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सचिव
Durga Shanker Mishra
Secretary

भारत सरकार
आवासन और शहरी कार्य मंत्रालय
निर्माण भवन, नई दिल्ली–110011
Government of India
Ministry of Housing and Urban Affairs
Nirman Bhawan, New Delhi-110011

No. K-14011/38/2019-UT-IV (Part)
March 10, 2021

Dear Chief Secretary,

Sub : Guidelines for National Sustainable Urban Freight Transport System Development of Freight Management Plans as per the Framework on National Sustainable Urban Freight Transportation.

Urban freight transport, as an essential concomitant supporting efficient economic and social development of cities plays a vital role in the urban mobility system. With the demographic trends showing an increasing urbanization, further challenges are likely to emerge in planning the management of freight system.

2. Urban planning tools such as Master/ Development Plans regulate the area for present and future urbanization, City Development Plans (CDP) provide valuable information regarding the existing and future infrastructure requirements in various sectors and utilities and Comprehensive Mobility Plans (CMPs) review the land use patterns towards mobility optimization and transport integration, as necessary. While all these plans provide frameworks that are more focused on the mobility of people, lesser importance is often found to be accorded to the freight transport management within the city.

3. Integrating urban freight planning into city planning has become more imperative than ever before, requiring focused and specific methodologies. It is needless to emphasize that new patterns of growth of e-Commerce and delivery apps have changed the nature of urban freight movement calling for innovative planning. Traditional ways of looking at freight transportation simply as "truck traffic" are getting obsolete. New and organized perspective and planning methodology addressing comprehensively the city specific challenges of public and freight mobility is the need of the hour.

4. Given the relevance and importance of urban freight, Ministry of Housing & Urban Affairs (MoHUA) had released an Urban Freight Transport Planning and Management - Toolkit (2016). Recently, under the Research Study initiatives, Urban Mass Transit Company (UMTC) was tasked by MoHUA to prepare to prepare a Framework for efficient management of Freight movement in urban areas and an action plan for Indian cities for improving sustainability of urban freight transport in Indian cities. Based on the data and case study of Faridabad, UMTC have come out with 'Guidelines for National Sustainable Urban Freight Transport (2020)' which include a framework for efficient management of freight movement in cities. The terms of reference for conducting study and summary of the Guidelines, emerging from the UMTC Study are enclosed for perusal. These are also available on downloadable pdf format on our website :

http://mohua.gov.in/upload/uploadfiles/files/Terms_and_Summary_of_Guidelines.pdf

Contd.....

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5. As we are well aware, the challenges and outcomes differ from city to city demanding innovative solutions. Therefore, all classes of cities are encouraged to adopt and test the recommended framework and provide the feedback on their experience. The comprehensive, commodity wise data and insights on all aspects of trade and logistics of various cities would enable not only improvement and revision of the framework but more importantly, identify key issues for strategizing integrated development of freight infrastructure in cities. I look forward to cities using this framework for sustainable city logistics.

Regards,

Yours Sincerely,

Encl: Standard ToRs and summary of Guidelines

(Durga Shanker Mishra)

Chief Secretary of all States / UTs

Preparation of Freight Management Plan as per the National Framework for Sustainable Urban Freight Transportation

Background and Context

Though the City Development Plans, Master Plans, Mobility Plans cover some aspects, freight transport in urban areas is still not well understood and there is no methodology aimed at the analysis and planning of freight movement, distribution and commodity infrastructure and services. To achieve urban sustainability, new models for the management of urban freight movements are needed, in which local authorities play a pro-active role. The framework, as an outcome of development of freight management plan for Faridabad, has been a result of analysis of primary and secondary data, various reports, and consultations with public and private stakeholders. It lays the groundwork to overcome the challenges involved in sustainable urban freight transport. While the cities differ in size, economy, and cultural frameworks, the transport sector plays a strong role in all cities. Freight transport is increasingly important however, both local authorities and transport operators, can no more neglect the problems that arise from freight in urban areas. An overall awareness is needed to understand that a deeper integration of freight transport and urban sustainability strategies can be beneficial for both the efficiency of freight transport networks and for local sustainability. While the necessity to use integrated transport planning including both passenger (which has conventionally been the focus) and freight transport exists, the city authorities need more logistics competence to achieve the same.

1. About the Framework

The framework described provides a template for the city planners and administrators to develop strategies, infrastructure interventions and operational management plans to address urban freight. The National Framework for 'Urban Freight' has been developed on five key principles:

- **i.** Understanding logistics issues from different stakeholder groups perspectives thereby developing a partnership for the processes from all involved stakeholder groups at the onset of planning process
- **ii.** Comprehensive data and insights in all aspects of trade and logistics
- **iii.** Clear roadmap to follow with clear role and responsibility allocation. Short term, medium- and long-term strategies and interventions for urban freight by size, type of economic activities and its geographical location in critical macro-logistics chain.
- **iv.** Financial support, institutional support and capacity building.

v. Forward and backward linkage of the urban freight plan i.e. linkage with state and national policy.

2. Steps in the Framework

Framework provides a step by step approach for evolving and addressing the urban freight needs based on the city size/population, location, industrial and economic characteristics. The same has been depicted in Figure 1.

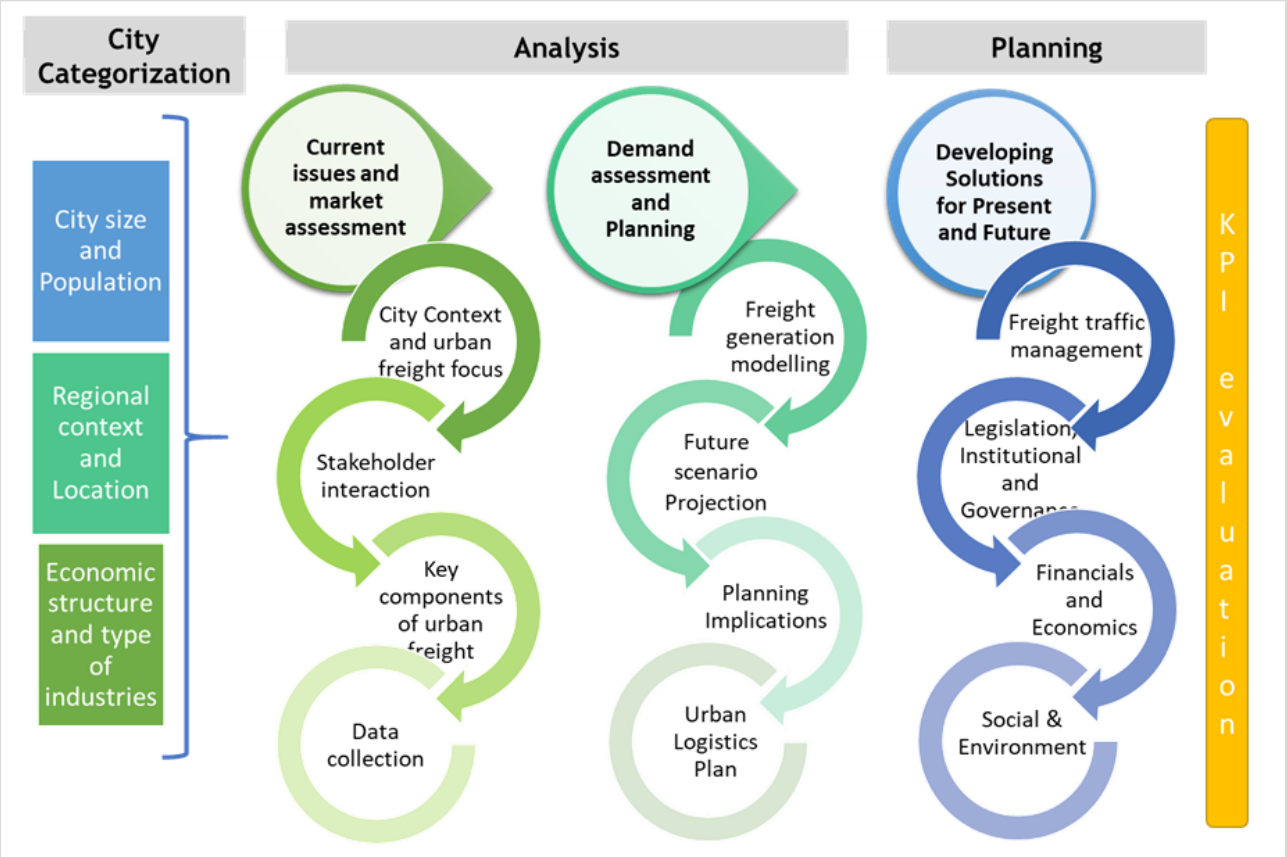


Figure 1: Proposed Framework

3. Scope of Work

The indicative scope of work is reflected below

Task 1: Assessing the Current Issues pertaining to the urban freight movement

- **Mapping Freight Infrastructure** – This would include mapping the freight generators/attractors, Freight storage and distribution facilities and other transport related infrastructure.
- **Stakeholder Interaction** – Extensive stakeholder interaction with truck operators, warehouse operators, industrial units, warehouse operators and others so as to

understand the key issues faced by them. The interaction would be done at an individual as well as group level.

Task 2: Data Collection

As already emphasised the understanding of logistics in a city requires extensive data collection both vehicular as well as commodity-based data. The data collection would be based on primary as well as secondary sources.

a) Primary Data Collection

The various primary surveys would be done to holistically review the urban freight would include -

- Road Side Interview Survey
- Vehicle Traffic Count Survey
- Establishment Survey
- Parking Survey
- Truck Driver Survey
- Truck operator Survey
- Truck Terminal Survey

b) Secondary Data Collection

- Demographic profile/characteristics of study area
- Socio-economic profile (employment and economic parameters)
- Freight Vehicle registration data
- Land use development plan of the project influence area
- Profile of industrial/commercial development
- Other related studies from various departments like PWD, Development Authority, Municipal Corporation etc.

