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Changing Landscape of Logistics in India with Multimodal Logistics Parks

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Introduction

Logistics costs in India account for a higher proportion of total value of goods compared to other developed countries. According to the Ministry of Road Transportation and Highways (MoRTH), it was around 13-14% in 2015 while for other developed countries it was approximately 7-8%.Another indicator of higher logistics cost is the difference in road freight cost per ton per kilometre. For India, the cost is around INR 1.9 per ton per km (almost double that of the cost incurred in the US). Lower speed of freight movement also increases the freight cost. In India, the average speed of freight movement, according to MoRTH, is around 25-30 kmph which is around 60-70% lower than that of the US. Thus, overall logistics efficiency in India is affected due to multi-party coordination delays and infrastructure challenges. To address this challenge, India is developing Multimodal Logistics Parks (MMLPs) along with other initiatives.

MMLP refers to a freight-handling facility encompassing a minimum area of 100 acres (40.5 hectares), with various modes of transport access, and comprising mechanized warehouses, specialized storage solutions such as cold storage, facilities for mechanized material handling and inter-modal transfer container terminals, and bulk and break-bulk cargo terminals (*Concept Note- LEEP*, n.d.). It is a type of Logistics Park where various value-added services are rendered in addition to rail/road-based transportation. The purpose of MMLP is to reduce coordination among different parties during transfer of cargo from one mode to another.

Various factors that affect the cost of logistics are (*Concept Note- LEEP*, n.d.):

1. Unfavourable inter-modal mix- The proportion of road transportation in freight movement is around 60% (OECD database, 2014). Inland waterways have yet to evolve to scale. Therefore, another alternative is rail transportation which is less expensive than road transportation. However, due to lack of inter-modal facilities, rail transportation has seen limited usage.
2. Underdeveloped material handling infrastructure: Presence of large number of small warehouses in the unorganized sector leads to their inefficient utilization. This results in

poor investment in the infrastructure and the vicious cycle continues. Due to lack of appropriate equipment, the handling loss of the material is also high in these warehouses.

3. Inefficient fleet mix: India's fleet mix is primarily composed of smaller trucks which makes freight movement more inefficient. Trucks with a higher payload capacity are more efficient as per ton per km cost is lower. The absence of freight consolidation and break-bulk facilities have resulted in use of smaller sized trucks and point to point movement of goods. Multimodal logistics parks aim at addressing the above-mentioned issues.

According to MoRTH, the multimodal logistics park will serve the following key functionalities:

a) Freight Aggregation and distribution (Hub and Spoke Model): This will enable freight consolidation and distribution. The logistic park near the destination will serve as a break bulk station for further downstream distribution to consumption points, leading to further reduction of overall logistics costs.
b) Multimodal freight movement: Rail and road connectivity in a logistics park will enable inter-modal transfer. The line haul (between the hubs) can be on the rail or waterways. Dedicated freight corridors and development of inland waterways will further increase the usage of these modes of transport.

Services provided by Logistics Parks include:

a) Storage and warehousing: Logistics parks will provide facilities for efficient handling of the cargo. The facilities include cold storage for the perishable items, racked warehousing space for palletized cargo and modern material handling equipment such as ASRS. This will reduce the handling loss of the materials.
b) Value added Service: Services such as speedy custom clearances and warehouse management services can be provided. The waiting time reduction will help in improving the turnaround time. This will lower the overall cost of logistics.

In the current scenario, when COVID-19 pandemic has thrown supply chains across the world off the charts, logistics efficiency and cost are extremely significant (*The Impact of COVID-19 on Logistics*, 2021). The aggregation that takes place in logistics parks helps in costs reduction and the bulk material handling with superior equipment reduces the wastage in the value chain.

According to the Asian Development Bank's report (Asian Development Bank et al., 2020), MMLPs have following advantages: (a) Provide smooth multimodal freight transfer, (b) Specialised storage (for e.g., Cold Storages etc.), (c) Value added services such as custom clearances, bonded storage yard etc., and (d) Late-stage manufacturing activities.

MMLPs can also increase the efficiency of inland container depots (ICDs) and container freight stations (Asian Development Bank et al., 2020). According to the MoRTH, logistics parks are expected to reduce the transportation cost of the top 15 nodes by ~10% (*Concept Note- LEEP*, n.d.).

The automation increases the efficiency of the warehouses and increases the throughput. In recent years, the quantum of warehousing space added per year has increased due to several factors. Some of these are:

- Simplification of tax structure by the introduction of GST which enabled the smooth movement of goods across the state borders.
- Several developers backed by foreign institutional investors developed large warehousing spaces, which ultimately proved to be profitable rental investments.

The demand for large warehouses is also expected to go up in the near future due to a number of factors, namely:

- Change in building construction codes that have facilitated the growth of large warehouses (i.e. building height increased from 12 m to 15 m, increase in floor load, etc.).

- Rising automation in warehouses as evidenced by growing usage of sorting machines, automatic packaging machines and conveyors inside the warehouse. Ecommerce companies like Amazon and Flipkart are known for their automated warehouses.

This paper aims to study the concept of MMLPs and recent steps that have been taken to achieve the objective of improving the efficiency of logistics in India. It also elaborates on various efforts by Government to promote the establishment of MMLPs. The case study of a recently proposed MMLP has been discussed and analysed taking into consideration key success factors crucial for MMLP. The paper also focuses on the policy formulation by State Governments with respect to Integrated Logistics Park (ILP) and Logistics Park (LP). The challenges and opportunities that lies in the domain of MMLP has been elaborated and some suggestions have been made regarding the same in the later part of the paper. The next section reviews the existing literature on definition of MMLPs.

