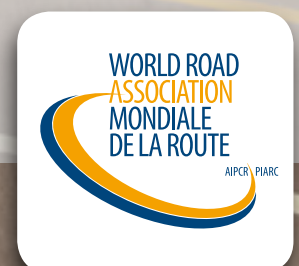




# FRAMEWORK FOR CITYWIDE ROAD FREIGHT TRANSPORT MANAGEMENT

Technical Committee 2.3 *Freight Transport*  
World Road Association



# STATEMENTS

*The World Road Association (PIARC) is a nonprofit organisation established in 1909 to improve international co-operation and to foster progress in the field of roads and road transport.*

*The study that is the subject of this report was defined in the PIARC Strategic Plan 2012 – 2015 and approved by the Council of the World Road Association, whose members are representatives of the member national governments. The members of the Technical Committee responsible for this report were nominated by the member national governments for their special competences.*

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Technical Committee 2.3 *Freight Transport*  
World Road Association

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## FRAMEWORK FOR CITYWIDE ROAD FREIGHT TRANSPORT MANAGEMENT

The report entitled “*Framework for citywide road freight transport management*” of WGI, TC2.3 “*Freight Transport*” describes the research and findings about the frameworks for public sector road freight transport management (RFTM). RFTM is a key contributor to the sustainable development of urban areas, since good freight transport management supports the creation of efficient and environmentally friendly freight transport systems. The framework of RFTM is characterised by legal, institutional and strategic aspects. A unique aspect of the report is the use of case studies, based on surveys of the frameworks for RFTM found in several PIARC member countries.

The report charts the decision making frameworks that support and guide national, regional and local freight planning activities expanding on the previous work of the committee to determine the approach and general principles that underpin a successful multi-faceted, multi-stakeholder process to achieve the goal of safe, efficient and environmentally sustainable RFTM systems.

RFTM issues are complicated and challenging, balancing economic growth and environmental impacts, reducing energy consumption and improving road safety. Added complexity comes from the multiple stakeholders involved in urban freight transport, namely shippers, freight carriers, administrators, residents and others. The different aspirations of private and public entities highlight the benefits of coordination in the process of implementing policy measures. Within the public sector the collaboration among multiple local authorities in the same region as well as those at regional, national and international level is required.

Institutional factors for RFTM include legal issues, organisational structure and functionality. Bodies are found for RFTM at local, regional, national, and international level in various countries on either a legal or voluntary basis. Recognising the importance of RFTM, the common functions of these bodies include sharing ideas and views, finding appropriate approaches and measures to solve problems, implementing policy measures, and evaluating the results.

Multi-jurisdictional freight planning with regional cooperative arrangements can provide the policy direction and context needed for the implementation of freight management activities. Public-private partnerships also play a key role in identifying needs, developing solutions, and exploring the sharing of benefits and costs. Nevertheless a dedicated freight planning and management function is essential within government at different levels. Also in public-private partnerships of stakeholders, leadership is important to define a common vision for RFTM and promote a strategic approach.

After implementing policy measures, ongoing evaluation of RFTM performance is required including impacts on transportation system as well as users of the system.

There are examples of multiple local authorities within a metropolitan area developing a collaborative relationship in their freight transport management. Public-private collaborations can be a leading group playing an important role in promoting freight transport management in the city/area. There is a variety of approaches in the freight transport management for urban

areas; some focus particularly on area wide logistics, while other cities implement individual issue measures in response to specific needs. Each area judges its approach on the on its own situation.

Many areas have designated truck routes (either regulated or preferred routing) to focus truck traffic on the most appropriate parts of the road network. Some areas specifically design road infrastructure to achieve this by providing an arterial road network, including ring and radial roads, as part of the broader plan of the surrounding metropolitan area. The development of such arterial roads often attract logistics centres and industrial activities to adjacent areas. Where supported by land use planning, this “*new-highways-bring-industries*” effect results in clusters of freight related activity along the arterial road network. Some national policies emphasises all user access to public roads whereas others adopt regulatory approaches to the freight vehicle traffic specific to an area or across wider areas.

We recommend member countries of PIARC to establish an efficient framework based on public-private partnerships for delivering RFTM initiatives to tackle complicated urban freight transport problems towards mobile, sustainable and liveable cities. The features of framework might be different in different depending on the historical and cultural development of each area. Further research through international collaboration is needed on RFTM.



**CONTENTS**

**1. FRAMEWORK FOR ROAD FREIGHT TRANSPORT MANAGEMENT (RFTM) SYSTEMS.....3**

    1.1 INTRODUCTION .....3

    1.2 THE NEED FOR A FRAMEWORK FOR RFTM.....4

    1.3 FRAMEWORK OVERVIEW .....5

**2. INSTITUTIONAL FACTORS .....9**

    2.1 THE IMPORTANCE OF INSTITUTIONAL FACTORS .....9

    2.2 LYON, FRANCE .....10

    2.3 ADELAIDE, AUSTRALIA .....12

    2.4 OSLO, NORWAY .....14

    2.5 OSAKA PREFECTURE, JAPAN .....16

    2.6 CHICAGO, USA.....17

    2.7 MONTREAL, QUEBEC, CANADA.....18

    2.8 INSTITUTIONAL FACTORS AND RFTM SYSTEMS .....20

**3. STRATEGY DEVELOPMENT FOR ROAD FREIGHT TRANSPORT MANAGEMENT (RFTM) SYSTEMS .....21**

    3.1 MULTI-JURISDICTIONAL FREIGHT PLANNING .....22

    3.2 REGIONAL COOPERATION .....23

    3.3 PUBLIC-PRIVATE PARTNERSHIPS .....24

    3.4 DEDICATED FREIGHT PLANNING AND MANAGEMENT FUNCTION .....25

    3.5 LEADERSHIP .....26

    3.6 PERFORMANCE EVALUATION .....26

    3.7 CASE STUDIES—FREIGHT PLANNING AND RFTM .....27

    3.8 CONCLUSIONS .....33

**4. LESSONS LEARNED FROM CASE STUDIES .....35**

    4.1 CASE STUDY SURVEY .....35

    4.2 CATEGORIZATION OF CASE STUDIES .....37

    4.3 DISTINCTIVE CHARACTERISTICS OF CITIES/AREAS THAT REPRESENT EACH CATEGORY .....37

    4.4 FRAMEWORK OF INDIVIDUAL FREIGHT MANAGEMENT BY AREA/CITY .....49

**5. CONCLUSION .....59**

**6. BIBLIOGRAPHY / REFERENCES.....61**

**7. GLOSSARY .....62**

# 1. FRAMEWORK FOR ROAD FREIGHT TRANSPORT MANAGEMENT (RFTM) SYSTEMS

## 1.1 INTRODUCTION

The growing demands for reliable transportation for freight and people and the increasingly vital role it plays in society today are linked to economic productivity requirements and to the greater mobility demands of the population.

Dependable and efficient movement of freight is inhibited by constraints such as congestion, environmental concerns, social changes, ageing infrastructure and other issues. These constraints are becoming increasingly significant at both national and local levels, especially when they impact on productivity at strategically located demand and supply points.

The influence of national and regional policy and planning settings is also a significant factor to be understood when addressing concerns. And in many cases, this factor is also not easily understood nor overcome by the first actors traditionally faced with freight problems, i.e. the private sector. This requires guidance to all actors using a method and approach based on what has been found to work well across a range of situations.

This report introduces and discusses elements and principles that provide the framework for planning, implementing and evaluating Road Freight Transport Management (RFTM) systems that cut across broad geographical, jurisdictional and existing land use/transport planning systems. The report looks at a range of case study materials to draw out principles to be considered in developing successful RFTM systems that align with other systems mentioned above, and the many actors involved across the public and private sectors.

It builds on the previous report of this committee “*Public Sector Governance of Urban Freight Transport*” that provided guidance for the public sector by way of a four step framework and process.

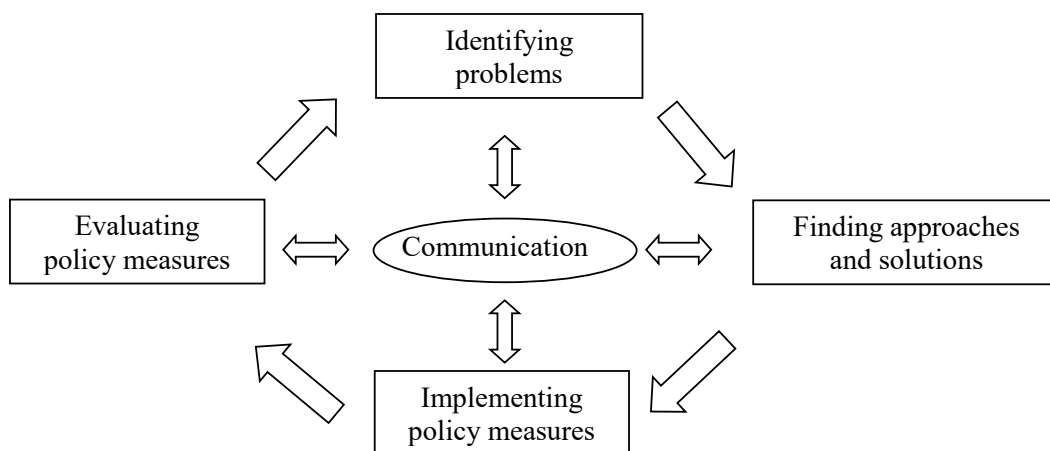


Illustration 1.1 - Framework of governance on urban freight transport<sup>1</sup>

<sup>1</sup> Public Sector Governance of Urban Freight Transport, PIARC Technical Committee B.4, Freight Transport and Inter-Modality, 2012.



The purpose of this governance framework is to aid those primarily from the public sector, and involved in planning, implementation and evaluation of urban freight transport policy measures. It describes an iterative and cyclic procedure relating to problem identification, finding approaches and solutions to be used, implementation of measures, and evaluation. The need for good communication throughout this process and amongst the actors is a key element to ensure a successful RFTM system outcome for urban environments.

In the previous report “*Road Freight Transport Management (RFTM)*” is described as a system of tools that is intended to bring social, economic and environmental success to a society. It is defined as follows<sup>2</sup>:

RFTM measures are a set of policies designed to improve the safety and economic efficiency of freight vehicles, as well as reducing their associated environmental burdens and improving local quality of life. The measures include infrastructural and non-structural measures such as developing roads and allocating freight movement to a desirable time and route.

This report builds on the previous report by developing case studies from member countries to establish common characteristics from among the subject responses and utilise the experiences of TC 2.3 members to understand important institutional factors and principles that support a strategic framework to approach the development of Road Freight Transport Management (RFTM) systems.

## 1.2 THE NEED FOR A FRAMEWORK FOR RFTM

### **The problem**

While not all freight moves by road, inter-regional and intra-regional road freight continues to grow and in some countries is the only viable or available transport mode. Additionally, the continued growth of demand for reliable urban freight transport, the impact of constraints of specific constraints related to freight movement on roads and the need to integrate the RFTM system with other planning and geographical considerations to achieve optimal outcomes are all factors that highlight the importance of establishing a global system perspective to be adopted by all the actors involved.

The freight sector is unique in that it carries out the operational elements of RFTM, however the activity itself is reliant upon the provision of transport infrastructure that is primarily planned, funded and developed by public sector entities at a national, regional and local level. Freight is also impacted upon by a number of other policy formulations and regulations such as road safety, land use and environmental policies, all of which intensify the interactions and demands placed on RFTM.

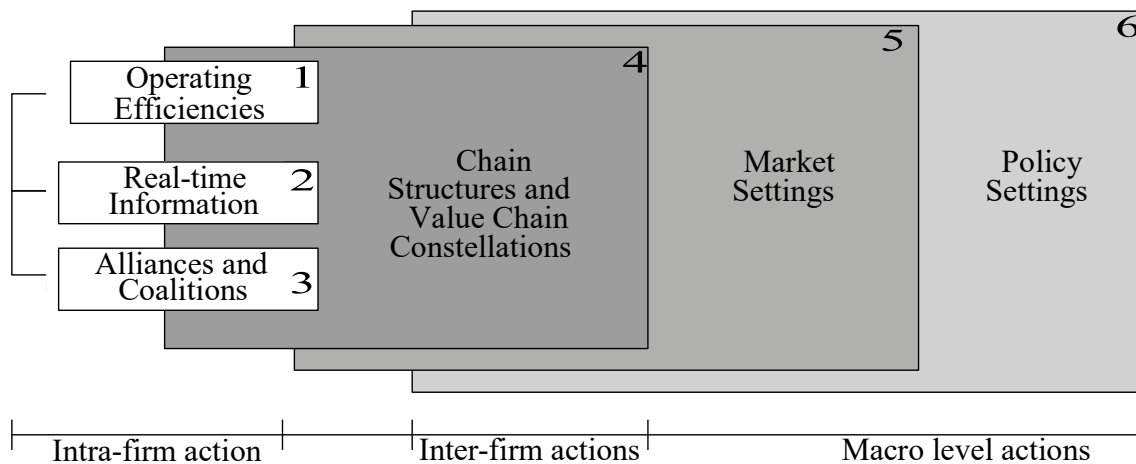
On the other hand the freight sector has historically been left to manage its responsibilities such as operational logistics planning and inter firm interactions, with the broader business sector setting market conditions. This historical split of responsibilities creates a critical issue regarding the understanding of each other’s interests and drivers which can inhibit policy formulation and lead to burdens such as reduced productivity of the freight sector. Robinson<sup>3</sup> depicted these

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<sup>2</sup> Public Sector Governance of Urban Freight Transport, PIARC Technical Committee B.4, Freight Transport and Inter-Modality, 2012.

