition, shifting warehouses and wholesale markets, currently being operated inside the city, to logistics parks would free up urban spaces, enabling congestion reduction.
- iv. Warehousing cost reduction:** Shifting warehouses, currently being operated inside city limits, to logistics parks will enable reduction in warehousing cost, driven by lower rentals in logistics parks situated outside the city limits. In addition, modern and mechanized storage solutions provided by logistics parks will enable reduction in storage and handling losses.

3.2 Expected costs

Development of logistics parks in the top 15 nodes will require capital investment of ~ INR 33,000 crores for land acquisition, construction of storage space and development of allied infrastructure. A broad estimate of capital requirement for land acquisition, construction of storage space and development of allied infrastructure are provided below

¹⁰ Comparison is for average freight transportation cost by road accounting for cost differences between different truck sizes

i. Land acquisition: A total of ~4,800 acres¹¹ is needed for development of proposed 15 multimodal logistics parks, including land for storage space, allied infrastructure, trunk infrastructure and land for future expansion. A total cost of ~INR 10,700 crores will be needed for land acquisition.

ii. Development of storage area: ~2,000 acres (~ 87 Mnsq.ft.) of storage space will be developed in the proposed 15 logistics parks. This will include open storage required for handling bulk commodities, closed storage required for handling break bulk commodities (primarily FMCG and whitegoods) and specialized storage required for handling perishables. A total cost of ~ INR 10,400¹² crores will be required for development of storage space.

iii. Development of allied infrastructure: Development of allied infrastructure including intermodal area, vehicle parking and service area, commercial space, restaurants, driver resting areas, fuel stations, etc. in the proposed logistics parks will require ~1,600 acres (out of the total 4,800 acres). In addition, ~1,200 acres will be allotted for developing trunk infrastructure, landscaping and land allocation for future development. Connectivity to the adjacent National Highway and rail line needs to be established. A total cost of ~ INR 11,800 crores will be required for development of allied infrastructure and establishing connectivity to nearest National Highway and rail line.

Details of the cost estimates for the 15 proposed logistics parks are provided in Annexure 3

¹¹ Bottom up estimate for storage areas; Benchmarks from the Detailed Project Report prepared for the Multimodal logistics park at Rewari, by DMICDC.

¹² Land rates based on information published in Government sources and other real estate players; Cost of development based on benchmarks from DMICDC.

4 Potential financing mechanism

A multi-modal company (MMC) is envisaged to manage development of Logistics parks. The MMC is expected to be under the aegis of Ministry of Road Transport and Highways (MoRTH), and will have varying representation and equity from National Highways Authority of India (NHAI), Indian Railways (IR), Airports Authority of India (AAI), Inland Waterways Authority of India (IWAI) and Indian Ports Association (IPA). The MMC will also be responsible for institutionalizing partnerships with other Government entities, as required (such as DFCCIL, DMICDC, AKIC, CBIC, PCPIR, CONCOR¹³, etc.). For each of the parks, the development can be done through two potential modes:

- i. **Land ownership resting with government** – In this case, the MMC will form a joint venture (JV) with the state government – this JV will be responsible for earmarking and purchasing the land for developing the logistics park, as well as for providing the trunk infrastructure (road connectivity, power, sewage, water, etc.). This JV will form SPV with a private players (PPP) for development and construction of the park – the private players are expected to be responsible for the development & construction and will need to provide for funding of the same through equity/ debt – the guidelines for debt vs equity will be provided by the MMC to ensure sufficient focus from the players.
- ii. **Land ownership resting with private players** – In cases where large land owners are interested in setting up a logistics park, an SPV between the MMC and land owner (in select cases, SPV may also include state government) can be formed. The private player will be responsible for the equity investment in form of land, while the MMC (including state government, if involved) will take charge of development of trunk infrastructure (road connectivity, power, sewage, water, etc.). The private player may be allowed to sell/ develop & lease a percentage of land parcel in return for his equity investment – the rest of the

¹³ DMICDC – Delhi Mumbai Industrial Corridor Development Corporation, AKIC – Amritsar Kolkata Industrial Corridor, CBIC – Chennai Bangalore Industrial Corridor, DFCCIL – Dedicated Freight Corridor Corporation of India Limited, PCPIR – Petroleum, Chemicals and Petrochemicals Investment Region

logistics park development can be developed through another SPV, formed with other private players.