Task 3: Demand Assessment for Freight in the city

- Commodity based modelling to assess the current situation of goods movement in the city and further demand projections for horizon years.
- Mapping the major commodity value chains and assessing the specialized requirement of each commodity.

Task 4: Identifying the key issues & providing strategies for an efficient urban logistics movement

Based on the existing situation analysis, stakeholder interactions as well as the demand projections, challenges will be identified and further comprehensive set of strategies would be developed for efficient & sustainable urban freight.

Task 5: Action Plan

Based on the strategies identified, interventions will be categorized as short term, medium term and long term followed by a **detailed action plan including related task, activities as well as the timelines.**

Task 6: Key findings from the cities and list of changes required in the framework

The key purpose of this study to identify unintended bottlenecks in the framework and rectify the framework to make it more practical and better understood by real practitioners. Based on the entire set of planning for three cities, a list of unintended bottlenecks in the framework are to be identified.

Task 7: Preparation of case studies and key example boxes to be included in the framework

Case studies and key boxes would be formulated to feed into the framework as key strategic places, to better explain the implementation of the framework.

3 Timelines & Deliverables (will vary per city)

The total time required, deliverables and payment milestones for carrying out each task are given below:

Table 1: Timelines & Deliverables

S.No.	Deliverables	Timelines (Weeks)
1	Submission of Inception Report	M+2 to 4
2	Submission of Interim Report	M+15 to 20
3	Submission of Draft Final Report	M+25 to 35
4	Submission of Final Report with Executive summary	Within two weeks of receipt of comments

M- From the date of issue of work order

Note: the above timelines shall not include the time taken for approval

4. Proposed Project Team

Table 2: Proposed Project Team

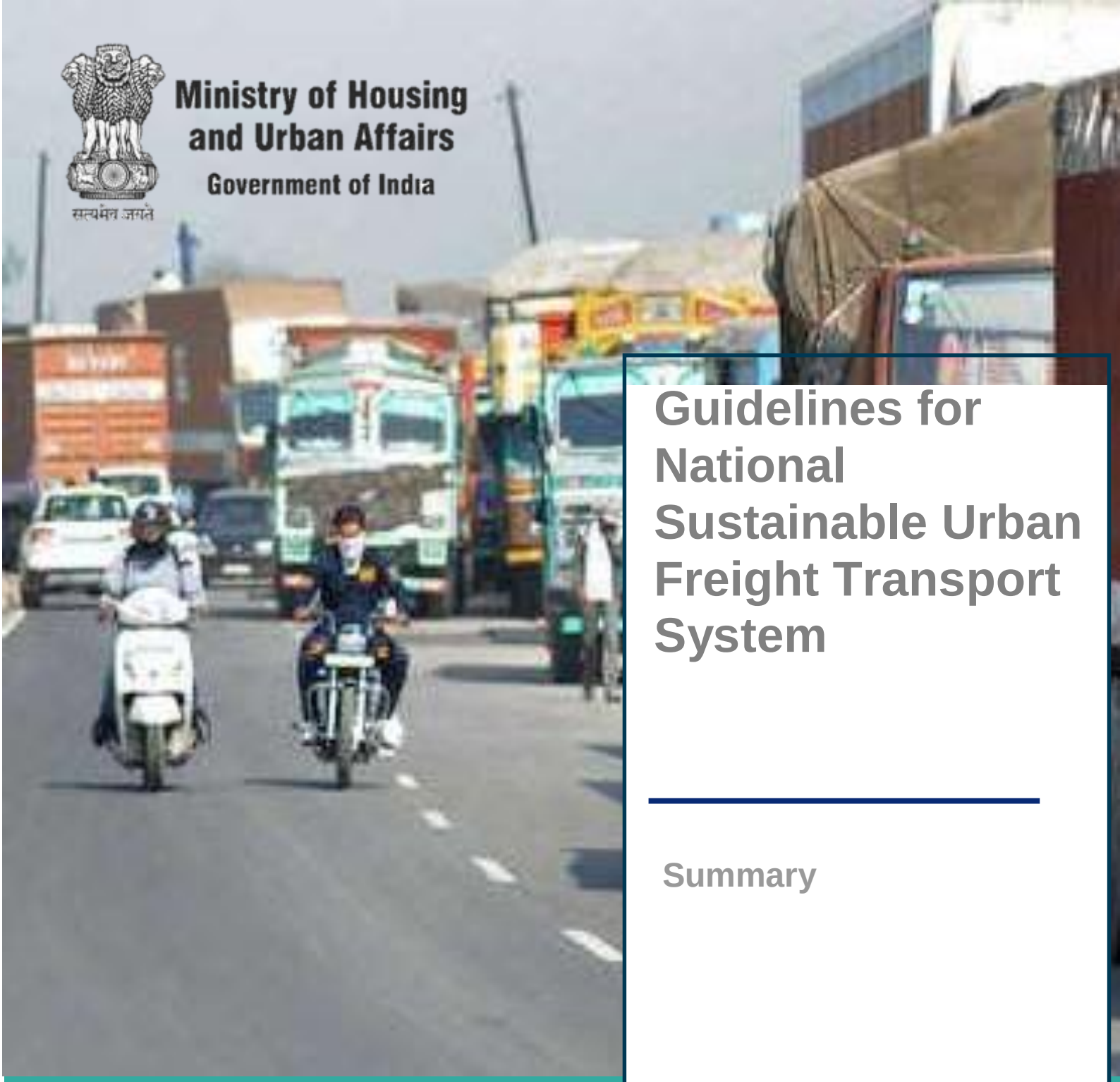
S.No.	Position	No.	Qualification	Man-Months Input
1	Team Leader	1	Masters in Transport Planning/MBA / Masters in Materials/ Logistics/ Supply chain with Over 15 years of experience in Urban Transport/ Infrastructure Development	4
2	Transport Planner/Engineer	2	Masters in transport planning with over 7 years' experience in city transportation planning	4
4	Data Analyst & Support Staff	3	Masters in Statistics/MBA/ Masters in Planning/ B Planning with 3 years of work experience in infrastructure sector.	

Note: Other than team leader proposed team will vary per city

5. Indicative Payment Schedules

Table 3: Payment Schedules

S.No.	Deliverables	Component Fee
1	Mobilisation Fee	10%
2	Inception Report	5%
3	Interim Report	25%
4	Submission of Draft Final Report	40%
5	Submission of Final Report	20%



Ministry of Housing and Urban Affairs
Government of India

सत्यमेव जयते

Guidelines for National Sustainable Urban Freight Transport System

Summary

October 2020

Urban Mass Transit Company Limited

Contents

Acronyms

3PL	Third Party Logistics
AFS	Air Freight Station
CFS	Container Freight Station
CMP	Comprehensive mobility plans
CONCOR	Container Corporation of India Limited
EBFS	Establishment based freight surveys
GST	Goods and Service Tax
HDV & LDV	Heavy Duty Vehicles and Light Duty Vehicles
HSIIDC	Haryana State Warehousing Corporation
ICD	Inland Container Depot
IPT	Intermediate Public Transport
ISIC	International standard industrial classification
LEADS	Logistics Ease Across States
MAV	Multi Axle Vehicles
MEGALOG	Megacity Logistics
MMLP	Multi Modal Logistics Park
MoCI	Ministry of Commerce & Industries
MoR	Ministry of Railways
MoRTH	Ministry of Road Transport & Highways
MSME	Micro, Small and Medium Enterprises
NCTD	National Capital Territory of Delhi
NMT	Non-Motorized Transport
PFT	Private Freight Terminal
RFID	Radio Frequency Identification
TaT	Turnaround Time
TCPO	Town and Country Planning Organization
UCC	Urban Carrying Capacity
ISIC	International Standard Industrial Classification
NACE	Nomenclature statistique des Activités économiques dans la Communauté Européenne (Statistical Classification of Economic Activities in the European Community)
NIC	National Industrial Classification
ULB	Urban Local Bodies