<sup>3</sup> Integrated and Intermodal Freight Systems: A Conceptual Framework, R. Robinson

interactions in the following model to show the distinct and multiple layers that create value and make up an integrated freight/supply chain system.



*Illustration 1.2 - The “efficiency envelopes” for integrated chain systems*

Importantly, the levels of tension between each of the elements of the system, as well as the reliance upon each element, can add to the misalignment between actors when seeking to make changes with best intent to deliver optimum social outcomes, as each seeks what is best for them.

In summary the problem we have is that there is a lack of knowledge of RFTM within the public sector, combined with tensions and interdependence between the parties involved and the increasingly complex nature of this issue itself. This problem is at the very core of the need for a decision-making framework for RFTM.

Without such guidance known issues remain such as:

- Limited vision and strategic leadership of RFTM, locally, regionally and nationally
- Freight policy direction that is not well formed
- Regulations that restrict productivity
- Reduction or oversupply in infrastructure capacity
- Wasted land use opportunities
- Increased tensions between actors
- Limited public private partnerships to develop solutions

### 1.3 FRAMEWORK OVERVIEW

A framework can be described simply as a structure that supports or guides an approach to an objective. In this sense frameworks have long been used in areas such as public policy, legislation, academia and planning, as well as decision making to bring together ideas that provide the broad outline to support a particular approach to achieving a goal.

Whereas public policy frameworks provide the necessary structure to support policy makers to develop and monitor policy, frameworks in academia have been applied more in conceptual and theoretical contexts and can be distinguished by:

- a conceptual framework being a structure of assumptions, principles and rules that holds together the idea that makes up the concept, whereas
- a theoretical framework being a group of related ideas that provide guidance to areas such as research projects

Whatever context a framework is being applied in, there are several components to any type of framework that come through and which consistently appear throughout relevant literature.

In essence a framework (summary of components):

- Should comprise principles, procedures, guidelines
- Be logical in structure
- Should inform discussion around considerations to be dealt with
- Be benefits led i.e. defined goals, objectives or outcomes
- Contribute to action plans
- Be fit for purpose
- Be guided by good practice
- Be clear, transparent and easy to access and understand
- Can show enhancement through effective consultation and communication with relevant actors
- Can be monitored and periodically reviewed to ensure ongoing relevance

Turning back to the previously outlined problem and issues related to RFTM we can further list key challenges to be considered by actors. Consideration of these shows the range of complexities to be taken account of and supports the need to establish a Framework for RFTM systems. The following list provides an example of the types of challenges to be considered from a whole of system perspective, categorized as institutional and non-institutional:

#### **Institutional Considerations**

- Unclear accountability for all levels of freight policy planning and implementation by public sector actors
- Variations in national and inter/intra-regional network structures
- Variations in national and inter/intra-regional demand patterns
- Economic and lifestyle changes and demographic challenges
- Urban intensification through land use plans and the impact to demand patterns
- Competing policies such as energy, fuel and environmental concerns
- Introduction of complex institutional, ownership and funding arrangements for infrastructure assets
- Future societal trends and changing norms
- Changing roles and responsibilities of public sector actors
- Decision makers designing freight policies or policies that impact on freight movement without requisite knowledge
- Lack of alignment and support of national and local plans that support all levels – national, regional and municipalities
- Capacity and capability contributing to variances between the multi layers of planning
- Information gathered and held by a variety of public sector actors in various formats
- Non existent or limited forums that encourage collaboration between actors
- Mapping the multiple actors and understanding the competing demands

**Non-institutional Considerations**

- Variations in national and inter/intra-regional supply patterns
- Supply side initiatives that drive economic and lifestyle changes
- Location shifts for major entry and exit points to the freight network
- Urban business intensification impacting local freight demand patterns
- Impacts from changing supply chain strategies such as specialization, centralization, lower inventories and JIT deliveries
- New societal trends shaping product demand
- Changing roles and responsibilities of private sector actors
- Increasing impact and rapid advancement of technology driven changes used within the whole system by private sector actors
- Escalation of the influence RFTM has in the supply chain
- Variations to the models of operational management used by supply chain practitioners
- Information gathered and held by a private sector actors in various formats and not available for consolidation to inform public sector decision making

While many of the considerations listed above can be categorised as being the domain of either the public sector (institutional) or the private sector (non-institutional), in many cases collaboration between the actors is required to fully understand the challenges, seek clarity and to share information in order to influence optimal outcomes.

To incorporate even a few of the above challenges into planning and decision making increases the complexity and as such requires a guide for actors to use in order to achieve their objective. This report outlines a decision-making framework that supports and guides national and local freight planning activities and expands on the previous work of the committee to determine an approach and general principles that underpin a successful multi-factor, multi actor process to achieve the goal of safe, efficient and environmentally sustainable RFTM systems.

Also, understanding the geographical, jurisdictional and existing land use/transport planning systems that impact on RFTM systems and strategies also provides valuable context when developing freight policy and managing the range of trade-offs that invariably arise.

In *chapter 2* this approach of categorising institutional factors to better describe the context has been used to provide an understanding of a number of case study locations. The following factors provide the necessary context:

- geography and jurisdictional arrangements
- land use and transport planning system
- public and private sector collaboration arrangements

As mentioned earlier, it is important to set and understand the principles that underlie a framework. These principles aid the decision making process in that they provide structure to the framework and harness the knowledge needed to make optimal planning decisions for RFTM systems and strategies.

In *chapter 3* the following principles have been identified as contributing to the successful development of RFTM systems and strategies:

- Guidance from multi-jurisdictional freight planning
- Understanding the regional cooperative arrangement between jurisdictions
- Use of public private partnerships
- Having a dedicated freight planning and management function
- Leadership
- Performance evaluation

In *chapter 4* we will discuss the lessons learned from the various case studies. This is explored through categorising the cities with a Freight plan and or those with a mechanism to regulate or control road freight flows, and then identifying their distinctive characteristics and describing their individual actions.

Finally *Chapter 5* draws together the conclusions drawn from the evidence presented throughout the report.

## 2. INSTITUTIONAL FACTORS

### 2.1 THE IMPORTANCE OF INSTITUTIONAL FACTORS

In order to understand freight management and freight transport planning in cities, it is important to know how the country's territory is organized on the political levels, and how transport system and the land use policies are organized. Which public institutions have the jurisdiction to manage the freight transport, and which institutions and laws are important for efficient freight transport management.

Private sectors normally decide how they organize their logistics, the choice of transport mode, the loading unit and the routes used. They depend on the public sector to provide road infrastructure for freight vehicles and organize land use in a way that allow them to build warehouses and terminals in locations that enable efficient logistics.

Collaboration between public and private sectors in freight transport planning is crucial to achieve a freight transport system that provides an efficient economy whilst having regard for improving safety and protecting the environment.

#### 2.1.1 Public sector

The legal and administrative framework for urban areas differs from country to country based on the way it has developed over time and the resulting government structure. A freight management plan is normally given authority by a democratic elected parliament or council. The type of plan most useful for an area depends on both the actual problem for a local and the wider administrative area, but also in the legal and administrative system, locally regionally and at the national level.

One key factor is how well the formal administrative territory matches the functional region. At what levels, covering what territory are there formal administrations and political elected "*parliaments*" able to make decisions relevant for a freight management plan for a locality, a city the surrounding area or a conurbation? How is the cooperation between the different administrative levels and between neighbouring areas at the same administrative level? How is the jurisdiction designed?

What is relevant on National, regional and city level differs from country to country. One obvious key factor is the size of the country and the size of the city. When we compare large countries such as USA with more than 300 million inhabitants and Japan with also more than 100 million inhabitants with small countries like Norway with 6 million inhabitants in total, the role of the national level regarding transport plans and freight management in the city is not the same. Similarly a plan may relate to a population of 100,000 people in a small city or to many millions residing in a sprawling conurbation.

The locations of terminals are important for efficient logistics, and also for successful multi modal freight movements. The need for freight transport in a city varies by the nature of the industries and commerce that inhabit the city, and this has to be individually planned for in each circumstance. The connection between longer and shorter transport journeys takes place in terminals, and the location of terminals and the space for logistic activities like consolidation



and warehouses near the terminals are crucial for the amount of consequential truck traffic in a city. Policies for land use and road freight transport management are closely connected. Policies for environment and safety also influence the efficiency of logistics. In the city centre the regulations for the last mile delivery and the access to stores and other stock receivers is important.

### 2.1.2 Private sector and public and private partnership

The private sector reacts to the existing policy or regulation framework conditions and organizes their freight transport accordingly. It is important for them that the public sector understands the subject of logistics and freight transport in general, and that there is a good dialogue about actual local needs and solutions. As many competing private businesses are small, the dialogue benefits from the private sector have representative organizations that can speak for them as an industry, not for single businesses.

The discussions between public and private sector can take place when a specific need arises or there may be more formal institutionalized structures. They can be in response to a certain requirement of the planning processes or simply a forum for regular discussions about freight issues.

### 2.1.3 Institutional arrangements in six cities

This chapter describes the population of the metropolitan areas and institutional arrangements for Lyon, Adelaide, Oslo, Osaka, Chicago and Montreal. This encompasses their geography, jurisdiction, land use and transport planning systems and arrangements for public and private partnership. A schematic overview of institutional processes and other initiatives for freight transport planning is given for each city. The diverse nature of the areas mean that they are not always directly comparable.

## 2.2 LYON, FRANCE

### 2.2.1 Geography and jurisdiction

Lyon is situated inland in the south-east of France, by the river Rhône. France has a population of 64 million people and is divided in 22 Regions, Lyon is situated in The Rhône-Alpes Region. The Rhône-Alpes Region has 6.2 million inhabitants and is the second largest region in France. It has a regional council that manages part of the transport network. The Regions are divided in Départements (there are a total of 96 in France), and the Rhône Département (1,7 million inhabitants) has a General council that manages the departmental road network. The national administration also has representatives at the various regional levels.

The city of Lyon is a municipality with a Mayor and Municipal council. The city has 485,000 residents. The urban area is much wider than the city boundaries, and the municipalities of Grand Lyon cooperate in a Public body of Intercommunal cooperation (EPCI) or intercommunal council. The Grand Lyon authority covers 58 municipalities with a total population of 1.2 mill inhabitants. Total territory of Grand Lyon is 527 km<sup>2</sup>. The city of Lyon covers 48km<sup>2</sup>. *Illustration 2.1* shows an overview of The Grand Lyon.



*Illustration 2.1 -Map of the Grand Lyon*

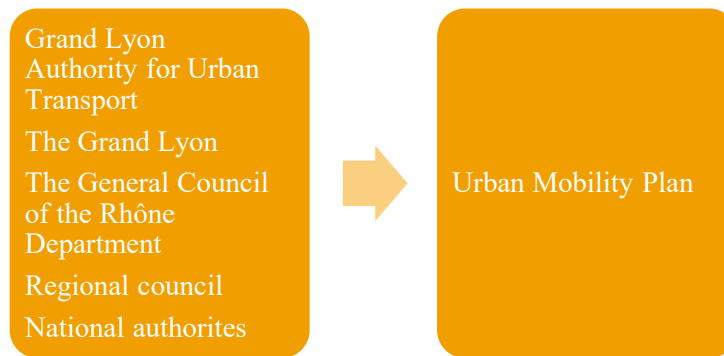
The nature of cooperation varies from one EPCI to another depending on the will of the communes involved. The Grand Lyon main responsibilities are for land use in the urban area. Over the larger geographical area another body, called the Urban Region of Lyon (RUL), consists of an association of various administrative levels in the metropolitan area (the Rhône-Alpes region, various départements, various EPCIs including the Grand Lyon.)