5 Key Success Factors

Logistics parks will need to be supported by investments in allied road and rail infrastructure and complementary policy to improve the business viability and to ensure realization of projected benefits. A list of key success factors are highlighted below

- iii. Connectivity to adjacent nodes:** Ability to cater to the demand of adjacent nodes will improve the business viability of proposed logistics parks. For instance, the proposed logistics park in Delhi-NCR will need to cater to the freight demand of adjacent district such as Sonipat, in addition to catering to the demand of Delhi, Gurgaon, Faridabad, Ghaziabad and Noida. It will be critical to ensure seamless connectivity from the logistics park to these adjacent nodes.
- iv. Non competing infrastructure:** Government can potentially restrict approvals for establishing rail connectivity and customs clearance posts in logistics parks/ similar infrastructure in the vicinity of proposed logistics parks, to improve the viability and attractiveness of proposed logistics parks. In addition, strong coordination is essential across multiple government entities developing similar infrastructure –For Eg. Delhi Mumbai Industrial Development Corporation (DMICDC), Dedicated Freight Corridor Corporation of India Limited (DFCCIL) and CONCOR.
- v. Competent service providers:** Ability to attract world class 3PL service providers for developing and operating the logistics parks will be critical to ensure success of the logistics parks. High service levels will be essential to ensure higher adoption of logistics parks amongst end users.
- vi. Complementary policies:** Existing policies on multimodal freight movement (Multimodal transport of Goods Act, 1993) cater primarily to Export and Import Cargo. There is no comprehensive policy to govern domestic movement of

freight on multiple modes. For multi-modal transportation of domestic freight, service providers are governed by policies and regulations of respective transportation modes, which may differ across modes. The requirements for qualification as Multimodal transport operators in the current act are very stringent (requirement of global presence in at least 2 countries, minimum turnover of INR 50 Lakhs, etc.)¹⁴ and would exclude domestic players from operating multimodal freight lines. In addition, financing for developing warehouses and logistics parks are not in line with other infrastructure products, restricting the tenure of loans for development of warehousing infrastructure. A comprehensive policy governing multi modal freight transportation for domestic freight movement needs to be developed.

vii. Early involvement of all stakeholders: Early involvement and alignment of all relevant stakeholders will be critical to ensure faster development of logistics parks. Alignment with Ministry of Railways is critical to ensure multi-modality at logistics parks. In addition, coordination with Central Board of Customs and Excise will be essential for developing Customs clearance posts within logistics parks. Also, early alignment with other government agencies such as DMICDC, AKIC, CBIC, PCPIR, DFCCIL and CONCOR¹⁵ will be essential to ensure that infrastructure is being established in alignment with the needs of relevant stakeholders. In addition, inputs from end users – 3PL service providers, user industries will be essential to finalize the design of the multimodal logistics parks.

6 Next Steps

A detailed technical assessment is needed to finalize the investments and business of logistics parks once the land parcels are identified. In addition, a separate entity to focus on multimodal freight movement with involvement from Ministry of Railways and other government entities focused on infrastructure (DMICDC, AKIC, CBIC etc.) will

¹⁴ Multimodal Transport of Goods Act, 1993

¹⁵ DMICDC – Delhi Mumbai Industrial Corridor Development Corporation, AKIC – Amritsar Kolkata Industrial Corridor, CBIC – Chennai Bangalore Industrial Corridor, DFCCIL – Dedicated Freight Corridor Corporation of India Limited, PCPIR – Petroleum, Chemicals and Petrochemicals Investment Region

ensure focus on the initiatives. A list of next steps identified have been highlighted below

- i. Setting up of a multimodal company:** Setting up a multimodal company with participation from Ministry of Road Transportation and Highways (MoRTH), Ministry of Railways and Ministry of Shipping is needed to ensure focus and accountability. In addition, the company will be responsible for institutionalizing partnerships with other Government entities under the aegis of different ministries – DFCCIL, DMICDC, AKIC, CBIC, PCPIR, CONCOR, etc.
- ii. Land parcel identification for development of logistics parks:** Exact land parcels need to be identified for development of the proposed 15 multimodal logistics parks in coordination with the State Governments. In addition, the land acquisition model needs to be finalized for the identified land parcels.
- iii. Finalization of business case:** A detailed financial assessment needs to be conducted to refine the cost estimates and the business potential of the proposed logistics parks, once the land parcels are identified.
- iv. Finalization of business model:** Ownership and operating model options (Government owned and operated vs PPP vs Private ownership) needs to be finalized based on the technical assessment and business case.