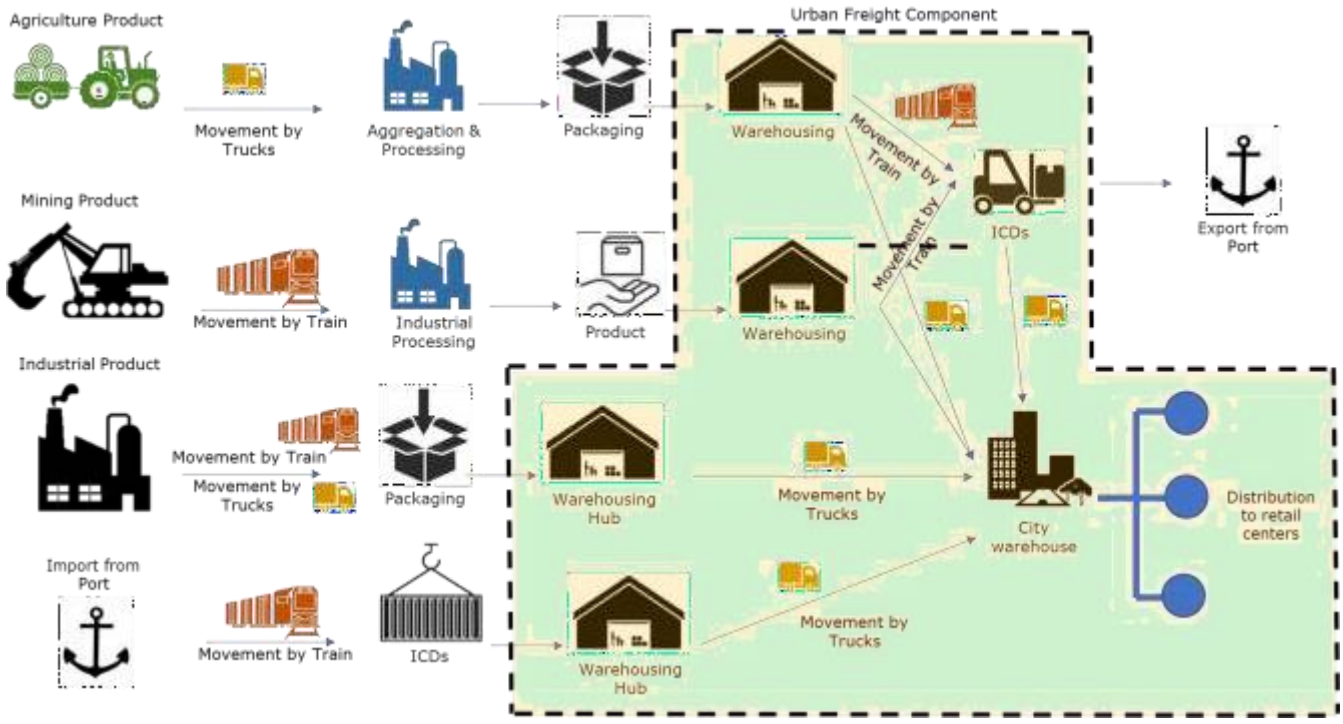
1 Background and Objectives

Urban freight is of primary importance as it is estimated that almost all global trade originates from, traverses through or is destined for metropolitan areas, which act as major hubs in the global goods distribution network. Therefore, a logical and efficient freight transportation planning, as part of the overall transport planning for the city is essential.

At the national level, governments typically promote logistics - through infrastructure spending, laying out transport and land-use policies, enforcing stringent environmental standards, promoting environment friendly transportation and to some extent supporting research and pilot projects to develop the road map. There are many policies by the central government such as the MoCI National Logistics policy, NHAI MMLP policy, State Logistics or warehousing policies, state transport policies that address various aspects of urban freight.

At city level there are CDPs, City Master Plans, CMPs that should address aspects of urban freight. However, urban freight remains a minor aspect in these plans even though it creates a much larger impact on the population and environment. Urban Planners typically plan for Urban freight by counting the number of trucks entering and exiting the city as a part of traffic planning and in some cases providing for truck parking at the outskirts of the city. However, this study shuns this traditional concept of freight planning in the city plans.

Figure 1: Total freight value chain vs urban freight value chain



The study proposes that urban freight planning needs to be done in conjunction with planning for public and private vehicles. There are many studies that have been commissioned by MoHUA on

various aspects of management of urban freight. The guidelines of national sustainable urban freight combine these studies plus latest methodologies that are being used for urban freight planning, into a **step by step methodology, that can be easily adopted as a template by city planners to plan for an efficient and effective urban freight infrastructure.**

By adopting the step by step methodology proposed in this study city planners can not only effectively incorporate freight planning into the city plans but also reduce the environmental impacts of the freight movements in the city.

Another aspect that has been emphasised at various points in the methodology is stakeholder's consultation at the outset of the planning process. Freight is a fast-changing environment which does not fit in the typical 10-year, 20-year planning perspectives. Hence, consultations at the outset and along the process is a mainstay of this step by step process.

2 National Framework for Planning for Urban Freight

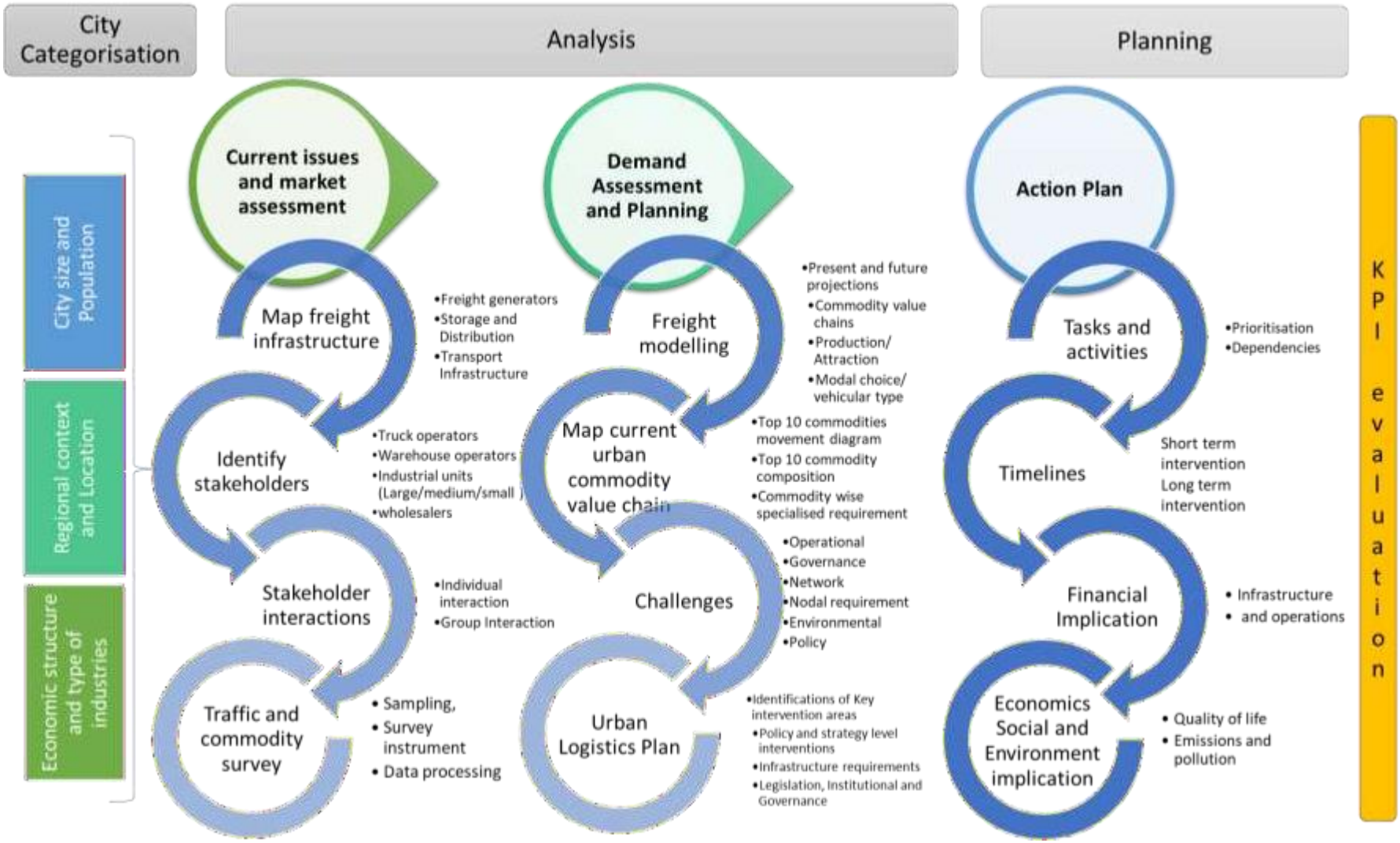
Urban freight should not be dealt with as a separate exercise in planning, but should be an important part of the larger city planning exercise. It is proposed that this framework should be a part of the CMP toolkit and urban freight plan should become a part of comprehensive mobility plan in every city.

This National Framework for planning for Urban Freight has been based on five key tenets:

1. Understanding logistics issues from different stakeholder groups' perspectives thereby developing a partnership for the processes from all involved stakeholder groups at the onset of planning process
2. Comprehensive data and insights in all aspects of trade and logistics
3. Clear roadmap to follow with clear role and responsibility allocation. Short term, medium- and long-term strategies for urban freight management in typical city by size, type of economic activities and its geographical location in critical macro-logistics chain.
4. Financial support, institutional support and capacity building.
5. Forward and backward linkage of the urban freight plan i.e. linkage with state and national policy as well as the CMP of the city.

Following image depicts the overall framework for planning for urban freight in a city:

Figure 2: Framework



3 Step 1 City Categorization

First step in starting with implementation of the framework is categorizing the city. Characteristics of Urban freight of a city is dependent of three criteria:

1. City Size and population
2. Regional context
3. Economic character - Industrial and agricultural production of the City.

Based on these characteristics, a city can act as a

1. production center for goods but the consumption of goods in general in the city is low. This is referred to as a production plus city.
2. consumption center for goods due to its large population and tertiary sector economy.
3. both production and consumption center because the city has a wide economic base and large population, as well as acts as a regional center for goods distribution.