### **2.2.2 Land use and transport planning system**

In France there is a legal requirement for every city or agglomeration over 100,000 inhabitants to develop an Urban Mobility Plan (PDU) concerning passengers and freight mobility inside the perimeter of the urban transport network. The law is called “*Law on Air and Rational Use of Energy*” (LAURE). The mobility plan is legally required to comply with the Local Plan for Urbanism and the Schema for Territorial Coherency (SCoT) elaborated at the EPCI level. The SCoT itself must comply with the Territorial Directive for land planning and sustainable development (DTADD) at the regional level. Finally, the PDU must comply with the Regional Plan for Air Quality (PRQA).

The institutional system for the strategic planning of Road Transport Freight Management in Grand Lyon is thus not suited to a single administrative level. The management of the road network is at the regional and Département level, and the land use is at the Grand Lyon level. The national authorities are also involved. The ownership of PDU process is thus shared by the Grand

Lyon Authority for Urban Transport (AOTU), the Grand Lyon, the General Council of the Rhône department, The Regional Council and the National authorities. Ownership of the Urban Mobility Plan (including freight) is shared between administrative levels. *Illustration 2.2* gives a simplified overview of the planning system for the urban mobility plan.



*Illustration 2.2 - System for the Grand Lyon mobility plan*

### 2.2.3 Public and private partnership

In 2004 the Greater Lyon authority created a consultation institution for urban freight transport. Under the patronage of the Greater Lyon, this institution groups various public and quasi-public actors, as well as professionals from the transport and logistic sectors and research and innovation representatives. Thematic groups have been created to work on goods deliveries, truck parking and logistics terminals.

## 2.3 ADELAIDE, AUSTRALIA

### 2.3.1 Geography and jurisdiction

Adelaide is situated in the state of South Australia, one of six states in the Australian Commonwealth. The total population of Australia is 23.6 million inhabitants and 1.7 million of them live in South Australia. The Greater Adelaide region has 1.2 million inhabitants and is the only conurbation in South Australia.

South Australia has 68 municipalities with a council. Of them 19 local governments constitute the metropolitan area called Greater or Metropolitan Adelaide. The central municipality called the City of Adelaide has primarily city centre functions and has only 20,000 inhabitants.

The nineteen councils of Greater Adelaide cooperate in a body called the “*Local government Metropolitan Group*”.

*Illustration 2.3* shows Greater Adelaide.



*Illustration 2.3 - Greater Adelaide and the City of Adelaide marked in red*  
(Source : wikipedia)

### 2.3.2 Land use and transport planning system

South Australia’s Government controls land use and the physical development of the state through the planning system. The Planning Strategy for South Australia sets out the state government’s broad directions for planning and development.

The planning strategy has various volumes covering different geographic areas of the state, and one of them includes the 30-Year Plan for Greater Adelaide. Each volume of the strategy is reviewed and updated every five years. All South Australian councils must align their development plans with the planning strategy volume that applies to their region. This is done through the development plan amendment (DPA) process. In this way the government’s broad directions are translated to local plans and can guide local development outcomes. The main steps in the planning process are shown in *illustration 2.4*.



*Illustration 2.4. - Main steps in the planning process in South Australia, greater Adelaide*

The strategy includes every sector, and transport is a part of it. Integrated transport and land use planning is ongoing, and it is proposed that the draft Integrated Transport and Land use Plan (if finalized) be encompassed by legislation requiring the State Government to formally review the Plan at regular intervals (e.g. 5 years). This is currently under consideration. Freight is included in the transport plan.

Australia, connect state and local planning at the metropolitan level. The state has a leading position. The Local government Metropolitan Group is cooperating with the State of Australia in preparing the Development plan.

### 2.3.3 Public and private partnership

In the planning process the private sector has an advocacy role. They are consulted during the preparations of plans. There are also regular meetings to discuss/resolve issues (e.g. Ministerial Heavy Vehicle Forum).

The South Australian Freight Council (SAFC) has members drawn from all industry sectors along the supply chains, ranging from buyers and users of freight service providers and Government. SAFC is focused on identifying, key freight logistics issues for South Australia, and developing solutions to them. It covers all transport modes and activities – road, rail, sea, air and storage as well as the interactions between these modes. The aim is to improve the efficiency and quality of the transport and logistics supply chains. They are jointly funded by Australian and State government with support from the Australian Logistics industry.

## 2.4 OSLO, NORWAY

### 2.4.1 Geography and jurisdiction

Oslo is the capital of Norway. The population of Norway is 5.1 million inhabitants, and 640,000 live in the City of Oslo. The metropolitan area of Oslo has approximately 1.2 million inhabitants. *Illustration 2.5* shows Oslo and the surrounding county Akershus, urban area (light brown) main roads, port, rail freight terminal and airport.



*Illustration 2.5 -  
Overview of Oslo metropolitan area*

Norway is divided in 19 counties, and Oslo is one of them. The city council of Oslo covers the roles of both a county and a municipality. The county of Akershus surrounds Oslo, and with its 580,000 inhabitants it covers most of Oslo metropolitan area. The Oslo metropolitan area is not closely defined. It depends on the issue how wide the metropolitan area is defined. This can be illustrated by the fact that the city of Oslo is a member in 6 different regional cooperation bodies which all deal with planning and development each with a different focus.

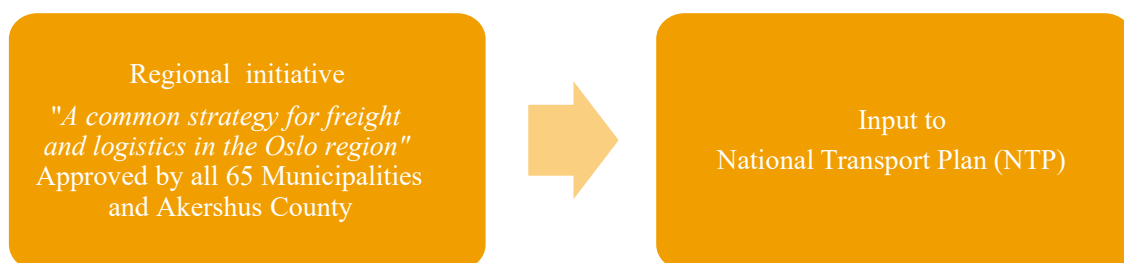
### 2.4.2 Land use and transport planning system

The Municipalities through their councils are responsible for the land use planning and zoning. The Municipalities also prepare developing plans for their territory. The Counties make indicative overall plans for the area. The roads are managed at all three levels, National roads, county roads and local Municipality roads. The National Public Road Administration manages the national and support management of the county roads.

City of Oslo and 65 neighbouring municipalities have prepared a report called “*A common strategy for freight and logistics in the Oslo region (April 2012)*”. The government has prescribed the Municipalities of Oslo and the 22 municipalities of Akershus together with the Municipal Ministry to undertake a formal cooperation in development planning for the region. The first Regional plan was submitted for consultation in November 2014. The Regional plan does not address freight but states that Oslo, Akershus County and the 22 municipalities of Akershus are supporting “*A common strategy for freight and logistics in the Oslo region*”.

The National Transport Plan (NTP) is the strategic document for road, rail and port management. The NTP is prepared by the Transportation Authorities (Road, Rail, Air and Coast) in a process that involves counties and the larger cities. The Ministry of Transport then prepares a white paper, which is considered and approved by the Parliament. NTP gives a ten-year plan for Funding national road projects, rail projects and rail terminals. Funding includes permission for toll roads/ city toll rings and state allocations. The NTP also states the overall national transport policy together with policies for the largest cities. A regional input is the document “*A common strategy for freight and logistics in the Oslo region*” which serves as Regional input to NTP on freight issues. The main focus is freight infrastructure investments and the location of Rail freight terminals to increase the capacity in the rail network.

The national Ministry of Transport has required the national transport administrations (Road, Rail, Sea and Air) to evaluate the strategy together with other options in a national context. Most of the infrastructure investments suggested in the regional strategy require national funding. *illustration 2.6* shows the metropolitan freight transport planning process in the Oslo area, based around a regional initiative.



*Illustration 2.6 - Metropolitan freight transport planning in the Oslo area*

#### 2.4.3 Public and private partnership

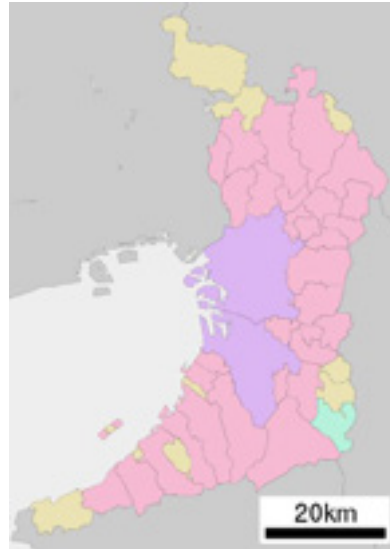
Private industry, in the form of their representative organizations, normally engages in land use and transportation planning issues through reference groups. In preparing the Freight Strategy, the private sector was involved through interviews and as participants at an open seminar. The project group for the strategy also visited private freight terminals and had meetings with leading individuals to learn about the freight industry and the transport user’s needs. Freight representative organisations are also invited to the NTP Reference Group as part of a wider group of other stakeholders.



## 2.5 OSAKA PREFECTURE, JAPAN

### 2.5.1 Geography and jurisdiction

Osaka is situated in Honshu in Japan and is the third largest city in Japan. Osaka Prefecture has a population of 9 million inhabitants. In Japan there are three administrative levels – National with the National Diet, Prefectural level governed by the prefectural Assembly and the Municipal Governments with their City or Town Assemblies. *Illustration 2.7* shows an overview of Osaka Prefecture.



*Illustration 2.7. - Osaka Prefecture*

### 2.5.2 Aménagement du territoire et système de planification des transports

Municipalities are responsible for a land-use planning. Overall policies are given by the national level. Japan has no specific legal process for urban transportation planning from the perspective of road freight management. The transportation plan is developed, reviewed and approved by the Prefecture. There is no legal requirement for them to do so. The Osaka “*Freight Transport Plan*” was developed in March 2009. The Freight Plan is an administrative plan developed by Osaka Prefecture in cooperation with a variety of interested groups. *Illustration 2.8* gives an overview of the planning process for Osaka Prefecture.



*Illustration 2.8 - Main steps in the Osaka Prefecture freight plan process*

### 2.5.3 Public and private partnership

During the planning process the “*Osaka City Logistics Study Group*” was formed. Members included business groups, logistics service providers, carriers and an administrative body. A series of discussions were held in order to incorporate their opinions into the “*Freight Transport Plan*”.

Also, a public comment was received before finalizing the plan so that opinions of freight industry and other industries are included in the plan where they could. The Freight Transport Plan is based on and gives input to other plans for infrastructure development.

## 2.6 CHICAGO, USA

### 2.6.1 Geography and jurisdiction



Chicago is the capital of the state of Illinois in USA. The city has a population of 2.7 million which is part of the larger metropolitan area home to 8.4 million inhabitants.

Illinois has a governor with a bicameral legislature, counties (governed by County Boards), townships (elected trustees), and municipalities (cities, with alderman representing districts, and villages, with trustees elected at-large). Township and municipal governments may overlap. *Illustration 2.9* shows a map of Chicago metropolitan area.

*Illustration 2.9 - Map of Chicago*

The regional planning agency, Chicago Metropolitan Area Planning (CMAP), is established as a multi-county municipality with an appointed Board of Directors and a separate appointed MPO Policy Committee. Counties, municipalities, the state, federal agencies, and transit agencies are represented on the MPO Policy Committee.

### 2.6.2 Land use and transport planning system

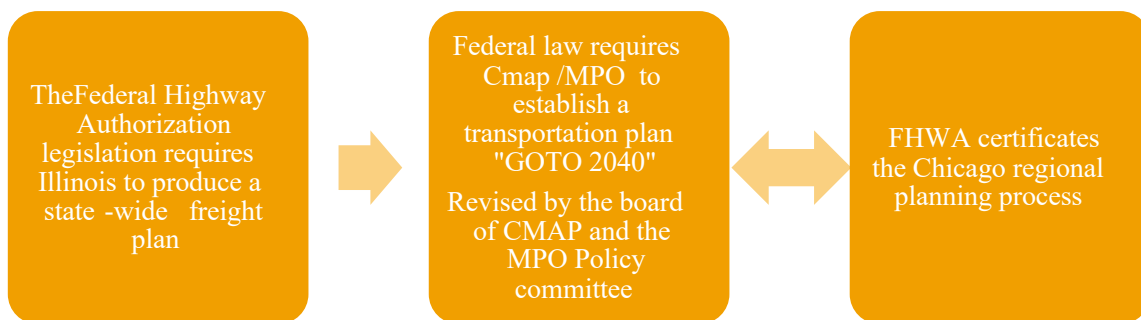
Municipal governments are largely responsible for land use planning and controls. Counties control land use elsewhere. CMAP, the regional agency, provides technical support for counties and municipalities. Each level of government (state, county, town, and municipal) has jurisdiction over a set of roadways. Jurisdictional responsibilities include planning, funding, construction, management, maintenance, and operations.