Definitions of MMLPs

Logistics parks play an important role in the economy of a country. With ongoing focus on the digitalization, the logistics sector has potential of USD 4 Trillion of value ('Delivering Change', 2016). Multimodal logistics (MML) is one of the key focus areas for improving the efficiency of the logistics sector, rationalize its cost and enhance competitiveness (*MMLP: Reshaping India's Logistics Sector*, 2021).

Definitions of Multimodal logistics/transport

S. No.	Organization/Author	Definition
1.	The Multimodal Transportation of Goods	"Multimodal transportation" means carriage of goods, by at least two different modes of transport under a multimodal transport

	Act, 1993 (MMTG Act, 1993), Ministry of Law, Justice and Company Affairs, Government of India	contract, from the place of acceptance of the goods in India to a place of delivery of the goods outside India.
2.	(EURSELS, 2018)	"Multimodality" in the transport sector, or "multimodal transport" refers to the use of different modes (or means) of transport on the same journey.
3.	(Tsamboulas & Kapros, 2000)	Defines intermodal transportation as the movement of goods in one and the same loading unit or vehicle, which uses successively several modes of transportation without the handling of the goods themselves in changing modes ('The Economic and Social Committee and the Committee of the Regions', 1997)
4.	(Caris et al., 2014)	Intermodal transport may be interpreted as a chain of actors who supply a transport service.
5.	(Bontekoning et al., 2004a)	Multimodal transport is defined as the movement of products from origin to destination using a mixture of various transportation modes such as air, ocean lines, barge, rail, and truck (Min, 1991).

(Dua & Sinha, 2015) carried out a literature review in the field of multimodal transportation from various databases and government reports. Key findings from the paper were that they categorized the research into six broad themes and mapped existing literature within those themes.

(Southworth & Peterson, 2000) studied and described the development and application of a multimodal and transcontinental movement of freight. Researchers have also pointed out that multimodal logistics as a new emerging field and the leader in this area is Europe (Bontekoning et al., 2004b). (Eng-Larsson & Kohn, 2012) studied intermodal transportation as a means to "green" logistics from a shipper's perspective. Based on a study of six companies selling non-bulk and fast-moving goods, they found that contextual factors indicated in carrier focused literature or decisions made by the shipping company's management don't always predict the success of modal shift. Although, various common denominators were present in successful cases such as low demand volatility and centralized demand control.

(Elbert et al., 2020) defined multimodal transportation as combination of different modes of transport which can prove to be cost efficient and environment friendly. (SteadieSeifi, 2014)analysed different research papers on multimodal transportation, including deterministic models, stochastic models, and heuristics used in the research papers post 2005 and presented an elaborate future scope of research. According to (Rondinelli & Berry, 2000), economic globalization, speed to market product delivery, agile manufacturing and integrated supply chain management are the major factors major factors driving increased demand for intermodal logistics.

A recent study by (*Kajal Sharda and Deepankar Sinha, Discussion Paper on MMLP*, n.d.) assessed the possibility of establishing four interlinked MMLPs in the BBIN (Bangladesh, Bhutan, India and Nepal) region to explore the possibility of trade enhancement among the member countries through waterways. They were able to narrow it down to four potential locations for setting up of these MMLPs. This was based on the strategic advantage that these locations possess. (Caris et al., 2014) also identified various economic opportunities that could be achieved by integration of inland waterways to intermodal supply chains.

(Wenwen et al., 2020) evaluated the AS-IS condition of the logistics parks in Germany and China, and found that government participation is a sine qua non for the development of logistics parks. Other researchers have also come to a similar conclusion. For instance, a study on the evolution of intermodality in Italy found that the role of port authorities played a major role in accelerating adoption of intermodal transport (Baccelli & Morino, 2020). The researchers concluded that integrated cooperation between port authorities and Governments was essential.

The above studies indicate the importance of the role played by the government and its policies in promoting the logistics infrastructure. In India, the Union Government as well as different state government have implemented policies for improving the efficiency of logistics sector and reducing associated costs which currently stands at ~13% of the GDP (*Transforming the Logistics Sector in India*, 2021). These policies have helped to improve the ranking of India in Logistics Performance Index from 47th rank to 44th rank (*Global Rankings 2018 | Logistics Performance Index*, n.d.). This paper focuses on multimodal logistics parks which have the potential to transform the logistics scenario in India. They can lead to reduction in transportation costs, CO_2 emissions and congestion, and as well as lead to development of infrastructure in the hinterland(*MMLP: Reshaping India's Logistics Sector*, 2021).

In the following sections, we discuss the case of the newly proposed MMLP at Jogighopa, Assam and key success parameters associated with MMLPs. This paper will further explore various policy measures by state governments with special mention of Maharashtra's logistics policy.

LPs in India: A case for future ready logistics

Evolution of Warehousing

The evolution of warehouses in India is an ongoing journey. Earlier, the word "Godown" brought to mind a picture of a building located far from city centres where safety was a concern. The warehouses were not as developed as they are today. This was due to multiple factors. In

post-independence era, India was a protected economy until the late 1980s with restrictions on imports. The liberalization of the economy took place in 1990-91, and investments in the logistics sector were not limited.

Most of the industries, particularly core industries such as coal, iron and steel, had low levels of domestic consumption. Disposable income per capita was also low. Therefore, most of the factories would store their products at their production premises in areas designated as shipment yards, storage rooms etc. These companies were not shipping goods by anticipating demands ahead of time. Therefore, the demand for warehouses were low.

As the disposable income per capita started increasing, demand for goods increased suitably. Moreover, companies also realized that if they started shipping quickly to customers, they could generate more revenue.

The retail sector in India was also picking up as the economy opened up. These factors led to rise in the consumption demand for the various goods. Therefore, the demand for warehousing also picked up.