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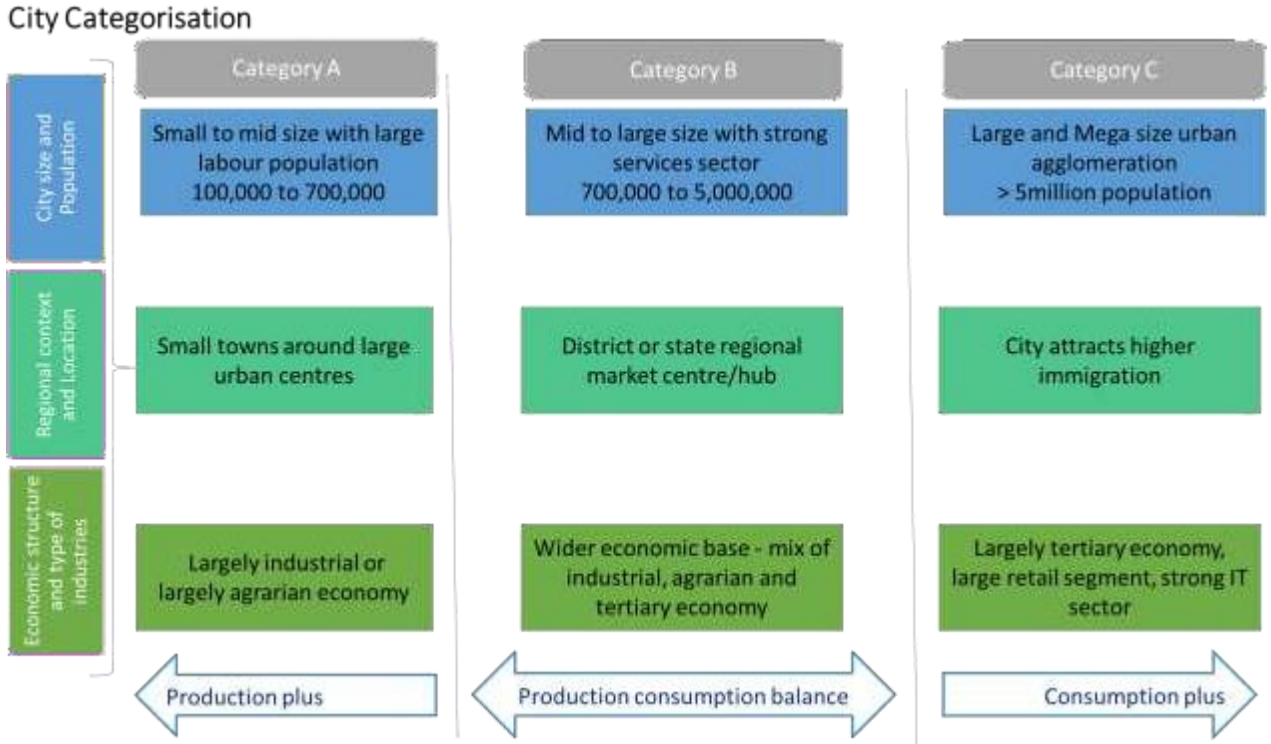
Figure 3: City categorization framework



As depicted in the diagram above there are three distinct categories that are proposed to be dealt with separately in this framework are depicted in the diagram above.

1. ***Category A (production plus***) – This category of towns are those towns that tend towards being a production center and has a smaller component of consumption-based freight. These can be Small and medium cities (population in range of 100,000 to 700,000) developing around large production units and or around the regional agricultural centers, well connected with rail and road. These have concentrated wholesale markets or warehouses and industrial

clusters. The freight patterns and logistics needs are comparatively concentrated to few corridors and nodes.

Comparatively smaller cities - 0.05 to 0.5 million population - do not necessarily feel the brunt of freight traffic issues. It will be prudent to take some early steps in order to leap frog to more sustainable logistics development.

2. ***Category B (production and consumption balance)*** - Million plus cities and other larger cities (population of 700,000 to 5,000,000) often develop as state/regional freight hubs for both agricultural and industrial production. This demands dual roles in storage, consolidation and distribution. Also, there are large amount of incoming freight as raw materials for industries and finished / value added products being distribution in region. This tends to somewhat equate the production and consumption in the city.

There has been growth in warehousing in many of the selected areas over the last decade compared to the national average as well sub-urbanization of warehousing in these cities. This affects the origin and destination of journeys visiting these facilities and typically increases the distance of such journeys.

This category will also include the categories of twin cities such as Pune and Pimpri Chinchwad; Hubli Dharwad; Ahmedabad and Gandhi Nagar, Metropolitan region of Mumbai, Chennai and National capital region of Delhi consisting of several towns and million plus cities, etc. Though in themselves they might be smaller than the large metros like Delhi, Mumbai, Bangalore, but together they generate significant traffic.

3. ***Category C (consumption plus)***– Mega cities (> 5million population) however have evolved into tertiary and services sector. There are fewer industries and those for want of competitive land and utilities tend to shift to outskirts of the designated urban areas. Additionally, the city attracts higher immigration, nano-stores (few sq. m.), informal eateries and restaurants, larger formal hospitality sector and mostly more IT related development. Such cities have larger geographical sprawl, and become large consumption hubs. Thereby their economy drives strong retail segment and larger shares of e-commerce.

A greater proportion of road freight has been shown to be undertaking intra city journeys in large urban areas when compared to smaller urban areas. Journeys within urban areas have been shown to be less efficient (more travel time and fuel usage) than journeys to and from the urban area. This results in more complex freight issues of having discrete destinations (all over the residential areas).

4 Step 2 Understanding Current Issues and Market Assessment

4.1 Step 2.1 Map freight infrastructure

Spatial layout and urban land use fabric of the city has several logistics implications in citing of industries, CBD, wholesale markets and hence the freight movement to retail and businesses. Additionally, historical evolution and city culture has a strong role to play besides Development planning regulations, in determining the type of eateries, hospitality business, industries and factories locational preferences.

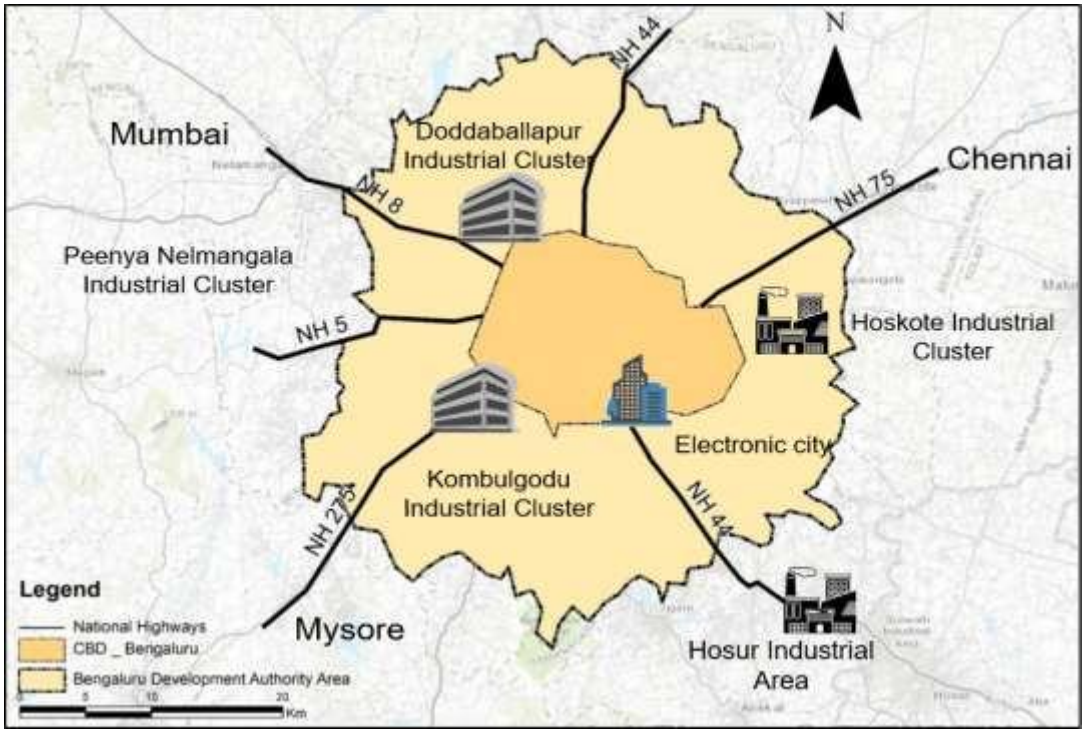
Therefore, as the next step to planning for freight is capturing detailed information about the 5 key urban logistics infrastructure components - Network of rail and road, transport infrastructure systems, processes and value-added services and list out the Stakeholders and correlate their characteristics into Freight generators, storage and distribution infrastructure and transport infrastructure.

4.1.1. Urban freight generators

Urban freight generators can be summed up as entities and land uses that produces freight or attracts freight at disaggregate level. Urban freight transport is required for the delivery of raw materials and goods to shops, factories, offices, etc. constitutes a large share of road traffic. From air pollution, noise, and congestion to tight delivery time slots and access restrictions – these complex issues show us how important it is to make urban logistics more efficient and to develop sustainable solutions that help reduce emissions. E-commerce and home deliveries contribute to a further increase in goods transport.

Following map depicts the mapping of freight generators in Bengaluru market:

Figure 4: Freight generators Bengaluru



The key freight producing and attracting land uses include -

- Industrial units, hubs, SEZ
- Whole sale markets and CBDs
- Old city core areas
- Construction sites, Hospitals and larger amenities
- Weekly hats, Mandi
- Eateries, restaurants and hotels
- Retail markets and shopping hubs
- Household factories
- corporate hubs and institutional areas of city
- Local shops, Nano-stores, informal units
- Residential areas, (in category B and C)

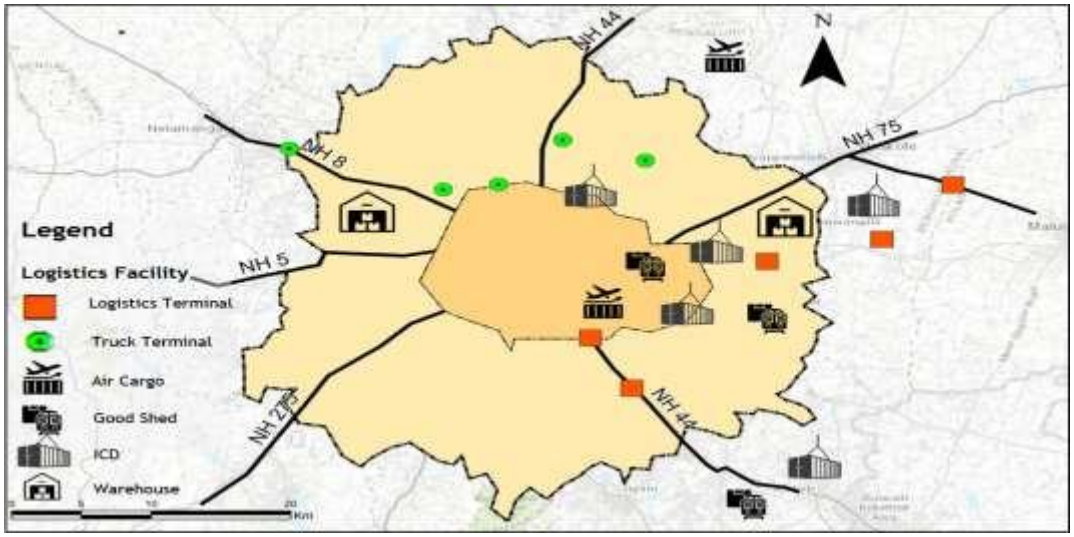
It's paramount that '***urban freight generators'*** are mapped on the city land use plans. A deeper geographical understanding can be developed by mapping the value chains of key commodities. Further, the value chain shall include the ancillary service partners, product management and related business partners. Geographically mapping these critical product value chains shall further enhance the understanding of the geographical coverage of the logistics problems and extent of pain points of freight movement.