CMAP, as the MPO, is required by federal law to establish a transportation plan with a 20-year horizon in cooperation with the state. For this purpose, CMAP has developed GO TO 2040, a

regional comprehensive plan. GO TO 2040 includes a section on mobility, including a freight mobility chapter. Local agencies also produce plans. These plans may be special-purpose or comprehensive plans. CMAP provides technical assistance for the preparation of these plans.

The State of Illinois will be required by MAP-21, the federal highway authorization legislation, to produce a state-wide freight plan. Otherwise, no requirement exists to specifically develop a freight plan, though the certification of the Chicago regional planning process by FHWA (Federal Highway Administration) would be in doubt if the MPO did not address freight needs in its plans.

GO TO 2040 was reviewed and approved by the Board of CMAP and by the MPO Policy Committee. *Illustration 2.10* shows the main steps in the planning process initiated by federal authorities and the State.



*Illustration 2.10 - Main steps in the freight planning process of Chicago Metropolitan Area*

### 2.6.3 Public and private partnership

The private sector freight industry participates in transport planning through a Freight Committee established by CMAP. CMAP has also established a higher-level Freight Leadership Task Force to make recommendations regarding the establishment of a regional freight authority to be housed within an existing agency.

## 2.7 MONTREAL, QUEBEC, CANADA

### 2.7.1 Montreal geography and jurisdiction

Montreal is situated in the Province of Quebec in Canada. The population is 1.6 million in the city and 3.8 million in the wider Montreal Metropolitan Area. The governance structure of Montreal is based around the City council, the executive committee, councils and council groupings. The Montreal Metropolitan Community (Communauté Métropolitaine de Montréal) brings together 82 municipalities. The city centre is located on the biggest Island on the St-Lawrence River. *Illustration 2.11* show an overview of Montreal.



Illustration 2.11 - Map of Montreal Metropolitan Area  
(Source : [www.Johomaps.Com](http://www.Johomaps.Com))

### 2.7.2 Land use and transportation planning system

The Montreal Metropolitan Community is responsible mainly for land use, coordination and funding. It is the senior organisation responsible for land use planning, coordination and funding at the scale of the metropolitan area. It is also responsible for green spaces and environmental issues. In the province of Quebec, the Act respecting land use planning and development calls for a land use plan in each agglomeration or regional municipalities. Such plan establishes guidelines for the organization of the territory and proposes a regional vision for its development. Each city’s plans and regulation must be developed and implemented in accordance with the regional land use plan. The plans have to take into consideration transportation challenges and issues, sometimes from the “*general orientations*” perspective but in some cases from the “*project*” perspective. There is no legal requirement for each city to have a “*freight transportation plan*” in this law.

In Canada the federal level is responsible for marine, air and rail modes and the trucking regulation falls under the responsibility of the Provinces (in this case Quebec). Provinces are also responsible for the management of road infrastructure (superior network) and city-administrations (such as Montreal) are responsible for regional and local network. The Ministère des Transports du Québec has a Policy of heavy vehicles traffic on the municipal road network, to ensure consistency in the management of the trucking network and truck restrictions within each city and across the province. Montreal Metropolitan Community is central in the planning process as shown in *illustration 2.12*.



Illustration 2.12 - Main steps in the planning process of Montreal Metropolitan Area

### 2.7.3 Public and private partnership

The private sector is involved in multiple ways in the development of land use plans and transportation plan. Government transportation agencies maintain a continuous dialogue with representative associations from the freight transportation industry and the business and trade community. The transportation industry is a key partner of the City of Montreal (municipal level) and the Quebec transportation ministry (provincial level). Private sector is involved in multiple ways. Any major project or regulatory change is subject to public consultation.

For the Montreal metropolitan area itself, the Metropolitan Cluster of logistics and transportation in Montreal, (CargoM), for example, is an implicit consultation mechanism. It brings together multiple stakeholders involved in the transportation of freight. CargoM mission is to bring together all players in the logistics and freight of Greater Montreal, whose activities promote the hub of Montreal, around common goals and concerted actions to increase the cohesion, competitiveness, growth and expansion.

To facilitate cooperation and consultation of the industry, the government deals mainly with alliances and/or association representing multiple companies from the same sector. The Quebec trucking Association is of course one major partner.

“*Mobilité Montréal*” (Montreal Mobility) is a group that brings together most of the stakeholders involved and impacted by construction and infrastructure maintenance in the Montreal metropolitan region. City of Montreal, Quebec Ministry of Transportation, trucking associations, business communities and more are participants in the group. The goal of the group is to coordinate all construction activities and other activities to minimise impacts on road traffic flows and road safety.

The private sector also plays an advocacy role for specific infrastructure projects or major policy or regulatory changes impacting businesses and the movement of freight. In some cases, to provide a framework and to facilitate private-public partnership, a committee or working group is created to deal with a specific issue or project, it's this case in Montreal.

## 2.8 INSTITUTIONAL FACTORS AND RFTM SYSTEMS

The case studies have shown that there are different ways of organizing land use and transportation planning in general, and specifically freight management. Some countries have a top-down approach while others base their approach primarily on local initiatives within a legal framework and general national policy. All the areas studied have some kind of cooperation between local and regional authorities.



### 3. STRATEGY DEVELOPMENT FOR ROAD FREIGHT TRANSPORT MANAGEMENT (RFTM) SYSTEMS

Freight management systems in the private sector support the execution of logistics and business objectives. Individual businesses and entire industries optimize their supply chains to enhance their competitiveness. Incentives for these management systems are inherent—reduced product delivery times, increased reliability, and reduced transportation costs. Improvements in safety and security preserve essential assets for transporting freight, by preventing damages from accidents, theft or attack.

This productivity-driven freight transportation system operates within a changing environment of physical and social systems (infrastructure, human settlement, and natural environment), economic forces (the volume and distribution of demand for goods), and political systems. Alignment of the freight transportation system with these other systems involves the actions of a variety of stakeholders, most notably shippers, carriers, governmental organizations and community residents. Efforts to improve freight mobility can range from largely opportunistic and adaptive approaches to those that are more formally planned and coordinated. These systems range from ad hoc actions to solve particular problems, such as alleviating truck traffic bottlenecks, to more system-wide solutions, such as the designation of metropolitan truck route networks.

Road Freight Transport Management (RFTM) systems are the responsibility of public road authorities. The RFTM system can be quite comprehensive and strategic, incorporating the planning, programming and operation of key infrastructure improvements that benefit freight. Improvements to road and bridge capacity or condition lead to more efficient truck access, and increased mobility and safety. Regulatory schemes dictate or guide the distribution (routing, truck type, time of day, etc.) of truck traffic across the road network to preserve infrastructure, reduce congestion or to advance other objectives (safety, environmental). Land use controls (zoning, site and building design, parking requirements, etc.) affect the distribution of both freight transportation supply and demand.

The successful development of an RFTM system and its strategies within an urban area incorporates one or more of the following principles:

- Multi-jurisdictional freight planning that provides the policy direction and context for RFTM.
- Regional cooperative arrangements among jurisdictions for the implementation of freight management activities.
  - Public-private partnerships for needs identification, development of solutions, and potential sharing of benefits and costs.
  - A dedicated freight planning and management function within city government.
  - Leadership that defines a common vision for RFTM and promotes a strategic initiative.
  - Ongoing evaluation of RFTM performance including impacts on the transportation system as well as on users of the system.

This chapter describes key principles of an RFTM strategy, including multi-jurisdictional freight planning, regional cooperation, public-private partnerships, dedicated freight planning and management, leadership, and performance evaluation. These principles are then illustrated with case study results from surveys of selected metropolitan areas worldwide.



### 3.1 MULTI-JURISDICTIONAL FREIGHT PLANNING

Public sector freight planning at all levels of government provides the framework for establishing RFTM systems. This freight planning provides the policies, goal, and strategies by which governmental agencies determine their role in improving freight mobility and addressing freight issues. The freight management strategies that are implemented are a response to and supportive of the freight planning framework.

Within a metropolitan area, freight planning can occur at the municipal (city) and/or metropolitan or regional level, and may include numerous political jurisdictions. The location of freight-related terminals (warehouses, trucking terminals, truck to rail transload facilities, etc.) developed by the private sector is subject to not only local land use regulations and decisions, but may be influenced by regional policies and requirements as well. Public sector redevelopment plans frequently seek to eliminate or relocate existing freight uses in favor of perceived “*higher and better*” uses such as residential or office development. When communities pursue redevelopment of industrial land for other types of uses (residential, office, etc.), this may result in less than optimal routings and facilities for freight operations. Ultimately this may undercut regional freight strategies aimed at preserving and enhancing freight transportation services and logistics sector development.

There are a number of examples of cities that explicitly protect and grow their industrial and freight land uses, recognizing the employment opportunities or the strategic importance of those facilities to local businesses. Companies that do not have the type of transportation access that is required for their goods and products relocate to more “*freight-friendly*” cities. Clusters of industries may benefit from the provision of regional freight facilities, such as intermodal (container) loading facilities connected by adequate local roadways to regional expressways. Public freight plans should recognize and support these types of transportation facilities and other freight management approaches that generate both industry and community benefits, while mitigating negative impacts on communities from freight operations.

There are a range of approaches to governmental freight planning:

- An explicit freight policy and plan with goals, objectives and strategies
- A transportation plan containing elements related to freight
- An economic or regional development framework that recognizes the importance of freight mobility.
- A set of design standards and operating practices that guides and/or controls the movement of freight.
- Individually planned actions that advance freight efficiencies and are consistent with broader policies and plans..

The guidance for local road freight strategies are generally found at the local level, as expressed in adopted transportation plans and policies, but can also be integrated into local regulations and ordinances. Thus official “*guidance*” can represent both intended goals and outcomes, such as improvements in freight mobility, but also set forth specific restrictions, such as limiting truck traffic to designated routes or zones. Regional plans frequently support freight objectives and outcomes. Federal and state guidance varies by country in accordance with political structures and overall legal authority (*chapter 2*). In Japan, for example, both long-standing (Act on the

Improvement of Urban Distribution Centers, Act N°. 110 of 1966) and more recent national legislation (Act on Advancement of Integration and Streamlining Of Distribution Business (Act N°. 85 of 2005) impose specific requirements regarding land use development and freight activities at the local and regional level. By contrast, in the United States, only recently (2012) (<http://www.fhwa.dot.gov/map21/>) has federal transportation legislation imposed freight requirements at the state and metropolitan level. Many of these requirements are for planning and capital investment purposes, rather than operational or management approaches.

RFTM systems may be incorporated directly into regional freight or transportation plans. More frequently, RFTM systems are managed at the local level and are independent of, but consistent with regional planning initiatives. While RFTM systems are necessarily focused on the roadway network, a multi-modal freight planning context at either the local or regional level recognizes the importance of optimizing the overall multi-modal freight transportation network. Alternate options for moving freight, such as rail or waterway shipping, can lessen the demand for road freight, and thus advance RFTM objectives. In addition, since significant amounts of freight are transferred between modes (such as truck to rail), the connections between modes (e.g., the efficiency of connecting roadways to transfer terminal facilities) are an important consideration for a comprehensive and effective RFTM system.

### 3.2 REGIONAL COOPERATION

Urban freight traffic consists of both longer distance freight as well as urban freight delivery vehicles, many of which are making multi-stop journeys. Longer distance combination truck vehicles make through trips, make deliveries into the urban core, and originate freight from metropolitan centers to points beyond. Because much of this truck traffic crosses road jurisdictional boundaries, some RFTMs necessarily require governmental cooperation at the regional level. The RFTM may be administered by either or both a regional government (county, province, prefecture, etc.) and one or more municipalities.

The planning of regional truck routes necessarily involves this type of regional cooperation. In some metropolitan areas, like Chicago, efforts are underway to coordinate truck routes across the many jurisdictions within the metropolitan areas<sup>4</sup>. Schemes that impose charges (toll roads, variable pricing, charges to enter downtown zones) may be best administered at the regional level to ensure consistency and equity, and minimize administrative expenses.

The role of various governmental entities in developing and managing roadways is normally codified in laws and regulations that establish authority. While responsibilities are typically allocated proportionally (e.g. local roads are developed, maintained and operated by local road authorities while regional or national roads serving the metropolitan area are the responsibility of higher levels of government), cooperative efforts are commonplace. Interjurisdictional road aintenance agreements, municipal consent for expansion of regional roadways, and joint planning of the transportation system are examples. Such cooperative arrangements can certainly be transferred or used as models for the planning, development and operation of RFTM.