The evolution progressed and e-commerce saw an accelerated growth post 2014-15. Various factors, including 100% foreign direct investment allowed in the warehousing sector, gave a fillip to the e-commerce sector. Companies such as Amazon, Flipkart and FirstCry etc. now have fulfilment centres which can ship out thousands of packages per hour.

SPV structure for MMLP

MMLPs need to be evolved as a “Hub and Spoke” model to reduce costs and to strategically integrate highway projects and other connectivity initiatives likes inland waterways, railways, etc. in tandem with the freight ecosystem.

According to the management model approved by MoRTH, a Special Purpose Vehicle needs to be created between the Central Govt, State Govt, and other stakeholders. SPV, also known as 'variable interest entities' (VIE), 'Special purpose entities' (SPE), or 'finance vehicle corporation' (FVC), is a legal entity (typically a limited partnership or a limited company) designed to achieve narrow, particular, or transitory goals (*Maurya & Biswas, 2019*) (*UNECE*, 2015).The SPVs shall take up development of MMLP through the Concessionaire on PPP Mode. The central Government and its agencies shall facilitate external trunk rail and road connectivity infrastructure. The return shall be shared among SPV constituents in proportion to the equity contribution (see Figure 1).

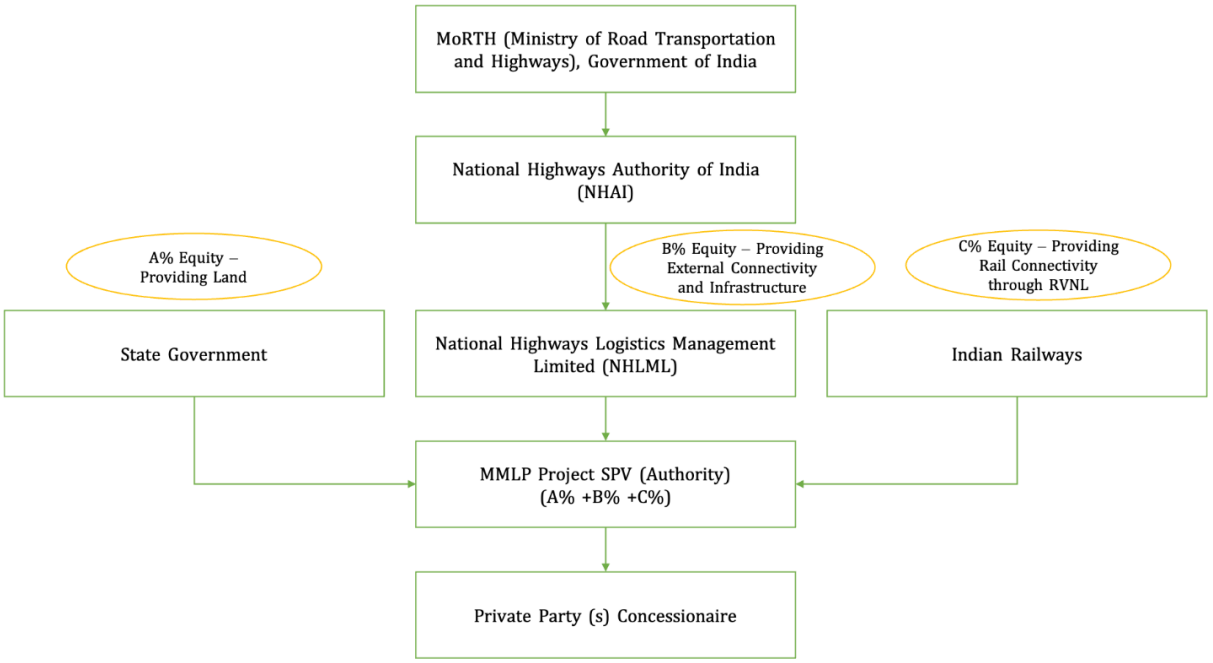

Figure 1: PPP model for developing an MMLP

1. Authority (MMLP Project SPV, which comprises of state government, NHLML, Indian Railways) shall grant concession to Concessionaire (Private Party individually or as a consortium) for a period of 30 years on Design Build Finance Operate and transfer DBFOT basis, 2. Authority shall provide land,

external infrastructure, road, rail, water, and power, 3. The bid parameter shall be a percentage of revenue share, and 4. Concessionaire shall provide spaces and services to different units.

Layout and Design Parameters

According to an estimate by Ministry of Road Transport and Highways (MoRTH), the LPs will aid the reduction of transportation cost by acting as an enabler for freight movement on bigger trucks. This would also help in lowering the carbon dioxide emissions and making cities less congested. Also, as per MoRTH, the MMLPs will serve five functions such as multimodal freight transport, freight aggregation and distribution, integrated storage and warehousing, information technology and support and other value-added services (*Concept Note Logistics Efficiency (LEEP)*, n.d.). The following facilities will aid in executing the above-mentioned functions.