Commercial and industrial land use patterns affect the types and quantities of goods produced, consumed, and hence the total quantity of freight transport handled. This also influences the distances over which goods are moved and by what specific mode.

4.1.2. Storage and distribution Infrastructure

Storage and distribution are important aspects of the freight and logistics. Raw material, semi-finished products, final products all move in and out of large stores and warehouses. Additionally, following entities also provide similar functions-

Figure 5: Logistics facilities Bengaluru



However, in many fast growing million plus cities and mega cities - rapidly rising land prices and increasing traffic congestion in urban areas have forced companies to relocate warehouses to locations with relatively lower prices, which are often not hindered by planning law. In addition, high urban land prices have encouraged retailers and other users of commercial floor-space to limit storage space in their premises, converting for activities which will provide better financial returns (e.g. increased sales areas). Partially, development plans are also responsible for nudging the factories to periphery owing to pollution and other externalities. The mentioned reasons have led to the sub-urbanization of warehousing (being relocated to the edge of the urban area or even outside the city).

Whereas the smaller and medium cities are currently integrated with industrial land use and its related freight functions. However, an early intervention towards securing land (in reference to robust long-term urban planning) will be beneficial in efficient logistics and freight management in future too.

It is important to not only geographically map these part of value chains, but to also gather land costs, size evolvement in relation to freight generators areas, employees hired and vehicle km operated. This provides deeper insights in the complex interactions and interdependencies in value chain.

4.1.3. Transport infrastructure

One of the key components of city logistics is efficient freight movement between value chains. Road freight transport distance have increased substantially over recent decades. This has been achieved due to vehicles being able to carry increasingly heavier loads, and the speed of travel increasing substantially (as a result of improved road engineering).

Hence analysis also need to account for multiple vehicle classes, including the delivery vans and small trucks that produce about 80% of urban freight traffic, and the complex interactions between freight activities in the urban core (old city areas mostly) and those in the suburbs, where most deliveries originate. Limited detailed urban freight studies from Delhi, Ahmedabad, Chennai and Kerala cities, Jaipur and few other examples add to the useful insights on urban freight statistics and issues therein. The key components for freight mobility include - bypass, highways, access and connecting freight routes / roads, railway and air freight hubs, other freight vehicle infra, freight vehicles, freight NMT modes, freight parking and loading bays

Freight system also produces some undesired or negative effects. Freight-vehicles and traffic creates congestion, pollution, noise, and require infrastructure especially in old city /core areas. It is prudent that the public policy shall strive to maximize the net social benefits of freight activity, maximizing the benefits of reliable freight flows while minimizing the negative externalities of freight-vehicle traffic. Hence, it is important to consider all available freight modes, as well as the infrastructure and operations carried by each of them.

Urban freight in mega cities and million plus cities ranges from full truckloads to individual parcels and letters, and from large combination vehicles to small passenger-type vehicles like motorized two wheelers in Indian cities. Inevitably, there are enormous variations in productivity across activities, particularly involving pick-up and delivery rounds, capacity utilization, average truck speed, and average shipment size.

The freight flow planning and management process is greatly influenced by some of the key factors such as geographic area and size of the population base, jurisdiction, or specific location (e.g., statewide, regional, metropolitan, or site specific) and the complex economic structure of the region. While land use planning and logistics plan of the city will take care of most of the connectivity issues, freight management plan and freight projects will be essential to solve the nodes and corridors issues.

4.2. Step 2.2 Identify Stakeholders

The end-users of the logistics value chain, as depicted in figure below, consist of cargo consigners/consignees (Industries), freight forwarders, Logistics Transportation Providers and 3PL/4PL logistics players etc.

Industries (Cargo consigners and consignees) generally trigger or initiate the logistics value chain. These consist of all major industries in the city and adjoining areas whose operations (by way of production, consumption, distribution etc.) would require significant movement of freight.

Logistics Transportation providers often provide end to end transportation services to any of the parties involved in supply chain management. Transporters such as Shipping lines, Road transporters, Airlines and Container Train Operators (CTOs) are responsible for the movement of freight through modes. These players are an integral part of the logistics eco system and it's essential that their point of view is accounted for in the planning process.

Logistics Facilitators include entities such as Customs brokers. Customs brokers are agents for importers/exporters who prepare and submit all documents for clearing goods from the Customs Department. Customs brokers have an aggregated understanding of cargo flows in a region (especially EXIM cargo) as they interact with the customs on behalf of exporters/importers and are an important stakeholder in the logistics eco-system. **Freight Forwarders** arrange for cargo to travel from an origin to a destination within a specific time frame. Freight Forwarders are required to arrange and monitor all of the fine details so that shipments flow across international borders with compliance and efficiency, mitigating delays. Freight forwarders advise shippers on estimated freight costs, port charges, costs of special documents, insurance costs and terminal handling fees etc. A **third-party logistics company** is one that works with shippers in order to manage another company's logistics operations department.

Terminal Logistics Operators such as ICD/CFS/PFT Operators, Air cargo terminal operators, Warehouse Operators, Cold Storage Operators etc. are primary stakeholders in relation to this assignment. Terminal logistics operators have a comprehensive understanding of the market for

terminal logistics services/facilities, are potential bidders for the proposed facility as well as competition for the proposed MMLP facilities. Detailed interactions shall be undertaken with Terminal logistics operators by the engagement team on various aspects of the development of MMLP facilities including their willingness to shift, kind of facilities that will be needed at the MMLP and market price for the services provided by them.

Real Estate Developers often have the ability to provide expertise, knowledge and raise capital about the said region to facilitate construction of a node or facility. They can also give us information about the upcoming infrastructure developments in the region and have vested interest in the development of the facility.

Government agencies- Interaction with Central and State governments along with cargo facilitation agencies (Customs, Plant and Animal Quarantine etc.), Developmental agencies and municipal authorities, Export Promotion Board etc. are also necessary to understand various policies, programs and protocols that drive cargo movements and demand for logistics facilities.

Industry and Trade Associations have complete knowledge about industries in the area, all the requirements related to industries and challenges associated with it. Interactions with them will help us understand their field of operation and get an insight in to their industries.

4.3. Step 2.3 Stakeholder Interactions

It is critical to do robust outreach to the relevant stakeholder during the whole process of the planning, designing and implementation of the interventions. The public sector cannot address freight issues without understanding the underlying phenomena involved. Often policy decisions relating to zoning, urban design concepts, parking regulations, and restrictions on truck routes can result in unintended problems (due to different perspective and business issue faced by the industry or business community).

An initial list of stakeholders may be further refined based on their size of operations, type of cargo handled and position in the freight value chain. It is important to interact with stakeholders to cover a wide range of commodities. This will help city planners to understand the value chain of key large commodities moving in the city. It is also important to cover a sample of each category of stakeholders such that issues and challenges faced by each stakeholder is understood.

Stakeholder discussions can either be done through individual interactions or through group interactions.

4.3.1. Analysis and inferences from stakeholder discussion

Inputs sought from stakeholders should further be categorized into four broad categories

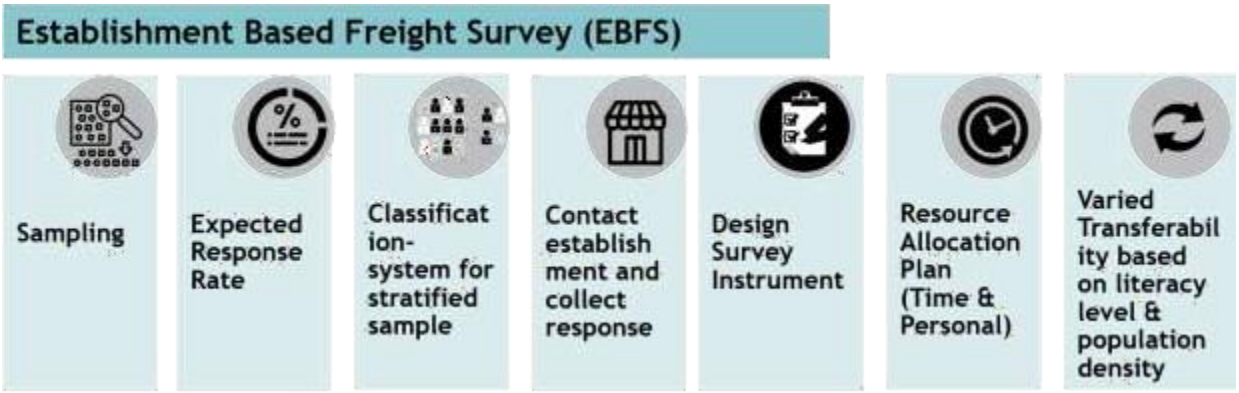
1. **Current trends**: Discussions on current trends help planners to understand where the current freight traffic is moving these discussions should ideally highlight the Network implications, Nodal requirement, Policy implications and Environmental Implications.