<sup>4</sup> Getting the Goods Without the Bads: Freight Transportation Demand Management Strategies to Reduce Urban Impacts, National Center for Freight & Infrastructure Research & Education, University of Wisconsin, 2013, p.30

These agreements usually involve the negotiation of revenue and cost sharing,, the mitigation of impacts on any particular jurisdiction, and decision-making authority for agencies implementing RFTM. The agreements may include liability provisions and establish roles and responsibilities for implementation.

Successful RFTMs enjoy support not only from jurisdictions that are directly affected by the RFTM, but also adjacent jurisdictions that may also experience impacts from the RFTM, such as traffic diversion and resulting congestion, safety and/or environmental degradation. Efforts to mitigate these impacts ensure the sustainability of the RFTM.

### 3.3 PUBLIC-PRIVATE PARTNERSHIPS

The RFTM system administered at the city level involve the private freight industry as users of the system. The way in which administrative systems are designed and implemented may reflect the input of industry. Cities obtain input using multiple methods, ranging from informal consultations to formal organized freight advisory councils, public hearings and request for comments on proposed rule-making, to specific negotiated legal agreements. For example, sustainability requirements (fuel efficiency, emissions) for trucks operating in central business districts or at water ports may be the result of a public-private accord, or simply enforced through regulation.

Examples of private sector participation include:

- In Lyon, France, a stakeholder's partnership forum has been organized by the City to discuss local regulations and proposed solutions for improving urban deliveries, truck parking and urban freight terminals.
- In Adelaide, Australia, a Heavy Vehicle Industry Forum provides an opportunity to raise and discuss strategic issues with government transportation officials.
- In Osaka, Japan, an Osaka City Logistics Study Group included the freight industry and their input was incorporated into the Freight Transport Plan.
- The City of Montreal's regional freight mobility coalition (Cargo M) includes both public and industry (trucking, port, etc.) representatives to ensure the efficiency of freight movement in, out and within the metropolitan area. <http://www.cargo-montreal.ca/fr/>

The RFTM seeks a constant balancing of interests--maintaining freight efficiency and access and mitigating the negative impacts of freight on communities. The equitable allocation of benefits, costs and risks of freight transport among public and private stakeholders is challenging. Discontinuities in the system result in conflicts that can threaten the preservation and operation of the freight transportation system. If industry costs are excessive under any particular scheme, freight traffic may change routes or time of day in a way that creates unfavorable community impacts. For example, night-time truck travel to avoid peak period charges may disturb residents.

RFTM may include various incentives, disincentives or formalized public-private partnerships that leverage capital investments by both the public and private sectors. In some cases, these partnerships involve both public and private capital investments.

Examples include:

- In Chicago, about one-quarter of funding for highway/rail grade crossing and related improvements (traditionally primarily the responsibility of road authorities in the U.S.) under the CREATE initiative have come from the private railroads.
- In Adelaide, Australia, there are a number of examples of legal agreements between mining proponents and State Government to deliver or contribute funding for road and other freight infrastructure upgrades.

Public-private partnerships for RFTM include shippers, carriers, residents, and public officials (administrators) as primary participants<sup>5</sup>. These interest groups are frequently organized so that the cooperation of numerous organizations may be required, depending upon the scope and scale of the management system. Environmental groups, various trucking associations, neighborhood groups and business groups such as downtown merchant associations and chambers of commerce may be affected and react to proposed road management systems. They may insist on modifications in the system, ask for formal representation on advisory committees and/or take legal action. Informed consent and other public participation strategies will help to ensure a broad-base of support for the RFTM, or at a minimum help to shape a system that reflects the needs of the various stakeholders and minimize opposition.

### 3.4 DEDICATED FREIGHT PLANNING AND MANAGEMENT FUNCTION

Traditional road management authorities concern themselves with the basics of road management—financing for infrastructure, maintenance, operations, law enforcement, etc. Optimization of the system for a particular set of users, truck freight, requires knowledge and expertise of a different kind. While individual RFTM actions can be implemented by traditional road authorities as a means to more efficiently manage truck traffic and eliminate bottlenecks, an RFTM grounded in a freight planning strategy considers in depth the needs of the freight system in design and implementation of the RFTM.

Dedicated freight planning is most likely to succeed if it is treated as a supplement to traditional road planning and management. The RFTM may in fact be one of a number of freight strategies, involving multiple modes of transportation that seek to advance economic development and regional competitiveness by improving freight mobility and lowering transportation costs.

A structured approach to RFTM relies on a process for design, implementation, and evaluation of freight management strategies<sup>6</sup>. The familiar Plan-Do-Check-Act approach provides for continuous monitoring and quality improvement:

**Plan** — problem identification, goal setting, strategy and action development

**Do** — implement strategies and actions

**Check** — monitor and evaluate the effectiveness of the implementation

**Act** — continuously adjust and improve

Freight planners seek to develop a common vision for the transportation system amongst the range of freight stakeholders, private and public. Knowledge of freight logistics, industry trends,

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<sup>5</sup> Public Sector Governance of Urban Freight Transport, PIARC Technical Committee B.4, Freight Transport and Inter-Modality, 2012.

<sup>6</sup> Public Sector Governance of Urban Freight Transport, PIARC Technical Committee B.4, Freight Transport and Inter-Modality, p. 39, 2012

and supply chain ensures that public-sector designed RFTM produce win-win solutions. Dedicated freight planning more frequently exists at the regional/provincial/national level than the local level. This may be problematic should the RFTM be administered primarily at the local level. Regional freight planning approaches with meaningful local involvement can address this challenge.

### 3.5 LEADERSHIP

Initiatives involving change rarely succeed without champions who advocate project benefits, engage stakeholders, develop consensus, and develop a workable action plan. Leadership may emerge in the public sector, the private sector, or both. It may manifest itself amongst lower level officials or community residents. Political and industry leaders may embrace RFTM as a new way to encourage freight-related development while mitigating community impacts.

Regardless of its form, sufficient leadership must be in place to address the many challenges of RFTM—stakeholder disagreements, enforcement actions, funding commitments, unanticipated consequences, and changing economic conditions that may require changes to the RFTM. The structure of leadership may be within the existing city government, whereby professional staff administers the program, as well as political leadership who represent stakeholder interests and can mediate disputes. Or ad hoc or even private-based groups may support and lead the development of RFTM or complementary initiatives, and cooperate with public officials who implement the strategies. For example, in Basel, Switzerland the Chamber of Commerce has launched a logistics cluster initiative to increase public support for logistics industries, including infrastructure improvements<sup>7</sup>.

### 3.6 PERFORMANCE EVALUATION

Evaluation of the impacts of an RFTM is essential for determining success of the program and any needed modifications. Changes in truck traffic congestion, improvements in truck parking availability, improvements in air quality, cost reductions for shippers and carriers are parameters for measurement. Overall cost-benefit of the program or strategy is needed to make decisions about continued operation and whether the investment of resources (financial and other) is warranted.

RFTM systems have been introduced as pilot projects or demonstrations, specifically to determine their real-world impacts and attributes. In Oslo, Norway, demonstration and pilot projects are under design to support a “*green city distribution*” research and development project ([www.sintef.com](http://www.sintef.com)). In Gothenburg, Sweden, pilot testing of urban consolidation centers for freight is continuing ([http://www.bestfact.net/wp-content/uploads/2014/02/CL1\\_QuickInfo\\_Gothenburg-21jan2014.pdf](http://www.bestfact.net/wp-content/uploads/2014/02/CL1_QuickInfo_Gothenburg-21jan2014.pdf)). Demonstrations are effective means of introducing RFTM strategies, because they limit risk and perhaps the scale of financial investment. However, the private freight industry depends on and relies on a consistent and reliable transportation network, and may resist short-term strategies that lack long-term commitment.

Performance measures form an important component of any evaluation of RFTM. Much work has been completed globally on the development and challenges of implementing freight performance

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<sup>7</sup> <http://www.logistikcluster-regionbasel.ch/lc/index.php>

measures (<http://www.internationaltransportforum.org/jtrc/Roundtables/2015Logistics/mcKinnon.pdf>).

The use of Key Performance Indicators (KPIs)<sup>8</sup> are a tool to determine whether the objectives of the program have been met. KPIs can measure both efficiency and effectiveness.

Measures are more meaningful if they are directly related to project objectives (reducing environmental impacts, increasing logistics job growth, etc.), can be monitored on an on-going basis, and capture both public sector and private sector impacts. Establishing targets for performance measures determines the progress that needs to be made. Establishing how the performance measures will be utilized, in other words, identifying the specific decisions that measures will guide, optimizes the relevance of those measures.

A variety of reliable and accurate data are needed to calculate performance measures and indicators. Intelligent Transportation Systems for traffic and parking systems include detection and sensor systems. These systems automatically generate data regarding vehicle flow and delay. A range of data derived from multiple sources is typically needed for comprehensive evaluation, which may include ad hoc data collection (for example, special truck counts) and even private sector provided data (for example, information on truck origin and destinations and commodity type, if needed).

Comprehensive performance evaluation also frequently assesses the difficulty of implementation. Case studies often include qualitative determination of this, based on surveys and interviews. General statements related to difficulty of implementation assumes common experiences across cities, but differences in governance, type of industry, and other factors may also need to be accounted for, even within the same country.

Evaluation of RFTM focuses on both the efficiency and effectiveness of the transportation system, as well as impacts on system users. Both system and users analysis may show that benefits and costs are not evenly distributed, that there are winners and losers. Evaluation results can be used to adjust the program and better align benefits and costs of both the public and private sectors.

### 3.7 CASE STUDIES—FREIGHT PLANNING AND RFTM

Selected case study results from surveys of selected metropolitan regions worldwide (Chapter 4) provide examples of freight planning guidance documents, including linkages with national, regional and local freight and transportation policies, as well as with metropolitan RFTM. These are profiled below.

#### Adelaide, Australia

##### **National Guidance (Australia)**

- The National Land Freight Strategy (June 2012) discusses numerous freight issues (<http://www.infrastructureaustralia.gov.au/freight/>).
- As part of the National Urban Policy (2011) (<https://www.infrastructure.gov.au/infrastructure/>

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<sup>8</sup> Public Sector Governance of Urban Freight Transport, PIARC Technical Committee B.4, Freight Transport and Inter-Modality, p. 67, 2012



[pab/files/Our\\_Cities\\_National\\_Urban\\_Policy\\_Paper\\_2011.pdf](#)), the Australian Government requires a 20-year freight strategy for each capital city by 2014 as a condition of funding under the Nation Building Program, consistent with the National Ports Strategy and the National Land Freight Strategy.

### State Guidance (South Australia)

- South Australia's Strategic Plan (<http://saplan.org.au/>) includes a vision for the region that includes 100 targets for specific objectives by year 2020. While not specific to transportation, certain targets and measures are directly relevant including road safety. Seven Strategic Priorities (<http://saplan.org.au/pages/seven-strategic-priorities>) support the Strategic Plan.
- The 2005 Strategic Infrastructure Plan for South Australia included key transport priorities. Developing and maintaining regional freight networks was one such priority. Numerous infrastructure improvements have resulted, including to the Port of Adelaide and other freight improvement projects.
- South Australia is also currently preparing SA Freight Directions, a strategic document guiding the freight network in the state in response to the National Land Freight Strategy.
- The Heavy Vehicle Access Framework provides the policy and guidelines for the strategic development of heavy vehicle freight networks in South Australia

TABLE 3.1: FREIGHT TRANSPORT PLAN'S POSITION IN THE WHOLE STRATEGIC CONTEXT



### Regional/Local Guidance (Adelaide, South Australia)

- The 30 Year Plan for Greater Adelaide (<http://www.dplg.sa.gov.au/plan4adelaide/index.cfm>) establishes the vision for the city to Year 2036. It promotes integrated land use and transport planning. The Plan policies include the designation and protection of strategic freight transport corridors.

### Summary

Freight transportation planning guidance is established at the national, state and local level. Guidance for more specific RFTM exists at both the state (Heavy Vehicle Access Framework) and the local level (corridor improvement projects).

### Basel, Switzerland

#### **National Guidance (Switzerland)**

- The Federal Law on Spatial Planning empowers the twenty-six Cantons to develop spatial structure plans. A number of federal functional spatial laws regulate infrastructure, for example, the Law on Motorways.
- Canton spatial structure plans vary considerably, depending upon local development, context and must be approved by the Swiss Confederation (federal government).

#### **State/Regional Guidance (Basel region)**

- The Basel region is a tri-national (Switzerland, France, Germany) agglomeration (EuroDistrict Basel) with a developed vision (Vision 2020 and 2030), strategy and measures contained within an Agglomeration Plan: <http://www.agglobasel.org/zukunftsbild/>. The seven strategic themes include urban freight, which focuses on ensuring regional accessibility to economic centers and intermodal facilities.