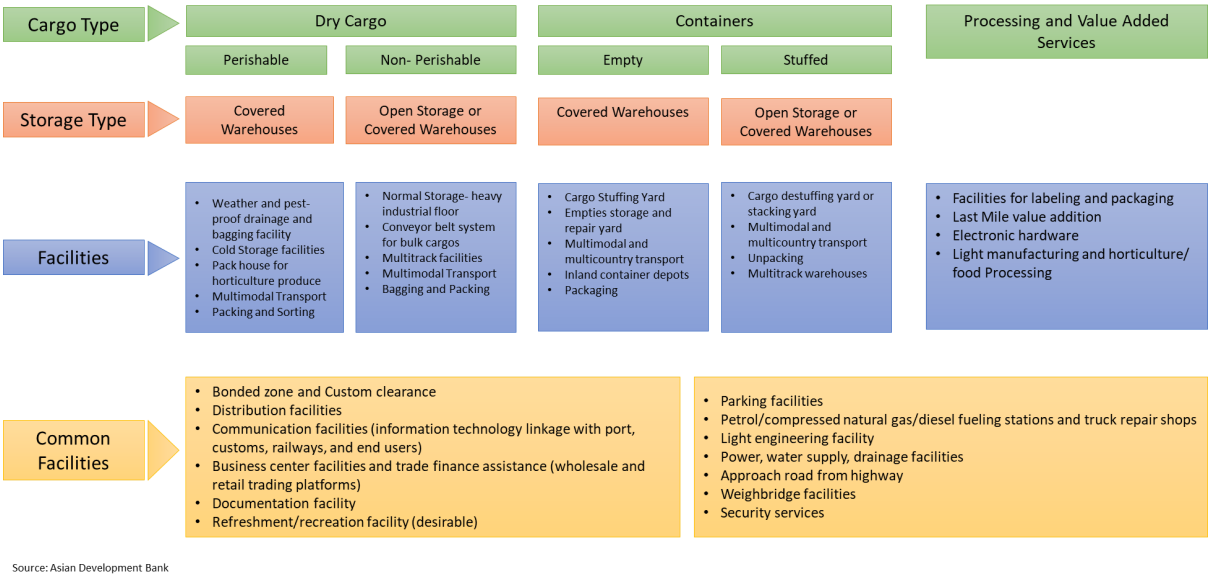

Figure 2: Key Facilities in a Multimodal Logistics Park by Cargo type

Decision Parameters for adding warehousing space or Logistics Park

A logistics park is a large parcel of land that houses multiple warehouses. It addresses all the concerns of an operations manager such as security (to minimise pilferages), ecosystem for trucks to conduct milk runs, power supply, water supply, compliant with all the regulatory approvals and avenues for future investments. When estimated demand for a logistics park, a time horizon of 3 years to 5 years is usually taken into consideration. This demand data is provided by the prominent customers (e-commerce, pharmaceutical, FMCG companies) who are associated with the developer. Another key parameter is legal evaluation of the land. The parcel of land should be aggregated and not scattered, in addition to having clear title. Technical feasibility of the project is also assessed. Different technical specifications such as soil conditions, terrain of the land, potential depth of the foundation etc. are assessed. Connectivity is also a major decision parameter. Connection to the road, last mile access etc. are being evaluated. The shape of the land should also be such that that maximum FSI (Floor space index) can be attained. Floor Quality is also a factor, as most customers require super flat floors since even 1-2 mm difference could potentially cause an accident.

Customers want the warehouses leased by them to be future ready. Logistics parks give the customer flexibility to buy space today and lock the other warehousing space in the same logistics park for investment in the future, thus enabling efficiencies of scale.

According to MoRTH, MMLPs will improve the efficiency of logistics sector pan-India and reduce costs (*Concept Note- LEEP*, n.d.). Integrated logistics hubs have been developed across the globe and these hubs have multimodal terminals, logistics and warehousing facilities and sometimes include the last leg of manufacturing activities which add value to the products. These logistics parks play a crucial role in national logistics network of the countries such as US (Kansas City Inter-Model), Canada, Russia and European Union (Euro Center, France) (*MMLP: Reshaping India's Logistics Sector*, 2021).

The development of MMLPs is essential for capacity enhancement for economic growth, reducing wastage and improving efficiency, cost reduction, sustainability.

Globalization has pushed many firms to adapt agile business practices, just in time inventory, enhanced supply chain visibility, etc. Companies want to minimise their logistics cost and inventory holding cost while catering to a very high service level. This has led to many third-party players who specialize in serving such demands. By aggregating various logistics facilities in a single location, MMLPs increase the asset utilization for material handling equipment and storage facilities. Multimodality enables logistics managers to take advantage of different modes of transport and decrease transportation costs.

Keeping in view the overall economic benefits of MMLPs, MoRTH has planned to develop a MMLP at Jogighopa in Assam (Sood, 2018). The following case explores the opportunities the MMLP at Jogighopa will provide and also the potential challenges it will encounter.

Case Study of Jogighopa Multimodal Logistics Park

The Jogighopa Multimodal logistics park is one the MMLPs planned under the Bharatmala project of Government of India. Jogighopa is a town located on the northern bank of Brahmaputra river (Bongaigaon district) (‘MMLP Jogighopa’, 2021). The proposed MMLP will boost the trade activities in the North Eastern states. It will also enhance the prospects of usage of inland waterways as it will have a waterway terminal which enable traders to establish the waterway trade routes with Bangladesh (India’s First Multimodal Logistics Park in Assam to Create 20 Lakh Jobs, 2020).

The location of Jogighopa was selected based on detailed assessment by Asian Development Bank (ADB). Assam, the state where Jogighopa MMLP is proposed to be located, is the economic powerhouse in North Eastern region of India and also a major consumption hub (Mitra et al., 2020). Guwahati, a major city of Assam, is located at a distance of around 160 kms from the proposed site of MMLP (see Figure 3). The administrative centre of the state, Dispur, is located nearby.