Annexure 1: Locations identified for logistics parks

The following nodes have been identified for development of multimodal logistics parks in the Phase 1 of the program

S No	Location
1	Delhi – NCR (Delhi, Gurgaon, Ghaziabad, Faridabad, Noida)
2	Mumbai (Mumbai, Mumbai Suburbs, JNPT, Mumbai Port, Raigad District)
3	North Gujarat (Ahmedabad and Vadodara)
4	Hyderabad
5	South Gujarat (Surat and Bharuch)
6	South Punjab (Ludhiana, Sangrur, Patiala)
7	North Punjab (Amritsar, Jalandhar, Gurudaspur)
8	Jaipur
9	Kandla
10	Bangalore
11	Pune
12	Vijayawada
13	Cochin
14	Chennai
15	Nagpur

Annexure 2: Attractiveness of value proposition of logistics parks for different commodities

Details of adoption of logistics parks for different commodities based on attractiveness of value proposition provided by logistics parks are listed below

S No	Commodities	Industry	Commodity Nature	Adoption Level
1	Containers	Containers	Containers	High
2	Provisions & Household Goods	FMCG	Break Bulk	High
3	Edible Oils	FMCG	Break Bulk	High
4	Milk & Products	Other agriculture	Perishables	High
5	Parcels, Misc.	Other manufactured products	Break Bulk	High
6	Cement & Structures	Construction	Break Bulk	Medium
7	Rice	Grain	Dry Bulk	Medium
8	Wheat	Grain	Dry Bulk	Medium
9	Grams & Pulses	Grain	Dry Bulk	Medium
10	Fruits & Vegetables	Other agriculture	Perishables	Medium
11	Cotton	Other agriculture	Break Bulk	Medium
12	Wood/ Plywood	Other manufactured products	Break Bulk	Medium
13	Paper and Products	Other manufactured products	Break Bulk	Medium
14	Electrical Goods	Other manufactured products	Break Bulk	Medium
15	Chemicals	Chemicals	Break Bulk	Low
16	Building Material	Construction	Dry Bulk	Low
17	Granite/ Marbles	Construction	Dry Bulk	Low
18	Iron & Steel	Metal industries	Break Bulk	Low
19	Heavy Machinery	Other manufactured products	Break Bulk	Low
20	Coal	Energy	Dry Bulk	Nil
21	POL	Energy	Liquid Bulk	Nil
22	Iron Ore	Metal industries	Dry Bulk	Nil

Annexure 3: Details of cost estimates for proposed 15 multimodal logistics parks

Details of land requirement and for the proposed logistics parks is highlighted below

S.No.	Logistics Park Location	Land requirement (acre)	Area for storage(acre)	Area for allied infrastructure (acre)	Area for future expansion and landscaping (acre)
1	Delhi - NCR	856	357	285	214
2	Mumbai	813	339	271	203
3	North Gujarat	488	203	163	122
4	Hyderabad	295	123	98	74
5	South Gujarat	279	116	93	70
6	South Punjab	226	94	75	57
7	North Punjab	267	111	89	67
8	Jaipur	197	82	66	49
9	Kandla	305	127	102	76
10	Bangalore	125	52	42	31
11	Pune	171	71	57	43
12	Vijayawada	203	84	68	51
13	Cochin	264	110	88	66
14	Chennai	153	64	51	38
15	Nagpur	174	72	58	43
Total (acres)		4,816	2,006	1,605	1,204

Details of project cost required for land acquisition and development of proposed logistics parks is listed below

S.No.	Logistics Park Location	Total Cost of Logistics Park (INR Cr)	Land acquisition cost (INR Cr)	Development of storage Areas (INR Cr)	Development of allied infrastructure (INR Cr)
1	Delhi - NCR	6,321	3,118	1,985	1,218
2	Mumbai	5,818	3,251	1,395	1,172
3	North Gujarat	2,668	732	1,105	831
4	Hyderabad	2,036	502	706	828
5	South Gujarat	1,579	335	632	611
6	South Punjab	1,505	221	529	755
7	North Punjab	1,704	261	644	799
8	Jaipur	1,344	375	443	525
9	Kandla	1,791	370	582	838
10	Bangalore	1,137	188	300	649
11	Pune	1,381	290	394	697
12	Vijayawada	1,372	147	494	731
13	Cochin	1,488	320	372	795
14	Chennai	1,419	382	359	678
15	Nagpur	1,292	174	418	700
Total		32,853	10,665	10,359	11,828