#### **Local Guidance (City of Basel)**

- The City of Basel's development plan includes a mobility section that references freight needs: <http://www.richtplan.bs.ch/>.

### Summary

No explicit freight plan is in place at the national, regional or local level, however freight elements exist at all levels. Within the City of Basel, there are several specific RFTM strategies, including special delivery times in the town center. Logistics uses are specified in the comprehensive (spatial) land use plan.

### Chicago, United States of America

#### **National Guidance (United States)**

- MAP-21, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), (<http://www.fhwa.dot.gov/map21/>) provides significant freight transportation guidance to state and local governments, including designation of a National Freight Network, encouragement of state freight plans, formation of freight advisory committees, requirements for freight performance measure reporting, and development of a National Freight Plan. No general freight transportation funding assistance is provided, although some freight improvements are eligible for federal transportation funding.

#### **State Guidance (Illinois)**

- The Illinois Freight Mobility Plan (2012) is part of the Illinois State Transportation Plan. [http://www.illinoistransportationplan.org/pdfs/final\\_report/05\\_freight\\_mobility\\_plan.pdf](http://www.illinoistransportationplan.org/pdfs/final_report/05_freight_mobility_plan.pdf) The plan identifies strategies for improving freight improvement strategies that address road congestion and other needs in Chicago, a major U.S. freight hub.

### Regional/Local Guidance (Chicago, Illinois)

- The regional comprehensive plan for Chicago, GO TO 2040, includes a freight mobility chapter. <http://www.cmap.illinois.gov/about/2040>. The plan calls for completing CREATE (Chicago Region Environmental and Transportation Efficiency Program) to improve rail corridors including roadway crossings; the implementation of a national freight improvement program, improving truck transportation, including dedication and management of truckways and updating of truck routes, and evaluating the development of a self-financed regional freight authority
- The freight mobility strategy recognizes the linkage between transportation services and dependent freight industries that are concentrated within clusters.
- The City of Chicago has established prohibitions on truck traffic traveling through downtown Chicago, a system of truck routes that requires or encourages trucks to use certain roads, and restricts trucks from other roads.

### Summary

Freight planning guidance is established at the national and state level. The City of Chicago administers several RFTM elements, including a truck route designated network.

### Gothenburg, Sweden

#### National Guidance

- The overall objective of Swedish Transport Policy is to ensure the economically efficient and sustainable provision of transport services for people and businesses throughout the country. <http://www.government.se/content/1/c6/12/64/31/03ca0324.pdf>
- The policy also states that transport quality for the business sector will be improved and will strengthen international competitiveness.
- The Swedish National Transport Plan (2014-2025) includes “a historic investment in infrastructure to safeguard commuting and the requirements of the business sector for functioning freight routes”. <http://www.government.se/sb/d/11941/a/238793>

#### State Guidance

- There are no states with administrative powers in Sweden, but rather 21 counties.
- Gothenburg is located in Västra Götaland County.

#### Regional/Local Guidance

- The Port of Gothenburg adopted a master plan (to 2035) in 2014 which includes the expansion of port facilities to accommodate demand.
- A freight transportation strategy is included in a general traffic strategy for the city of Gothenburg. This strategy “*Göteborg 2035 – Trafikstrategi för en nära storstad*”, with year 2035 as the planning horizon; the plan was adopted in Spring 2014.
- The freight strategy includes three objectives:
  - To ensure good accessibility for freight transport in Gothenburg and at the same time reduce local negative effects on the environment,
  - To cooperate regionally when establishing local logistics terminals and transport intensive businesses.
  - To stimulate innovation through cooperative public-private and academic partnerships.

### Summary

Gothenburg's freight planning is supported by policy support at the national level, as well as an explicit freight strategy at the local level. As the City includes the major port for Scandinavia, the City's and the Port's freight planning activities require coordination to optimize the flow of freight.

### Tokyo and Osaka, Japan

#### National Guidance

Several national legislative acts guide freight and logistics development activity.

1. Act on the Improvement of Urban Distribution Centers (Act No. 110 of 1966)
2. Act on Advancement of Integration and Streamlining Of Distribution Business (Act No. 85 of 2005)
  - Supports logistics industry efforts to reduce costs and environmental burdens by integrating and streamlining distribution processes (e.g. transporting, storing, loading/unloading and distribution processing).
3. Distribution Business Centers Renewal Program for International Competitiveness
  - Supports for development and redevelopment of logistics hubs that help improve international competitiveness, disaster prevention and the urban environment.
4. Designation of Guided Truck Route (A Part of Amendment of the Road Act (Act N°. 30 of 2013)
  - Designation of an oversize/overweight vehicle road network, increased preventive maintenance, and stricter enforcement of regulations.

#### State Guidance

- There are no states in Japan. Japan has 47 prefectures.

#### Regional/Local Guidance

Ibaraki (Tokyo), Japan

- The “*Ibaraki Prefecture Comprehensive Freight Plan*” establishes the significance of road development to improve freight movement.
- The prefecture has a separate “*Comprehensive Logistics Plan*” for the metropolitan area. The Plan's freight traffic management strategy is included in the city-wide traffic plan. The Plan includes promotes an environmentally-friendly logistics network for metropolitan Tokyo.
- Osaka, Japan
  - The prefecture developed a multimodal “*Freight Transport Plan*” that aims to improve logistics efficiency and environmental protection. The plan identifies a regional truck network and improvements to eliminate bottlenecks.

### Summary

In Japan, significant freight planning guidance is provided at both the national and regional/local level.

### Lyon, France

#### National Guidance

- There is no single document that articulates freight policy, but rather various master plans and guidance that discuss freight and logistics themes.

### State Guidance

- France has no states but rather administrative regions (twenty two), whereby the regional government has a “*contract*” with the federal government regarding their financial investment framework, including for infrastructure. These contracts typically have a freight element. In addition, metropolitan areas typically have master plans, sometimes including freight.

### Regional/Local Guidance

- A City Logistics Policy was adopted in February, 2013. The Logistics Policy has ambitious goals for reductions in emissions and freight tonnage on roadways; these goals are under review.
- The Territorial Climate and Energy Plan includes actions directed at goods movement.
- There is a Freight Transport Management System Present Situation and Plan up to 2030.
- There is an effort to organize “freight villages in the region that encourages the clustering of logistics facilities.
- Several freight management guides have been developed for the 58 municipalities of the Greater Lyon region:
  - A guide for developing delivery bays
  - A guide for writing local regulations for deliveries
  - A guide for implementing truck routes for heavy vehicles

### Summary

An extensive freight planning context exists at the metropolitan and city level, which has supported the implementation of a variety of freight management actions.

### Montreal, Canada

#### National Guidance

- The national transportation agency, Transport Canada, seeks to advance the goal of a commercially based, market-driven multi-modal transportation system that delivers the best possible service in support of economic growth and prosperity.
- The marine, air and rail modes are mainly a federal responsibility, while management of higher order road infrastructure and trucking regulations are the responsibility of provinces. Cities have responsibility for local and regional road networks.
- Freight plans and policies are primarily at the provincial and local level.

#### State (Provincial) Guidance

- The Quebec Ministry of Transportation (provincial level) developed the Road Freight Transport Policy 2009-2014, a strategic planning tool that identifies opportunities for “*intervention*” and recommended actions to support the development of a safe, secure and sustainable freight transportation system: [http://www.mtq.gouv.qc.ca/portal/page/portal/Librairie/Publications/en/camionnage/pol\\_transp\\_march\\_angl.pdf](http://www.mtq.gouv.qc.ca/portal/page/portal/Librairie/Publications/en/camionnage/pol_transp_march_angl.pdf)
- The Policy focuses on “*promoting the road freight transport system’s efficiency from a sustainable development perspective, helping maintain the Québec trucking industry’s competitiveness in the North American market, keeping road transport infrastructures functional and in good condition, encouraging the development of an efficient trucking network, and continuing to improve road safety.*”

#### Regional/Local Guidance

- The Communauté Métropolitaine de Montréal (Montreal Metropolitan Community)

developped and adopted a « *Metropolitan land use and development plan* » (2011) containing policy directions for people and freight transportation, all modes.

- The City of Montreal (within the province of Quebec) adopted a Transport Plan in 2008, which includes certain freight objectives:
  - Increase transportation efficiency as leverage for economic development;
  - Support intermodality as a tool to integrate economic performance, reduction of greenhouse gas emissions and quality of life;
  - Work with all stakeholders to consolidate the status of Montreal as a strategic hub for freight movement in the continent.

### Summary

Freight planning and management in Montreal requires cooperation between the City and the Province of Quebec, as well a variety of other organizations, including the regional (metropolitan) level with respect to land use planning. Comprehensive freight planning documents establish the action agenda in the region.

### Oslo, Norway

#### National Guidance

- Norway has agreement with the European Union (EU) and its policy for Road Freight Management. The EU Commission has adopted aggressive goals including the reduction of freight shipping emissions of 40% by 2050, and modal diversion of 50% for “*medium distance*” freight journeys from road to rail and waterbourne.
- The National Transport Plan is a 10-year multi-modal investment plan that includes primary freight facilities and networks.
- The National Transport Plan has a general chapter on freight, but is not specific to freight management.
- The National Transport Plan provides an overall transport policy for cities. Major highways carrying the highest volumes of trucks, in addition to access roads to major terminals, are planned and funded at the national level.

#### State Guidance

- Norway has counties, but no states. Oslo is both a city and a county.

#### Regional/Local Guidance

- City of Oslo and 65 neighboring municipalities have prepared a report called “*A common strategy for freight and logistics in the Oslo region*” (April 2012). The report is not a binding plan, but rather a voluntary, cooperative approach for regional freight improvement.
- Oslo is also a member of six regional cooperative bodies, as the transportation context extends beyond the greater Oslo area. Freight is sometimes a focus of these discussions.

## 3.8 CONCLUSIONS

A variety of strategies can be employed for the development of Road Freight Transport Management Systems. A set of common principles support these efforts, as follows:

1. Multi-jurisdictional freight planning can provide the policy direction and context for RFTM. Adopted transport and related policies and plans at the national, regional, and local level provide the framework for RFTM initiatives.



2. Regional cooperative arrangements among government jurisdictions can support the coordinated implementation of freight management activities. These arrangements recognize that freight flows frequently cross jurisdictional boundaries, and that efforts aimed at improving freight mobility and minimizing community impacts are a shared responsibility.
3. Public-private partnerships plays a key role for identifying needs, developing solutions and potential sharing of benefits and costs. These partnerships can evolve from freight advisory councils that provide a forum for the on-going discussion of freight transportation challenges and solutions.
4. A dedicated freight planning and management function is highly desirable within local government. Local freight management tends to focus on regulatory and public works or asset management functions. Integration of freight planning is needed to consider the impacts of these functions and actions on the efficiency of freight system and economic development.
5. Leadership is important to define a common vision for RFTM and promote an integrated strategic approach. This leadership expresses itself through support of elected and appointed officials, but also championing by private industry representatives.
6. Ongoing evaluation of RFTM performance is required including impacts on both the transportation system itself and the users of the system. As transportation and economic conditions change, adjustments will be needed in how management strategies are applied.

## 4. LESSONS LEARNED FROM CASE STUDIES

### 4.1 CASE STUDY SURVEY

A number of case studies of Road Freight Transport Management (RFTM) were collected from many cities and metropolitan areas in countries in the following manner.

I) A questionnaire was designed in order that TC2.3 members could research and provide their case studies. The questionnaire consists of the following questions:

Q1. Background Information about the City and its Surrounding Metropolitan Area (population size etc.)

Q2. Overall Transportation and Development Plans

Q3. Overall Strategy for Managing Freight Transportation

Q4. Individual Measures or Actions for Freight Management

II) The questionnaire was sent to all TC2.3 members and corresponding members on the member list from the following 26 countries in *table 4.1*.

TABLE 4.1: COUNTRIES WHICH INITIALLY THE QUESTIONNAIRE WAS SENT TO			
Europe		Africa	North/Central/South America
Belgium	Norway	Burkina Faso	Canada
Czech Republic	Romania	Cameroon	Mexico
Finland	Spain	Congo	United States
France	Sweden	Madagascar	Québec
Italy	Switzerland	Mali	Cuba
		Morocco	Argentina
			Chile
Oceania		Asia	
Australia		Iran	
New Zealand		Japan	

III) The following 29 cities in *table 4.2* originally expressed their intention to send their case studies.