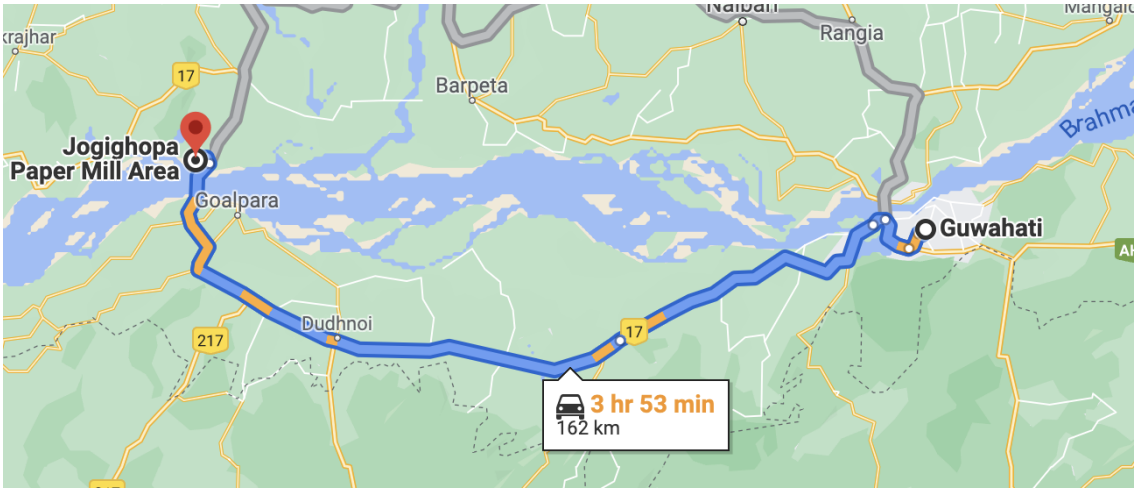

Figure 3: Illustration of route between Guwahati, Assam to Jogighopa paper mill area, Assam (*Guwahati, Assam to Jogighopa Paper Mill Area, Assam- Google Maps*, n.d.)

The proposed site is also not very far from Nepal and Bhutan. Phuentsholing, a major trade hub between India and Bhutan, is located at a distance of 175 kms from the proposed site (*Kajal Sharda and Deepankar Sinha, Discussion Paper on MMLP*, 2021). Thus, considering its proximity to major centres of trade and commerce, the proposed site will benefit pre-existing economic linkages. ADB found that there was only one container handling facility in the region (ICD Amingaon) in 2017 and the tariff of warehousing facilities in Guwahati was on the higher side (Mitra et al., 2020). Thus, a new MMLP will ease the burden on existing infrastructure by providing container handling facilities and warehousing facilities at a single location. ADB projected the traffic potential of MMLP to grow to 2.9 million metric tons by 2035 (Mitra et al., 2020). As apparent from Table 1 below, there exists an untapped opportunity for a MMLP in this region.

No.	Year	Bulk-Break Bulk (MMT) Domestic		Bulk-Break Bulk (MMT) Cross-Border		Container (TEUs)	
		Region	*MMLP*	*Region*	*MMLP*	*Region*	*MMLP*
1	FY 2020	13.56	0.75	0.86	0.34	5413	1536
2	FY 2025	18.88	1.06	1.53	0.61	6612	1876
3	FY 2030	24.89	1.44	2.18	0.87	7515	2133
4	FY 2035	31.15	1.89	2.47	0.99	7925	2249

MMLP = multimodal logistics park, MMT = million metric tons, TEUs = twenty-foot equivalent units.
Note: The fiscal year (FY) of the Government of India ends on 31 March. "FY" before a calendar year denotes the year in which the fiscal year ends, e.g., FY2020 ends on 31 March 2020.
Source: Asian Development Bank

Table 1: Traffic potential at Jogighopa. Sourced from Asian Development Bank.

MoRTH, in its concept note on logistics efficiency enhancement program, has highlighted key success factors to be considered for the MMLPs (Concept Note- LEEP, n.d.). These are: Connectivity to adjacent node, Non-competing infrastructure, competent service providers, Complementary policies, and early involvement of all stakeholders.

For Jogighopa MMLP to be successful, all the above criteria have to be taken into consideration. Furthermore, a few areas of concern have to be addressed as well. The development of infrastructure connecting the MMLP to the hinterland is one of them. Connectivity in terms of rail and road infrastructure remains a challenge for MMLPs. The key infrastructural drivers that have to be addressed for better execution of MMLP project at Jogighopa are widening of highways (NH-17 between Gopalpara and Guwahati), development of new railway line from Jogighopa to Gauripur and developing Jogighopa river port as an inland port (Mitra et al., 2020). These projects will provide better connectivity to the hinterland areas with the MMLP.

As already discussed, there is only one container handling facility in the region near to the proposed facility. The concern for competing infrastructure has been addressed to an extent.

The competent service providers have to be roped in for operation and maintenance purpose once the logistics park is completed. A transparent bidding process will have to be implemented.

At the time of writing this paper, multimodal freight movement is governed by the Multimodal transport of Goods Act, 1993, which has caters only to export and import goods. A government policy governing the domestic flow of goods through different modes is yet to be developed. Easing of stringent provisions for becoming a multimodal operator would necessitate a change in the Act. However, it would be better to develop a holistic new policy concerning the recent requirements and developments. The Union Government is in the process of preparing a draft legislation on national level logistics law (National Logistics Efficiency Advancement Predictability and Safety (NLEAPS) Act) which will define all the stakeholders of the logistics ecosystem and will ease the regulatory burden (Press Trust of India, 2020a).

Another area which can emerge as a key success parameter would be the level coordination between the different stakeholders. A nodal agency as proposed by the draft national logistics policy in the form of Multimodal Logistics Park Authority of India (MMLPAI) is a step in right direction. This body will be under the authority of the Union Government and will help in coordinating with different stakeholders (Mitra et al., 2020).