2. **Future trends**: Discussions on these categories will highlight what direction the industry will take in the future. It is important to understand the future perception of the stakeholder and factor them in the final freight management plan.
3. **Challenges faced**: challenges highlighted by stakeholders can be further divided into operational challenges and governance challenges. Planners would have to device strategies to address these challenges in the action plan.
4. **Solutions sought**: by virtue of operating in the business for many years, stakeholder often have also had their own ideas of the solutions that will work. It is important to capture these ideas for further investigation and detailing int eh action plan.

4.4. Step 2.4 Traffic and Commodity Survey

Establishment based freight surveys (EBFS) has been found to be the most explanatory technique to understand the logistics in a city. The survey provides both goods flow and vehicle activity data besides linking goods flow and vehicle activity to business sector/land use/supply chain.

Figure 6 Establishment Freight Survey



Pani, A. and Sahu, P.K. (2019)[1] provided an integrated framework for establishment-based freight survey design and implementation depicted in the figure 4-1 below. Paper demonstrates the application of the proposed framework by implementing it in eight cities across two geographically dissimilar states of India. The framework talks about the key aspects which should be considered while conducting the establishment-based freight survey exercise.

Present study, gives a comprehensive methodology for conducting EBFS taking reference from the available literature. Various aspects involved in EBFS data collection exercise are listed below-

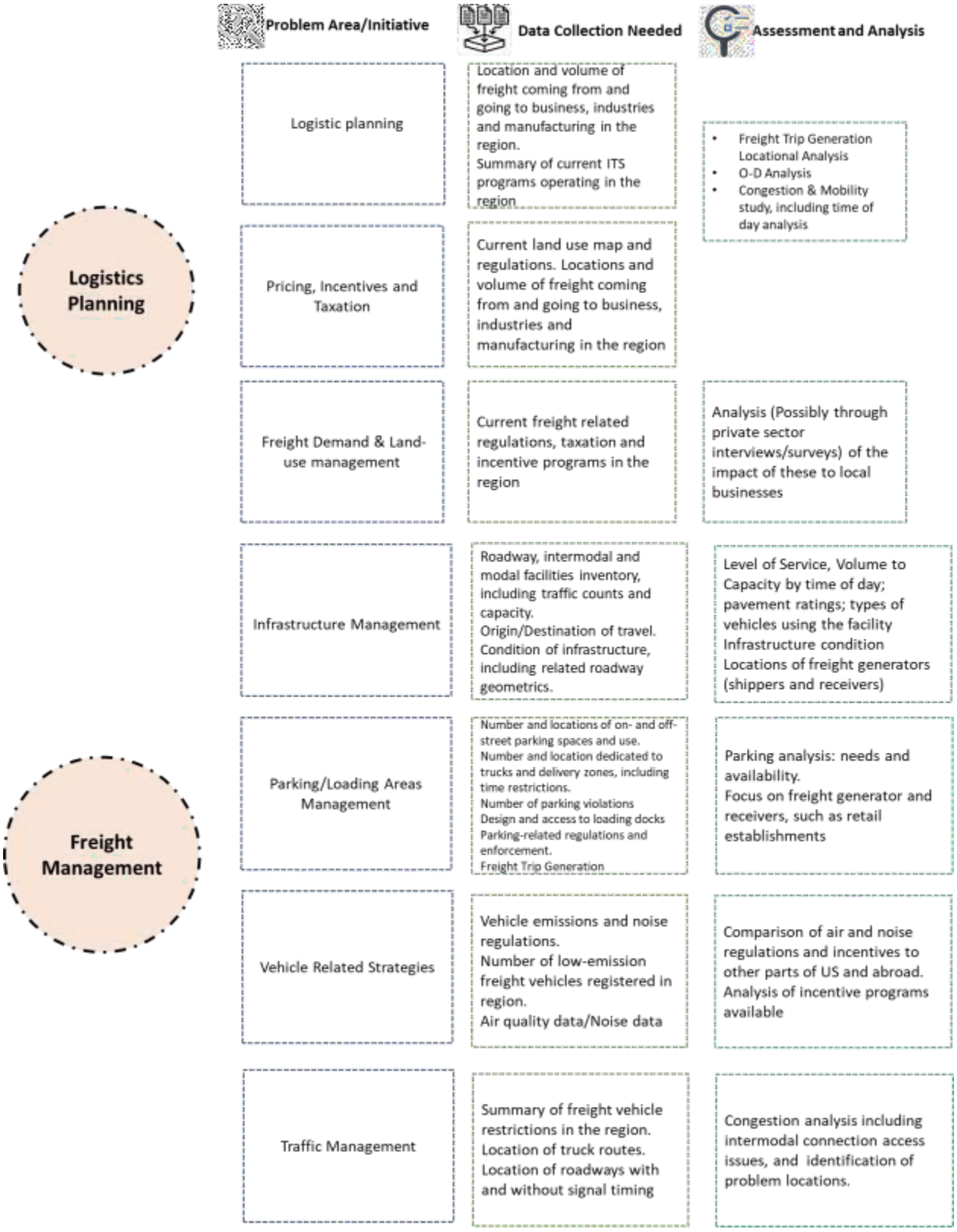
[1] Source: Pani, A. and Sahu, P.K., 2019. Planning, designing and conducting establishment-based freight surveys.

5. Step 3 Demand Assessment and Planning

5.1. Step: 3.1 Freight Modelling

The data collection & analysis required for each is described below-

Figure 7: Survey instruments and their enquiry themes

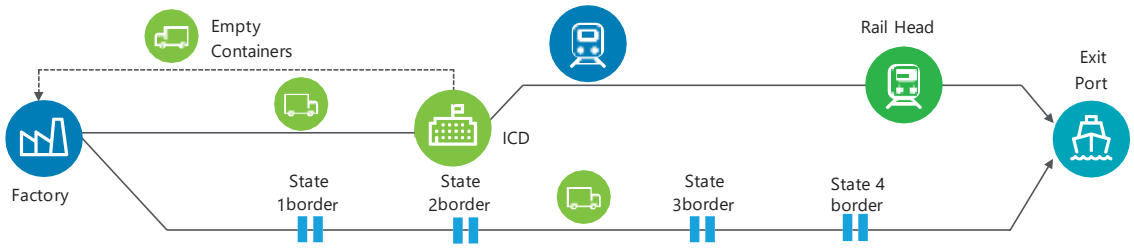


5.2. Step 3.2 Map Current Urban Commodity Value Chain

It is important to capture data on top 10 commodities moving in the cities. Source of this information would largely be stakeholder discussions who will talk about their specific commodities and explain the entire value chain of commodities.

Capturing of the value chain of top commodities helps in understanding the nature of movement of commodities. A typical value chain[2] of commodity can look like as shown in the figure below:

Figure 8: Typical value chain of a commodity



For example: in Nagpur large proportion of rice come from the north eastern region around Chhattisgarh. And moves directly toward the container terminal for exports. Container terminal is towards the south of the city thereby increasing traffic within the city or on the ring road.
Therefore, mapping these value chains will help planners understand the challenges specific to commodities moving in the city.

Further **commodity composition** plays an important role in defining the needs for logistics infrastructure. For example, there is a very large movement of cotton in the three months when it is produced in and around Nagpur. Cotton doesn't have a very specialized warehousing requirement. A well-ventilated covered shed would be enough for its requirement. Plus, it is a seasonal commodity moving in high volume. Therefore, planning for storage facilities for this commodity has to be on low value land in the city.

Commodity specific specialized requirements is another category of information that is usually captured through stakeholder discussions. For examples wheat in Madhya Pradesh is often stored in Silos (large drum like structures) while Rice can only be stored in bags not Silos. Storing rice in silos causes breakage and caking at the surface leading to damage of the product. Such specialized understanding will also help in planning for logistics infrastructure both nodes and network.

5.3. Step 3.3 & 3.4 Challenges and solutions into a Logistics Plan

The most important aspect of the strategy basket is to help the city understand the various options to tackle the problems faced and select the appropriate strategy in city. City authorities /agencies as a preliminary discussion can set off the options with relevant stakeholder (both public and private) and gauge interest and support.

[2] Source: 2018 & 2019. MoCI. LEADS - Logistics Ease Across States

SUTP toolkit[3] draws upon popular urban freight management strategies from international practices. Further best practices are compiled by GIZ[4], Rocky Mountain Institute (RMI)[5] and several others. CoE-SUFS also developed a tool to assist cities internationally choose appropriate alternatives for intervention.

This study has adapted from various international tools and developed a comprehensive catalogue of 26 critical measures suitable in Indian context. Based on these, the following section simplifies the catalogue to include the practices that have high probable transferability to the 'production plus', 'production –consumption balanced' or 'consumption plus' cities.