TABLE 4.2 CITIES ORIGINALLY EXPRESSED THEIR INTENTIONS TO OFFER CASE STUDIES			
France	Switzerland	Japan	United States
Gent	Bern	Osaka	Kansas City
Lille	Basel	Ibaraki	Portland (Oregon)
Lyon	Zurich	Shizuoka	Atlanta
		Takamatsu	Philadelphia
Belgique	Norvège	Sendai	Columbus
Liège	Oslo	Kanazawa	Seattle
Brussels			
Italy	Burkina Faso	Australia	Canada
Milan	Ouagadougou	Adelaïde	Montréal
Turin			Québec City

IV) Out of the 29 cities above, 19 cities/areas indicated in *table 4.4* submitted completed questionnaires.

V) Analysis of the responses from 15 areas/cities that were considered particularly informative were taken forward and summarized. (see Appendix for given format). Although Göteborg and Chicago were not sent the questionnaire, they were asked to summarize their RFTM.

VI) To further analyze institutional systems and details of their freight plans, a follow-up questionnaire was designed. The follow-up question consists of the following question areas:

Q1. Legal-Administrative Framework for the Urban Area

Q2. Legal-Institutional Framework for the Urban Area Road Freight Management

Q3. Freight Plans

Q4. Public-Private Road Freight Transport Management Collaboration

Q5. Truck Routes

Q6. Areas where Access or Through-Traffic of Trucks is Restricted

Q7. Development of freight terminals in Specific Designated Areas

VII) 3 large cities/areas and 5 medium cities/areas were selected. A follow-up questionnaire was sent to each of 8 cities/areas in 7 countries in *table 4.3* among the respondents.

TABLE 4.3 CITIES/AREAS WHICH THE FOLLOW-UP QUESTIONNAIRE WAS SENT TO			
France	Switzerland	Japan	United States
Lyon	Basel	Osaka Prefecture*	Chicago*
	<b>Norvège</b>	Ibaraki Prefecture*	
	Oslo	<b>Australia</b>	<b>Canada</b>
		Adelaïde	Montréal

\* Large cities/areas. Others are medium cities/areas.

VIII) Cities/areas in orange boxes in *table 4.4* below are chosen as typical cases from the aspects of population size and available information to discuss at chapters in this report. The following *table 4.4* shows all areas/cities that responded to our surveys.

TABLE 4.4 AREAS/CITIES THAT RESPONDED TO OUR SURVEY				
Country	Name of city or area	Response to questionnaire	Summary in a given forma (Case No.)	Response to follow-up questionnaire
Australia	Melbourne	X	X (1)	
	Adelaïde	X	X (2)	X
Canada	Montréal	X	X (3)	X
	Québec City			
France	Lyon	X	X (4)	X
Italy	Milan	X		
	Turin	X		
Japan	Osaka Prefecture	X	X (5)	X
	Ibaraki Prefecture	X	X (6)	X
	Shizuoka Prefecture	X	X (7)	
	Takamatsu City	X	X (8)	
	Sendai City	X	X (9)	
	Kanazawa City	X	X (10)	
	Private Businesses		X	
New Zealand	Unknown			
Norway	Oslo	X	X (11)	X
Sweden	Göteborg	Note 3	X (12)	
United States	Kansas City	X	X (13)	
	Portland (Oregon)	X	X (14)	
	Chicago	Note 3	X (15)	X
Switzerland	Bern	X		
	Basel	X		
	Zurich	X		
Burkina Faso	Ouagadougou City	X		

Note 1: Cities/areas in orange boxes will be discussed as case examples in this report.

Note 2: Cities/areas in green boxes are the subject to the follow-up questions.

Note 3: Although Göteborg and Chicago were not sent the questionnaire, they were asked to respond to follow-up questionnaire and to summarize their RFTM in the given form.

## 4.2 CATEGORIZATION OF CASE STUDIES

Cities and metropolitan areas have been categorized as shown in *table 4.5* according to the following aspects:

- Presence of “*Freight Plan*” and its legal basis.
- Presence of mechanism to regulate or guide freight vehicle flow.

These categories were chosen because they would help to reveal characteristics of each area (or city) from the perspectives of “*Overall picture*” of “*Freight vehicle flow*” and “*its Management*”.

The following aspects are considered when categorization:

1. The expression in this categorization “*designated truck routes or truck restricted areas*” applies only to political measures that the government intentionally implements. Any de-facto freight routes or restricted areas that resulted from physical constraints of the road (e.g. insufficient load carrying capacity, narrow width, limitations in curvature radius or vertical slope) are excluded in this categorization.
2. In many countries, vehicle operators must have permit from road administrators before they drive oversize or overweight vehicles. This oversize/overweight permit system, however, is not considered as a type of “*designated truck route*” in this context.
3. “*Cooperative efforts between public and private sectors*” was not included as a category, because all areas/cities are likely to use it in one way or another.

**TABLE 4.5: CATEGORIZATION OF CASE STUDY CITIES/AREAS**

	Plan specifically for the purpose of road freight transport management			
	There is a “ <i>Freight Plan</i> ”		There is no “ <i>Freight Plan</i> ”	
	Legislative requirement	No legislative requirement	Development plan or transport plan includes freight transport plan	Freight-related measures are implemented on an individual basis
Designated truck routes or truck restricted areas		Chicago (U.S.) Kansas City (U.S.) Portland (U.S.) Milan (Italy) Osaka Pref. (Japan) Shizuoka Pref. (Japan) Ibaraki Pref. (Japan)	Montréal (Québec-Canada) Zurich (Switzerland) Takamatsu City (Japan) Kanazawa City (Japan) Sendai City (Japan)	
Other (i.e. no truck route or truck restricted area)		Adelaide (Australia) Melbourne (Australia)	Oslo (Norway) Lyon (France)	

Note1) “*Trucks*” as the subject to this measure can be either all freight vehicles or some freight vehicles that exceed a certain weight, size or axle number.

Note2) Although the following cities have answered to the questionnaire, they are not categorized in this table because there is not sufficient information. - Torino (Italy), Bern (Switzerland), Basel (Switzerland), Ouagadougou (Burkina Faso)

### 4.3 DISTINCTIVE CHARACTERISTICS OF CITIES/AREAS THAT REPRESENT EACH CATEGORY

With the inputs from the cities/areas, RFTMs of the following six cities/areas that represent each category of population size are summarized in *tables 4.6 – 4.11* later in this section.

#### *Population size: Cities/areas*

Large: Osaka Prefecture and Chicago

Medium: Lyon, Adelaide, Montréal and Oslo

The summarized case studies shown in the tables may present inconsistencies, because descriptions of each case study are based on the responses to our questionnaire, which might be interpreted differently by each respondent city/area. For example, there is a possibility that some cities/areas left a question unanswered if they have an urban development plan even if they do have such a plan, because their plans do not include a specific reference to RFTM. Indeed, there is a general understanding that almost all cities/areas have an urban development plan or its equivalent. Readers should keep in mind that a nil answer may not necessarily mean that there is no such thing. With this in mind, the summarized tables describe the whole picture of RFTM in place in cities/areas. The items in the tables are explained below:

#### **1. Target area**

Scope of RFTM usually embraces regional districts including multiple cities, towns and villages. Some RFTMs cover single administrative unit, such as a city and a prefecture. There are a variety of target areas of RFTM, because power is divided among administrative units differently from a country to another.

#### **2. Legal-Administrative Framework**

Many countries adopt 3-level government system (i.e. National-Province/State/Prefecture-City). Some federate countries adopt 4-level system (i.e. Federal-State/Province-Region-City). Some countries add metropolitan areas to the multi-level system (Federal/National-Region-Metropolitan Area-City).

#### **3. Administrative levels responsible for land use**

In many countries, cities regulate land use, although there are cases where metropolitan areas are responsible for land use regulation.

#### **4. Administrative levels responsible for transport plan**

Transport plans are developed by different levels of administrative units, including national, regional and city governments.

#### **5. Plans**

Plans are usually developed in a hierarchical manner, ranging from Development plan to Transport plan to Freight plan to Guidance. Our questionnaire asked if the city/area has a separate volume of “*Freight plan*” or a freight element as a part of the upper-level plan. Both cases were found in this survey. Not many cities/areas answered that they have guidances. As *table 4.5* shows, cities/areas have a separate volume of “*Freight plan*” or a freight element as a part of the upper-level plan. There are no cities/areas that implement individual freight transport measures without having a freight transport plan in our case study. It is safe to conclude that

cities/areas recognize the importance of the mechanism where individual measures are implemented under a plan. Currently about half of the cities have developed a separate volume of freight transport plan. For the future, it is recommended to the cities/areas that have a freight transport plan as a part of the upper-level plan to clearly place their freight transport plans in a larger hierarchic structure. There are a few cities/areas who answered that they have a guidance for Freight Traffic, although they may have a policy for the operation of carriers and driving guide for HGVs.

## 6. Legal basis

Some cities/areas develop their plans and regulations based on the legislation, and others develop them not based on the legislation.

### a. Plans

Some cities/areas have developed plans because it is mandatory and others have developed plans on a voluntary basis even though there is no obligation.

### b. Designated areas for freight terminals

Although there are some cities that designate specific lands for logistics use, they are minority. On the other hand, there are some cities that encourage developers to develop logistics facilities in specific areas, although it is not mandatory.

### c. Designated truck routes

Countries and cities/areas encourage freight vehicle drivers to use appropriate roads in a variety of methods depending on their circumstances. To raise road users' awareness authorities post "*Truck Route*" signs along the roads and provide a "*Truck Route Map*". Their methods can be classified into the following four types:

**Type 1** (Some form of legally binding regulation designates and mandates the use of truck routes): To improve living and working and retail environment without being disturbed by freight vehicles, authorities designate specific road network for freight vehicles over a certain size/weight. The operators of such vehicles are required to use the designated road network. If their origin or destination is away from the designated road network, they are expected to take the shortest route to the designated road network. A fine is imposed on freight vehicle drivers who use non-designated roads without due cause. Example: Chicago (U.S.), Kansas City (U.S.), Portland (U.S.), Milan (Italy), Montréal (Québec-Canada), Zurich (Switzerland)

**Type 2** (Advisory truck routes are designated and truck traffic is guided): To improve living and working and retail environment without being disturbed by freight vehicles, authorities designate an advisory road network for freight vehicles over a certain size/weight with no legal force. The use of the advisory road network is not a requirement but a recommendation. Authorities encourage heavy freight vehicle drivers to use the advisory road network whenever there is a good opportunity. Example: Derby City, UK (Advisory Lorry Route Map), Tyne and Wear, UK (Freight Partnership Preferred Lorry Routing Map). Whilst we know that Type 2 truck route do exist, such as UK's Derby City Advisory Lorry Route Map and UK's Tyne and Wear Freight Partnership Preferred Lorry Routing Map, our case studies did not include examples.

Some Type 1 cases collected from Japan could be further classified into sub categories Type 1a and 1b. Considering whether truck routes are designated on a legal basis or not is the most important aspect in this categorization, Japan's truck route system is categorized into Type 1. However, the use of the designated road network is not a requirement in Japan's case. Heavy freight vehicle drivers are allowed to drive on other routes than those designated routes if they



are issued an oversize/overweight vehicle permit. Japan's case is different from the above-mentioned Type 1 in this point. The outline of Japan's truck route system is described below and the further details are provided in the Appendix.

**Type 1a** (Roads with raised weight/height limit are designated and truck traffic is regulated): Authorities designate the road network with raised weight/height limit. The operator of a freight vehicle with a certain size/weight less than or equal to the raised weight/height limit can use the designated road network without a permit. However they must apply for a permit to use the non-designated roads including the case when their origin or destination is not on the designated road network.

**Type 1b** (Recommended truck routes are designated and truck traffic is guided with an incentive): Authorities designate the road network for oversize/overweight freight vehicles and provide an incentive for heavy freight vehicle operators to use the designated road network. The use of the designated road network is not a requirement but a recommendation.

In many countries, vehicle operators must have permits from road administrators when they carry abnormal and indivisible loads on a specific route connecting specific origin and destination. This oversize/overweight vehicle permit system, however, is not considered as a type of "*designated truck route*" in this context.

**d. Truck restricted areas**

Although there are cities/areas that restrict the movement of oversize/overweighed freight vehicles and/or less environmentally friendly freight vehicles in specific areas, they are not in the majority.

**e. Other restrictions**

Some cities/areas prohibit on-street loading/unloading operations in the entire city or at least most of the city with some exempt districts, and other cities/areas prohibit delivery operations except in certain hours of the day within designated districts.

## 7. Co-operation

### I) Regional cooperation

Many cities form a coalition to meet a legal requirement or on a voluntary basis, depending on the circumstances of the country.

### II) Public-private partnership

Public-private partnership is a common arrangement in the modern world, ranging from setting up a body for the partnership to holding a discussion to collecting inputs.