Sustainability should be another area of focus. The Jogighopa MMLP is estimated to generate around 2.242 tons of waste per day (Development of Multi Modal Logistic Park at Jogighopa, n.d.). Therefore, given the location of the MMLP near the northern bank of Brahmaputra River, an in-house waste treatment plant is essential. For this purpose, National Highways and Infrastructure Development Corporation Limited (NHIDCL) has proposed the development of a Sewage Treatment Plant (STP) of capacity 1000 kilo-litre per day (KLD).

The success of MMLPs in India hinges upon regulatory norms, interaction between stakeholders and sustainable business practices. The Jogighopa MMLP is an opportunity to develop an ideal case for MMLP that can be emulated and scaled up at other proposed sites. Recently, Cabinet Committee on

Economic Affairs (CCEA) has directed MoRTH to start with the development of 35 multimodal logistics parks across the country. These parks will be developed in Public-Private partnership mode (PPP)(*35 Multi-Modal Logistics Parks (MMLP) Projects to Be Developed under Public Private Partnership (PPP) across the Country*, 2022) . The map below shows the location of these MMLPs across the country.

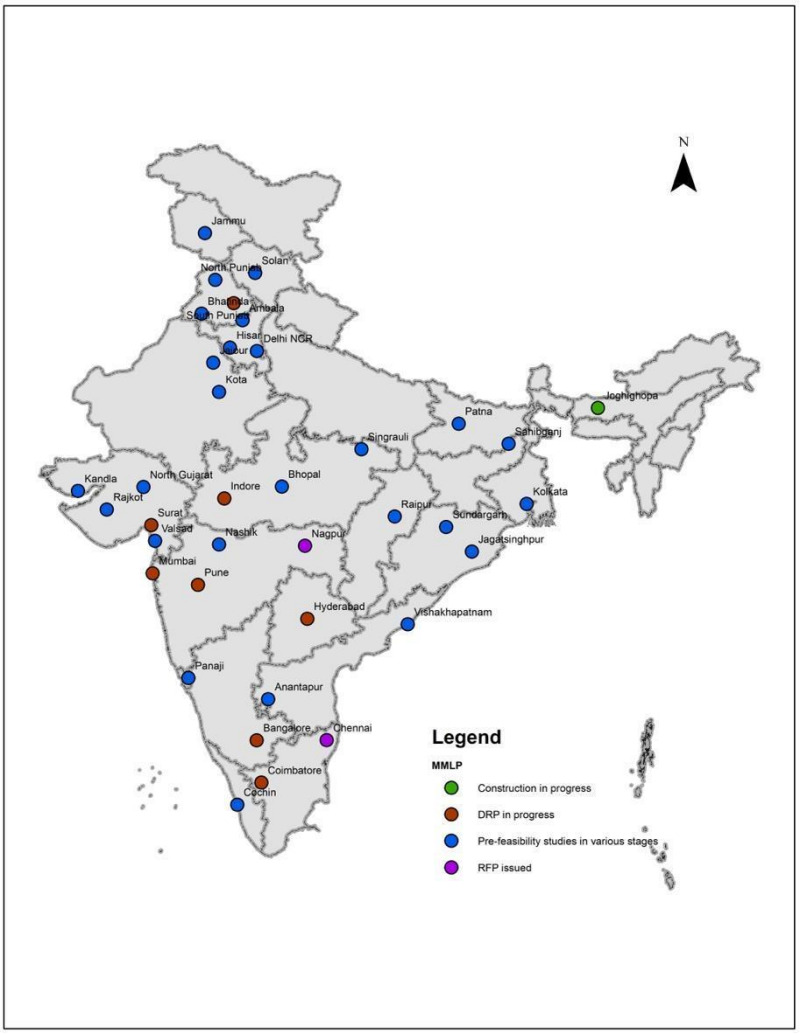

Figure 4: Proposed Multimodal Logistics Parks across India
(https://pib.gov.in/PressReleasePage.aspx?PRID=1737646)

Logistics Policy of States for ILPs and LPs:

Land is a major resource needed for the development of the MMLPs. It is classified as a state subject under Seventh Schedule of Constitution of India. Therefore, state governments are one of the important stakeholders for the development of the MMLPs in India. Most state governments promote integrated logistics using private investments and generate local employment opportunities (*India Evolution of Integrated Logistics by JLL*, 2019). The following matrix shows the common areas that are in focus among logistics policy of different states:

	Uttar Pradesh	Maharashtra*	Karnataka****	Haryana	West Bengal**	Gujarat***	Madhya Pradesh	Chhattisgarh
Enforceability of Policy till	2023	2024	2023	2023	NA	2020	NA	2023
Logistics Area Focus								
Logistics Park								
Multimodal Logistics Hub								
Storage for EXIM Cargo								
Warehouse								
Cold Storage								
Technology								
Automation and Robotics								
Employment and Skill Development								

Figure 5: Areas of focus for logistics policies of various states. Source: (*India Evolution of Integrated Logistics by JLL*, 2019)

In this paper we focus on Maharashtra's logistics policy. Maharashtra has highest Gross State Domestic Product in India (*Handbook on Statistics on Indian States*, 2020) as well as the largest network of national highways (*MoRTH*, 2019) along with the second largest network of rail among all the states (*Indian Railways*, 2016). It has been consistently ranked as among top five states in Logistics Ease Across Different States (LEADS) index developed by the Commerce and Industry Ministry and Deloitte (*LEAD 2019 Report*, 2019). Therefore, the study of development of integrated logistics park under the Maharashtra Logistics Park Policy, 2018 gains significance.

Perspective of Maharashtra State logistics policy

In this section, we briefly discuss objective of the policy and some of the conditions associated with the development of Integrated Logistics Park (ILP) and Logistics Park (LP) (For details refer appendix). The logistics policy of the state of Maharashtra aims at to make the state a part of global value chain, to modernize the traditional godowns, to convert traditional godowns into integrated and value-adding bodies that offer variety of logistics services and to improve the efficiency and reduce the costs.