Table 1: 'Strategy basket' for different type of cities to develop solution alternatives for various problems and challenges faced[6]

Solutions	Category A city (Production plus)	Category B city (Production consumption balance)	Category C city (Consumption plus)	Checks or considerations
Land use policy				
Integrating Freight into land-use	Ensuring adequate perspective for freight and planning	Balanced perspective, resources and priorities to freight	Securing land use for future, Balance freight and passenger	• Private sector engagement • Engage and coordinate with public agencies
Regional plan			To address the dependencies of smaller towns cities around	• Locational issues • Desired size, capacity, and connectivity • Lead agency • Resources needed to operate the project
City development plan	Addressing comprehensive analysis of problems and solutions	Addressing comprehensive analysis of problems and solutions	Addressing comprehensive analysis of problems and solutions	• Lead agency • Resources needed to operate the project • Engage and coordinate with public agencies
Old city and core area reforms	Whole city has focus and	Old city and core have	Most complex to delink wholesale,	• Enough right-of-way available

[3] Source: MoHUA, 2017. Toolkit on Environmental Analysis – Strategic Environmental Assessment and Environmental Impact Assessment.
[4] Source: GIZ, 2016. Urban Freight and Logistics: The State of Practices in India.
[5] Source: MoHUA & Rocky Mountain Institute, 2019. Efficient Urban Freight: Best Case Practices.
[6] Source: structure and clustering adapted from CoE SUFS toolkit and collection of best practices.

	dependency on it	road safety issues, congestion in wholesale markets	freight from core city areas	• Other projects required to fully complete the project
Demand Management				
CMP and CTTS		Integrated planning of passenger and freight	Integrated planning of passenger and freight	• Lead agency • Resources needed to operate the project • Engage and coordinate with public agencies
Modal shift		Congestion and pollution issues	Congestion and pollution issues	• Lead agency • Resources needed to operate the project • Engage and coordinate with public agencies
Traffic governance through UMTA and UTF			Governance and funding gaps	• Lead agency • Engage and coordinate with public agencies
Cargo consolidation centers			At each district or wards gaps in freight distribution	• Private sector engagement • Engage and coordinate with public agencies
ITES				
Real time information management		Quick information and variable charging	Quick information and variable charging	• Lead agency • Resources needed to operate the project • Risk of the technology/project becoming obsolete
Artificial intelligence and fuzzy logic			Complex interaction needs modelling	
Custom IT solutions				
Last mile deliveries				

Staggered or dedicated time slotting	Congestion and delay in freight delivery	Congestion and delay in freight delivery	Congestion and delay in freight delivery	• Private sector engagement
Training and awareness				• Private sector engagement
Alternate choice for last mile delivery			Congestion and delay in freight delivery	• Desired size, capacity, and connectivity • Resources needed to operate the project
Infrastructure management				
Ring road development		Through traffic bypass	Congestion and delay in freight delivery	• Enough right-of-way available • Locational issues
Upgradation of existing infrastructure	Congestion, pollution, loading offloading	Congestion, pollution, loading offloading	Congestion, pollution, loading offloading	• Enough right-of-way available • Desired size, capacity, and connectivity
Cluster development		Hub for Aggregation of freight	Hub for Aggregation of freight	• Lead agency • Resources needed to operate the project
Building bye-laws	Norms for controlled development	Norms for controlled development	Norms for controlled development	
Dedicated freight parking and loading zones			Congestion, pollution, loading offloading	• Enough right-of-way available • Locational issues Desired size, capacity, and connectivity
Parking management				
Loading and parking restrictions		Congestion, pollution, loading offloading cause	Congestion, pollution, loading offloading cause passenger inconvenience	• Enough right-of-way available • Desired size, capacity, and connectivity

		passenger inconvenience		
Parking reservation system			Congestion, pollution, loading offloading	• Desired size, capacity, and connectivity
Shared parking			Congestion, pollution, loading offloading	• Policy/project be mandatory or voluntary • Locational issues • Desired size, capacity, and connectivity
Dedicated parking			Congestion, pollution, loading offloading	• Locational issues • Desired size, capacity, and connectivity
Vehicle initiatives	Pollution, safety	Pollution, safety	Pollution, Safety	• Incentive for participation (or penalties for not) • Lead agency
Traffic management	Congestion, pollution, safety, incentive, penalty	Congestion, pollution, safety, incentive, penalty	Congestion, pollution, safety, incentive, penalty	• Enough right-of-way available • Desired size, capacity, and connectivity
Financial incentives			Incentive, Penalty, Business margins, Impacts, and Saving.	• Lead agency • Private sector engagement • Engage and coordinate with public agencies • Policy/project be mandatory or voluntary • Incentive for participation (or penalties for not)

The comprehensive strategy basket covers array of interventions such as policies, programs, and projects. An example of a policy could be to give delivery trucks preferential access to curb space in commercial areas; an example of a program might be an ongoing effort to incentivize carriers to purchase electric trucks; and an example of a project could be an intersection redesign effort. Selecting the appropriate combination is of great importance.

The matrix (of strategy basket) takes care of the issues such as geographic scope of the challenge and strategy to address the root cause (s) and its more apparent manifestations. This strategy basket can point city authorities in the right direction however, detailed planning and option evaluation exercise alone can help estimate costs and benefits (discussed in next section). An assessment of the trade-offs inherent in the allocation of scarce resources, are only possible through a formal planning and stakeholder participation process.

These measures were classified into 25 groups and summarized with planning and land use related initiatives at one end and infrastructure and traffic related initiatives at the other end. The measures also were tied to the active participation of the main stakeholders involved in the freight issue to be addressed.

The planning for urban freight management does not take place in isolation. The most successful way to initiate the change is to engage all stakeholders for developing consensus-based strategies. Such a process of engagement has to be collaborative and in partnership.

The whole set of interventions require many stakeholders and agencies to play their part for robust coordination to obtain the desired outputs. Such tasks also include extensive stakeholder outreach and respective agency coordination. It also entails tedious data collection/ information gathering exercises along with detailed assessment and analysis - such as different planning exercises that includes managing NMT like bicycle, or Cycle Rickshaw Trolley (CRT) for freight while also managing the safety and security for inclusive and equitable employments.

Informing and initiating more structural and long-term initiatives such as -

- Land use policies
- Freight demand management strategies

And in more short and medium terms, the 7 groups of urban freight initiatives are -

- ITES
- Last mile delivery
- Infrastructure management
- Parking management
- Vehicle initiatives
- Traffic management
- Finance initiatives

6. Step 4 Action Plan

An Action Plan that defines the recommended policies, programs, processes, and improvements to be conducted is one of the key products of the planning process. City action plan is proposed to be created on the lines of a management practices called Balanced Score Card method.

An action plan is a comprehensive list of Tasks and activities defined by their timelines, dependencies, task owner and KPI for follow-up. Preparing an action plan has following steps:

1. **Detailing out the Tasks/projects**. Projects have to be detailed out with sub tasks and activities, that are to be undertaken in order to implement the solution: Each solution identified would require certain task to be completed before the solution can be implemented. Here the planners would have to detail out the list of each task, any sub-tasks and activities that would ultimately have to be completed to implement the solution.
2. **Defining the timelines and dependencies** with other tasks and activities. Each activity is associated with the time. Assessing and defining a range of time in which the tasks and activities have to be defined in the action plan.
3. **Short term, medium term and long-term division**: The set of solutions identified would then be divided into short term, medium term and long-term Tasks and activities. Short-term would generally be tasks that would be completed in a year, while long-term would-be tasks that would take around 5 years to complete. Long term tasks would usually be heavy capital-intensive solutions that would require time for raising capital and then long construction periods. Long term tasks could also include institutional and governance changes that would require changes in the working cultures of organizations.
4. **Detailing out the funding requirement with possible sources**: A base case cost has to be estimated for each task/project. This could be based on thumb rules so as to get an estimate. Detailed costs can be worked out when detailed reports and investigations are conducted. The tasks will have to be identified and funding sources would need to be identified. Funding sources could include government grants, convergence with government programs, bonds, Private funding through PPP etc.
5. **Identifying the owner of the solution and supporting actors**: Owner of the solution here refers to the person or designation in the organization that will take the responsibility of implementing the solution. Identifying an owner is important to ensure that the projects are finally implemented and seen through to its completion. This also ensures that someone is answerable to the results of the implementation process.
6. **Define KPIs for follow-up activities**: It is important to define measurable outcomes, which can at the end reveal the success of the project.

6.1. Pilot Testing and Implementation

Pilot testing, particularly in urban freight management, could play a key role in demonstrating to the private sector that the public sector is interested in: proceeding carefully with the implementation of new ideas, assessing the real-life impacts of potential initiatives, and implementing only those that

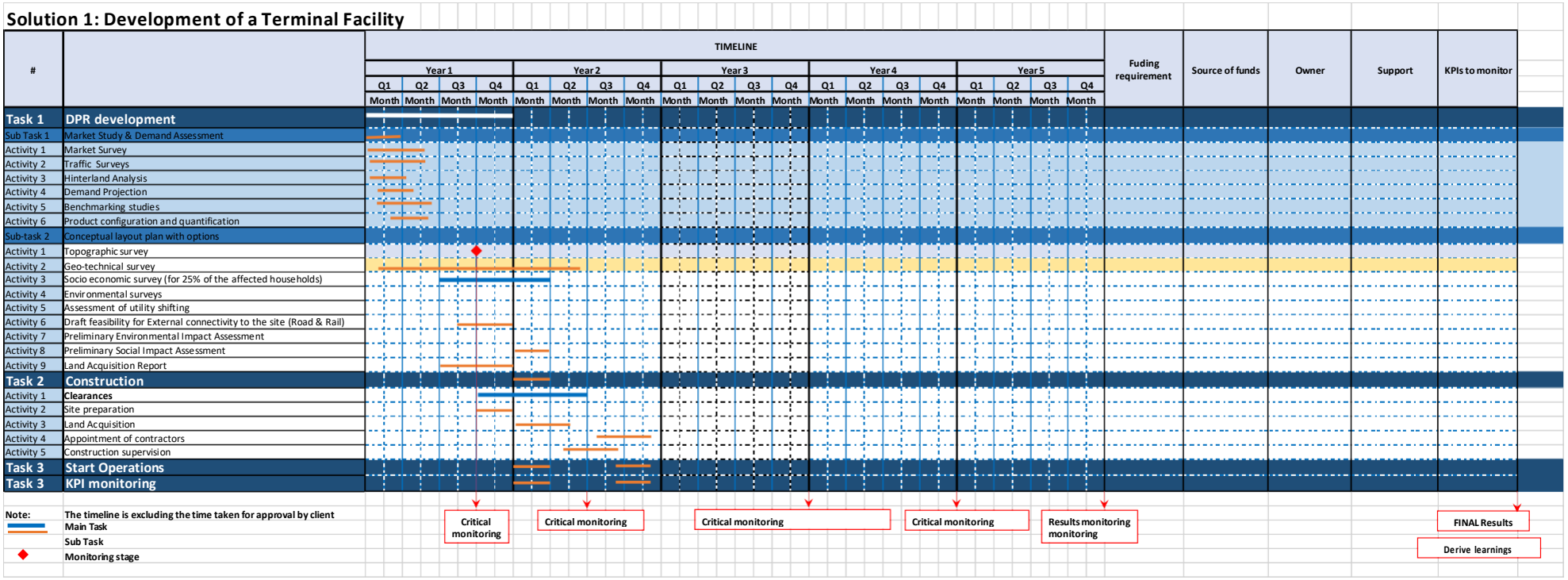
successfully pass the pilot tests. Pilot tests provide an opportunity for all stakeholders to find out more about an initiative and mechanism so that they can decide whether to (a) move ahead with a full implementation phase or (b) stop. To fulfill that role, however, pilot tests need to be properly designed; a poorly designed pilot could lead to either a false success (a bad idea that performs well in the pilot), or a false failure (a good idea that does not perform well in the pilot).