The policy provides for precise definitions of LP and ILP to remove the scope of any ambiguity and prevent future litigation. It provides for different undertakings and services/facilities permissible in Integrated Logistic Park such as a minimum of 70% of area notified should be utilized for providing logistics park services and the balance 30% of the area should be utilized for permissible commercial services.

The policy also lists minimum binding basic facilities for ILP which includes internal roads, electricity connection, communication facilities, water distribution and drawing facility, sewage and drainage facility, firefighting services and parking spaces.
Some the common binding facilities that have to be provided at ILP are dormitory, eating house, medical centre and weigh bridge.

Based on the ownership of the land for the ILP, the policy lays down two procedures for the development of the ILP.

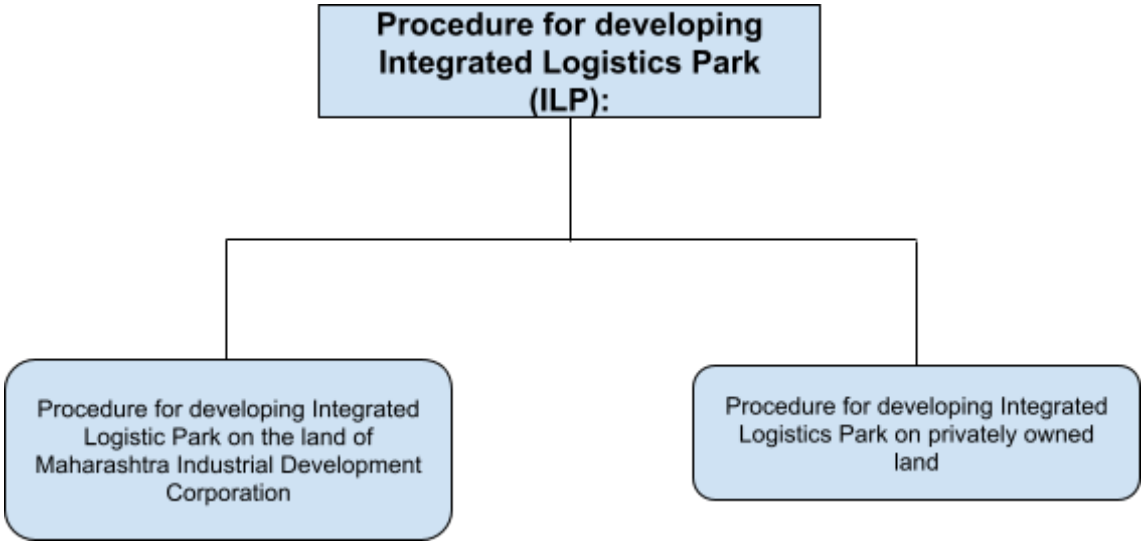

Figure 6: Process for development of ILP. Source: Authors' own research

The procedure for developing Integrated Logistic Park on the land of Maharashtra Industrial Development Corporation (MIDC) defines lessees of MIDC having lease for a term of 30 years or it can be with respect to the land acquired under Maharashtra Industrial Development Act 1961 for logistic or joint undertaking, the Developer has to submit an application to the competent authority. Regarding developing Integrated Logistics Park on privately owned land, it elaborates that owner of the land and joint venture company of owner of land can on establish the ILP. The policy also lays

down few conditions with respect to the land and its ownership. The conditions are that land under the project must be owned by the owner of the land/developer/joint venture company. The ownership shall include development rights given by the owner of land for development or sale of a project under one or more registered development agreement/s / power of attorney and the lease term should be of 30 years or more.

As mentioned earlier, since land is under state purview, the policy permits specific categories of land for development of ILP. These are lands which are included in industrial, residential, agricultural or no development zone in the sanctioned development/regional scheme and for industrial use of which here is non-agricultural permission and all lands except in industrial zone in respect of which it is necessary to change the zone.

To ease the regulatory burden, the provision of self-certification has been included. A self-certificate has to be displayed on MIDC website stating that ILP is being used as per rules.

For developing Logistic Parks (LP) the minimum 20000 sq. ft. construction/carpet area is permissible and/or industrial building. It is binding to use 80% area out of total construction/carpet area of Logistic Park for Collecting/ segregating goods, Classification, Packing/ repacking, affixing transit chit/marking chit, separating goods for various types of transportation, Open and closed storage, Cold storage, Godown attached to Customs, Place for payment of transport charges, Parking space for goods carriers, Goods handling equipment for efficient distribution of partly finished and finished goods. The balance 20% area to be used for providing commercial and professional services like Hostels, Guest Houses, Medical Centre, Petrol Pump, Office Spaces, Production Testing Centres etc.

The policy document elaborates on qualifications of applicant for Logistic Park as it can be established by any registered body like proprietor/partnership firm/private limited company/public limited company or trust. It can also be jointly developed on condition that either of them should not have availed any other Government scheme and binding on the concerned to submit an undertaking that grant received from the Government will not be misused. The policy further elaborates on

qualification of land owner required for developing Logistic Park. It can be owner of private land or developer appointed by him or a joint venture company formed by the owner of land and the developer or lessee of Maharashtra Industrial Development Corporation whose balance term of lease is of 30 years or it can be established on the land acquired by Maharashtra Industrial Development Corporation (MIDC).

Although the policy tries to address major concerns by providing timelines and accountability to various stakeholders in the process, however, some of the questions remain unaddressed. The policy addresses the issues at state level and tries to ease the process for setting up of Logistics Park. However, for ILPs and LPs to function and deliver properly, the connectivity to the hinterland is desirable. A multi-stakeholder approach is needed to address the larger questions. These questions provide us opportunity for future scope of research and refinement of policies

Challenges and Opportunities

The logistics park involves multiple stakeholders such as investors, operators (for operations and maintenance), multiple regulators, logistics service providers and customers. The interaction between different stakeholders should be smooth to enhance the efficiency of the process. Multimodal logistics involves various players who operate in different mode of transportation. The definition of these players and under whose governance framework they will act has to be clear. The Multimodal Transportation of Goods Act, 1993 (MMTG) provides for the regulation of Multimodal Transportation of Goods from any place in India to any place outside India involving two or more modes of Transport on the basis of a single Multimodal Transport Contract (*Multi-Modal Transportation of Goods*, n.d.). A new law governing present logistics scenario, defining major players and providing light regulatory environment is the need of the hour. The Ministry of Commerce is considering to replace MMTG Act, 1993 with National Logistics Efficiency and Advancement Predictability and Safety Act (NLEAPS) (Press Trust of India, 2020).

The MMLPs at Inland waterways are expected to act as a hub for the hinterland. However, poor quality of road connectivity and limited infrastructure poses a significant challenge (*Multimodal*

Transport in India, 2015). Moreover, different ministries at Union as well as state level are involved in the grant of regulatory approvals. The absence of a nodal body leads to complex intermesh with over 50 approvals required from various Central and State Ministries for development and operation of MMLPs (*Multi-Modal Logistics Park (MMLP) Governance in India - KPMG India*, 2021). Therefore, a nodal ministry that can provide a regulatory umbrella to this sector and a single window clearance process is the need of the hour.

Land parcel identification and coordination with state governments remains a key area according to MoRTH (*Concept Note- LEEP*, n.d.). The land parcel for all the MMLPs planned have to be identified and land acquisition models have to be implemented to prevent further delay in projects.
PPP framework for development and operations of Logistics Park by private players should be in place to avoid litigation and delays. The recommendations of the Kelkar committee on PPP model for infrastructure can be used for developing PPP framework for MMLPs (*Report of the Committee on Revisiting and Revitalising PPP Model of Infrastructure*, 2015).

Developing rail infrastructure should be one of the key priorities. The Union government has already taken steps in right direction through National Rail Plan. This plan aims at developing the rail infrastructure by 2030 to demand until 2050. The plan also aims at achieving the modal share of 45% by capacity (*NRP*, 2021).

Up-Skilling of human capital is also necessary for smooth functioning of MMLPs. These include operating material handling equipment, IT related services and other types of professional training (*India Evolution of Integrated Logistics by JLL*, 2019).

The constant drive to reduce costs and improve efficiency & scale has led to a rapid adoption of technology in logistics. Technologies such as automated vehicles, shuttles, gantry systems, cranes in hi-bay warehouses, movable racks, have already been adopted in several warehouses. Further, there have been several successful use cases in the logistics where technologies such as blockchain and IoT have been successfully implemented. Blockchain and IoT can be adopted in the context of Logistics

Parks to provide desirable traits such as quick traceability, enhanced efficiency, value-added digital services, and automated payments in such high volume and huge facilities. Two Use Cases for blockchain and IoT from the logistics space are presented below to demonstrate how these technologies can be extended to the logistics parks

• Quick Traceability – Walmart's food traceability system based on Hyperledger fabric helped the organization drastically cut down on the time required to trace back the source of a particular food product. Prior to the adoption of the blockchain-based traceability system, tracing the origin of Mangoes took Walmart a couple of weeks which was cut down to just a few seconds. Quick traceability will be a key requirement in successful operations of multi-modal logistics parks where goods crisscross from multiple vendors from multiple geographies are transported using several modes of transport.

• Efficiency Enhancement – Application of VeChain's IoT and blockchain-based cold chain traceability solution has helped enable accurate data collection at scale, immutable data storage, and business process monitoring. Such a scalable application has the potential to be at the heart of monitoring and enhancing the operations within logistics parks and help connectivity between other nodes (parks).

Adoption of technologies such as blockchain and IoT can provide further benefits in

- Provide common repository access which will reduce the volume of paperwork
- Reduce the float in the payment duration
- Quick dispute settlement

Conclusion

The logistics space in India is plagued with numerous problems. These problems also provide a variety of opportunity for the sector to grow. NITI Aayog in its report on Freight transport in India has highlighted three areas which would enable unlocking economic, environmental and public health benefits. These areas are: (*Freight Report*, 2018)

- Enhancing rail mode share and promoting intermodal transport
- Optimize truck use by improving transportation and warehouse practices

- Increase use of fuel efficient, clean and electric vehicles

The logistics parks provide support to achieve objectives mentioned above by enhancing the operational efficiency, providing economies of scale, reducing wastages in the process and making investments in technical interventions viable.

MMLPs provide an opportunity to improve the efficiency and reduce the logistics cost. The geo-strategic position of India provides an opportunity of development of ports as a logistics park which can provide value added services. Also, with the Union Government focusing on inland waterways (Vasudha Chawla, 2016) and with over 15,000 kms of navigable waterways (*Statistics of Inland Water Transport 2018-19 | Ministry of Ministry of Ports||Shipping and Waterways*, 2019), the potential to develop inland waterway terminals as MMLP are immense. The logistics sector has the potential to provide major impetus to the economy. The creation of jobs due to establishment of MMLPs will provide growth opportunity for the interior areas. The infrastructural development will provide opportunity to correct regional imbalances in the development. Organized logistics park will ensure introduction of modern material handling equipment and professionalism in the sector. The infrastructural modernization in logistics sector through MMLPs are one of the enablers to achieve the dream of USD 5 Trillion economy by 2024-25.

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