6.2. Follow-up: Reassessment and Modification

Planning is a process that should be continuous, given that issues and challenges in any region continually change. Planners need to continually revisit and reassess freight strategies—both those recommended and those in place—to determine what is working and what may need to be adjusted to successfully improve the performance of the freight transportation system. In urban freight, it is Important

Follow-up conveys to the private sector that the public sector is interested in careful consideration of the impacts of their initiatives. Also, it is said that “success breeds success.” Being able to demonstrate the success of freight initiatives that have been recommended and implemented helps build support for future initiatives. If properly conducted, follow-upand reassessment foster an environment in which public and private-sector involvement is ongoing; then proactive freight planning can prosper.

City action plan be built in readily available software such a Microsoft projects or even in Simple spreadsheet software would do. A typical Action plan for each solution will look like as shown in the image below:

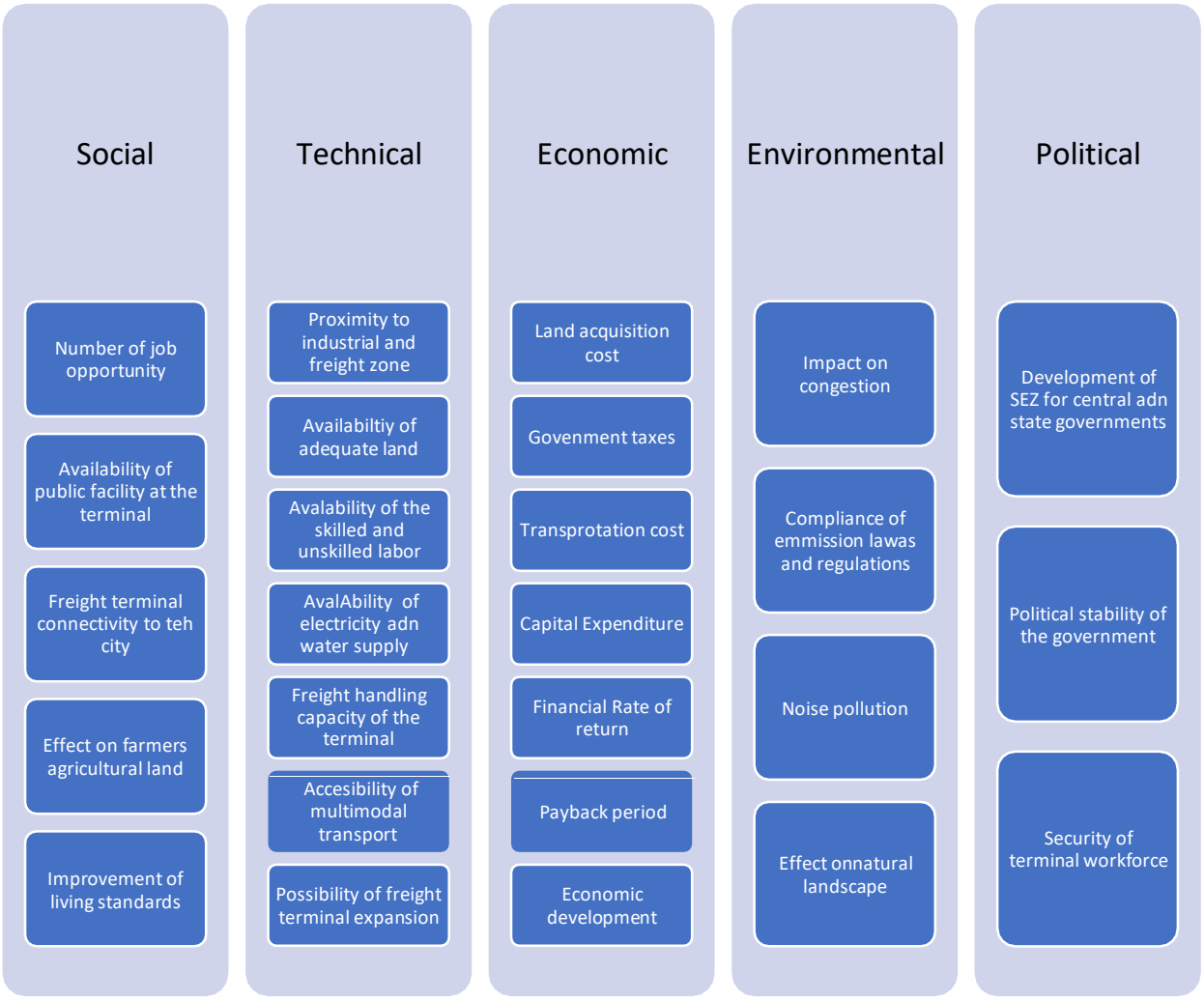


7. Step 5 KPI for Impact Evaluation and Feedback

7.1. Suggested STEEP Framework7

It is proposed that STEEP framework is used for evaluating the impact of City Action Plan. Following figure depicts a comprehensive list of indicators that should be measured at end implementation of the action plan.

Figure 9: Suggested STEEP Framework



7.2. Definition of Performance Measures

Performance measures (PMs) are an important aspect of the planning and decision-making process and are central to gauging the degree to which goals and objectives are achieved. During the planning stage, PMs are used to screen and select a preferred solution from among the possible alternatives. Once a solution has been implemented, PMs provide a method to evaluate the level of success that was attained in achieving intended goals.

[7] Kyler, 2003. Assessing Your External Environment: STEEP Analysis.

This implementation guideline refers to measuring performance, by measuring specific outcomes of interventions taken. These could range from a modeling result to more tangible data points such as safety, parking, use of alternative fuels, or reliability of freight movement /delivery.

PMs can be defined in numerous ways, but practice shows that they work best when they are:

1. directly related to a single objective;
2. easily quantifiable;
3. able to gauge the entire range of levels of achievement (a PM that is defined as a continuous variable is better than one that takes only two values, like “achieved” or “not achieved”).

7.3. Stakeholder outreach and agency coordination:

Different stakeholders are likely to have different ideas about what PMs should be used, and how to measure them. For example, the delivery costs paid by receivers may be a good metric to measure the objective of “increasing the competitiveness of downtown.” However, freight carriers may argue that delivery costs do not account for the full cost of a delivery given that carriers, typically, absorb parking fines and tolls due to the competitive pressures of the market.

Respecting the confidential nature of commercially sensitive data is crucial. Many useful PMs—such as the full cost of delivery just mentioned—could require the use of data that carriers may refuse to share, such as driver wages, indirect costs, and fringe benefits. Engaging private-sector associations and trade groups could enable the public sector to create solid cost estimates for use as input to the PMs. Gaining stakeholder support in the process of defining the PMs, and securing the corresponding input data, are essential.

7.4. Data collection:

PMs are by definition quantitative, and thus require data on the existing or base conditions and/or, in the case of planning efforts, estimates of their future values. Producing such estimates requires the use of planning models and/or simulations. It is suggested that freight planning staff work closely with the modelers at the planning agencies to ensure that the available models can produce the desired PMs. If the models are not capable of providing the necessary PMs, either the PMs must be redefined to suit what the models can provide, or the models must be modified to provide the desired PMs. Careful consideration is needed to determine whether adjusting the PMs or adjusting the models will yield the most applicable and useful data.

Freight PMs may require data from all modes of transportation, and may include analysis of safety, mobility, system conditions, pavement conditions, travel times, congestion, accessibility, parking, or environmental conditions related to freight movements.

Freight data availability often is an issue in defining PMs. Engaging stakeholders in the definition of PMs and, at the same time, securing their support to get the necessary input data, can mitigate the data availability issue considerably.

7.5. Assessment and analysis

PMs are used at several steps in the management and planning processes, such as to assess the base case conditions surrounding a freight issue, and to compare the results of the assessment to conditions in other jurisdictions. Such comparisons provide context to PMs that may otherwise be difficult to interpret.

PM analyses must account for such important factors as the variability of the input data used; the time it takes to collect the data and update the PMs; and the sensitivity (or lack thereof) of the PM to changes in the input variables. For example, PMs that use highly variable data (e.g., travel times), need to be analyzed with caution to ensure the robustness of the results. A PM that relies on data collected every 2 or 3 years will fail to capture rapidly changing conditions, whereas a PM that is too sensitive, or too insensitive, may be difficult to analyze. All of these factors need to be taken into account. Adjustments may be needed to the definitions of the PMs and the necessary input data to ensure that the PMs adequately fulfill their roles.