### III) Initiative leadership

Some jurisdictions have appointed individuals or teams with specific responsibility for leading the public-private partnership.

## 8. Objectives, policies, strategies for RFTM

In many cases, the following objectives guide the RFTM:

**a. Comprehensive objectives/policy/strategy**

- Revitalization of city
- Comfortable city to live

- Revitalization of industries
  - Enhancement of international competitiveness
  - Mitigation of congestions
  - Improvement of traffic safety and raising public awareness for safe driving
  - Improvement of environment,
  - Mitigation of global warming
  - Streamlining of freight transport
- b. Freight traffic policy/strategy
- support the introduction of environmentally friendly vehicles and restriction of vehicles that fail to meet environmental standards
  - Provision of parking spaces for freight vehicles.
  - Re-arrangement of logistics facilities from a city center.
  - Restriction of delivery operation except for specific hours of the day
  - Restriction of loading/unloading operations except for designated spaces
  - Freight vehicle size restrictions

## 9. Specific actions for RFTM

In many cases, the following actions are taken.

### I) Actions involving infrastructure improvements

- Provision of interchanges to alleviate traffic bottlenecks.
- Development of arterial road networks to cover the entire metropolitan area for efficient freight movement
- Development of arterial road network suitable for HGVs
- Development of arterial roads to connect major logistics centers such as ports
- Development of ring roads or underground roads to eliminate freight vehicles and other traffic within the central urban area
- Development of interchanges for specific access to logistics facilities
- Grade separation of rail lines to increase railway capacity
- Provision of off-street parking spaces for freight vehicles
- Provision of spaces on roads for loading/unloading operations
- Development of facilities at the secured space for joint delivery
- Effective road maintenance strategies such as designation of routes for heavy vehicles and intensive maintenance on them

### II) Actions that involve non-infrastructure improvement

- Truck route designation
- Truck restricted area designation
- Bus lanes shared with delivery vehicles
- Priority green signal for freight traffic at traffic signals (on an experimental basis)
- Risk reduction during hazardous goods transport
- Use of ITS to monitor the height of freight vehicles on road
- Use of ITS to prompt efficient freight transport
- Relaxation of gross weight/length restriction of freight vehicles to prompt efficient freight transport (on an experimental basis)
- Formation of a body for partnership of freight traffic strategies

**TABLE 4.6: FRAMEWORK OF THE ROAD FREIGHT TRANSPORT MANAGEMENT IN CHICAGO, USA**

Items		Outline	
Target area		Chicago metropolitan area (7 counties in the northeastern Illinois), Illinois, USA	
Legal-Administrative Framework		- Federal (USA) – State (Illinois) - County (Cook) – Township - Municipality (Chicago) -The regional planning agency, Chicago Metropolitan Area Planning (CMAP)	
Administrative levels responsible for land use		Municipal governments are largely responsible for land use planning and controls	
Administrative levels responsible for transport plan			
Plans	Development plan	GOTO 2040 (the comprehensive regional plan)	
	Transport plan	Chapter 10, 11, 12 of GOTO 2040	
	Freight plan	Chapter 12 of GOTO 2040	
	Guidance		
Legal basis	Plans	-CMAP (Chicago Metropolitan Area Planning) is required to establish a transportation plan. -The freight plan was voluntarily developed. -The State of Illinois will be required by MAP-21 to produce a freight plan.	
	Designated areas for freight terminals		
	Traffic restrictions	Truck routes	-Truck traffic is regulated through designated truck routes
		Truck restricted areas	-Through traffic truck prohibitions in downtown Chicago.
Others		-Peak-period on-street loading is restricted in downtown Chicago	
Cooperation	Regional cooperation	-Regional Freight Leadership Task Force	
	Public-private partnership	-CMAP Freight Committee (representatives from freight industry, private railroads, trucking companies, consultants, researchers, planners, local, regional and state governments)	
	Initiative leadership	CMAP (the official regional planning organization)	
Policies, strategies for RFTM		-Identify opportunities for dedicated and managed truckways or truck lanes on existing roadways. -Manage the transportation system to reduce peak-period congestion through congestion pricing. -Address delivery times and parking restrictions. -Catalog and update the region's truck routes	
Individual actions for RFTM		-Circle Interchange (to eliminate a bottleneck) -Illiana Corridor (a new freight-oriented highway) -Chicago Truck Route Study (designated truck routes) -Freight Cluster Analysis (an analysis of freight elements and their relationship) -CREATE Rail Capacity Projects (rail capacity and highway-rail grade separation) -Illinois Tollway (Toll road development to provide better freight flow) -Regional Freight Leadership Task Force (potential institutional models for a Regional Freight Authority)	

**TABLE 4.7: FRAMEWORK OF THE ROAD FREIGHT TRANSPORT MANAGEMENT IN OSAKA, JAPAN**

Items		Outline	
Target area		OSAKA Prefecture, Japan	
Legal-Administrative Framework		Japan – Prefecture (Osaka) – City (Osaka)	
Administrative levels responsible for land use		National, prefectural and municipal governments	
Administrative levels responsible for transport plan			
Plans	Development plan		
	Transport plan	”Osaka Prefecture Road Transport Master Plan”, March 2004) - A long-term transport policy set for completion in the year 2025.	
	Freight plan	Freight Transport Plan, March 2009	
	Guidance	- Guiding system for freight vehicles to the structurally suitable roads for them	
Legal basis	Plans	-No legal process	
	Designated areas for freight terminals	- Act on the Improvement of Urban Distribution Centers (National act) - Act on Advancement of Integration and Streamlining Of Distribution Business (National act) - Distribution Business Centers Renewal Program for International Competitiveness (National program)	
	Traffic restrictions	Truck routes	- Roads with raised weight/height limit are designated and truck traffic is regulated (the Road Act and the Vehicle Restriction Ordinance) - Recommended truck routes are designated and truck traffic is guided with an incentive (A Part of Amendment of the Road Act)
		Truck restricted areas	-HGV restricted areas in downtown Osaka.
		Others	
Cooperation	Regional cooperation		
	Public-private partnership	-Osaka City Logistics Study Group - East Osaka Freight Quality Partnership	
	Initiative leadership		
Policies, strategies for RFTM		- Roads that are structurally suitable for heavy vehicles* were identified. - Relocation of distribution facilities to reduce inner-city traffic and improve distribution efficiency based on the legislation (Act on the Improvement of Urban Distribution Centers). -Support Program for Development of International Logistics Hubs (national strategies)	
Individual actions for RFTM		- Develop Yamato River Road and Yodo River Left Bank Road to complete the ring road. - Add some roads to the road network that are durable enough to accommodate heavy vehicles. - A new parking area mainly for freight vehicle use was developed on the Osaka Central Ring Road in East Osaka city, where a cluster of logistics-related facilities is located.	

**TABLE 4.8: FRAMEWORK OF ROAD FREIGHT TRANSPORT MANAGEMENT IN GRAND LYON, FRANCE**

Items		Outline	
Target area		Grand Lyon, France	
Legal-Administrative Framework		European Union - French Republic – Régions (Rhône – Alpes) – Départements (Rhône) – Intercommunalité / agglomération (Grand Lyon) – Communes (Lyon) - Arrondissements	
Administrative levels responsible for land use		Mainly the responsibility of the Grand Lyon	
Administrative levels responsible for transport plan		In the urban area, the planning is done by the Grand Lyon.	
Plans	Development plan	The Schema for Territorial Coherency (SCoT)	
	Transport plan	Urban Mobility Plan (PDU) (by the SYTRAL) Local Plan for Urbanism (PLU)	
	Freight plan	Freight plans are included in PDU, PLU Urban Logistic Space (ELU) Schema for Logistical Coherency for the region of Lyon (renewed in 2005) (by the RUL) Grand Lyon framework-statement Freight Transport Management System, Present Situation and Plan up to 2030	
	Guidance	Guides for the 58 municipalities of the Greater Lyon: <ul style="list-style-type: none"> <li>• A guide for developing delivery bays</li> <li>• A guide for writing local regulation about deliveries</li> <li>• A guide for implementing routes for heavy goods vehicles</li> </ul>	
Legal basis	Plans	Urban Mobility Plan (PDU) (required by the Law on Air and Rational Use of Energy (LAURE)) PDU must comply with the Regional Plan for Air Quality (PRQA)	
	Designated areas for freight terminals	The urban plans such as the SCoT and PLU On a piecemeal basis, but no policy based on incentives.	
	Traffic restrictions	Truck routes	An incentive for trucks in transit to by-pass the city using the peripheral highways. - Municipal decrees can prohibit some routes to trucks – it is the case at least in one city of the Grand Lyon - Truck routes are designated by decree on trucks circulation - Truck traffic is guided to designated truck routes by signalization used to induce the transiting trucks (and cars) to use the highways
		Truck restricted areas	- Trucks with emission norm under Euro 3 are prohibited from entering the central city area (designated “ <i>truck restricted areas</i> ”) by the municipal decrees from Lyon city and Villeurbanne city.
Others			
Cooperation	Regional cooperation	Authority for Urban Transport Organization (AOTU) SYTRAL is the Grand Lyon’ AOTU	
	Public-private partnership	Urban Freight Transport. Under the Grand Lyon patronage (with 3 thematic groups: delivery conditions, trucks parking and logistics terminals) Stakeholders partnership forum A public inquiry is led before the PDU can be finally adopted by the SYTRAL committee	
	Initiative leadership	SYTRAL	
Policies, strategies for RFTM		<ul style="list-style-type: none"> <li>- No restriction for circulation inside the city.</li> <li>- Deliveries on delivery bays admitted only from 7:00 am to 7 pm and for vehicles of less than 29 m<sup>2</sup>. The residents can use them from 7:00 pm to 7:00 am</li> <li>- Only EURO 3 vehicles are admitted in the city center of Lyon and Villeurbanne (progressive timescale for implementation from EURO 0 in 2007 and EURO 5 in 2015).</li> <li>- For new urban projects the rule is: delivery on private space not on public space. There are negotiations with the promoters for each building project (before the building permit).</li> <li>- For large platforms: it is being tried to organize “<i>freight villages</i>”</li> </ul>	

**TABLE 4.8: FRAMEWORK OF ROAD FREIGHT TRANSPORT MANAGEMENT IN GRAND LYON, FRANCE**

Items	Outline
Individual actions for RFTM	<ul style="list-style-type: none"> <li>- There are some examples of bus lanes where delivery is allowed.</li> <li>- Delivery disk (given only to the professional stakeholders (carriers, craftsmen, shopkeepers...) not to residents)</li> <li>- 3 600 m<sup>2</sup> space for joint deliveries</li> <li>- Implementation planned for the construction consolidation center (CCC)</li> <li>- Green wave for truck tested in the frame of an European Project (Freilot)</li> </ul>

**TABLE 4.9: FRAMEWORK OF THE ROAD FREIGHT TRANSPORT MANAGEMENT IN MONTRÉAL, QUÉBEC, CANADA**

Items	Outline		
Target area	Montréal Metropolitan area, Québec , Canada		
Legal-Administrative Framework	Federal (Canada) - Province (Québec )- city (Montréal)		
Administrative levels responsible for land use	Montréal metropolitan area and the city of Montréal: there is a communication mechanism in place to insure consistency at both levels		
Administrative levels responsible for transport plan	Provincial level (Ministry of transportation) is responsible for global road freight transport policy and its action plan (2009-2014) and for the management of the trucking regulation (weights and dimensions, special permits concerning oversize and overweight vehicles). The city of Montréal is responsible for its own local freight plan.		
Plans	Development plan		
	Transport plan	City of Montréal transport plan 2008	
	Freight plan		
	Guidance	Policy of heavy vehicle traffic on the municipal road network	
Legal basis Plans	Plans	The city's transportation Plan	
	Traffic restrictions	Truck routes	At the provincial level, the truck network may be consulted on line. There is a project to make a detailed Truck route map for the agglomeration where the trucks permitted. City of Montréal is currently adopting the bylaws of each individual Burroughs and cities of the agglomeration of Montréal (Island). The city of Montréal truck network, including truck restrictions may be consulted online on the following link: <a href="http://www2.ville.montreal.qc.ca/camionnage/">http://www2.ville.montreal.qc.ca/camionnage/</a>
		Truck restricted areas	The city of Montréal restricts the circulation of trucks by adopting regulation. Such regulation must be approved by the provincial level (ministry of Transportation) to insure consistency and fluidity on the global network. The regulation must comply with guidance of the Policy of heavy vehicles on the municipal road network.
		Others	<ul style="list-style-type: none"> <li>- Some Burroughs made some restriction approach to delivery time schedules</li> <li>- Designation of on-road strips for loading or unloading activity (Limited spaces particularly within and surrounding Burroughs of CDB)</li> </ul>
Cooperation	Regional cooperation		
	Public-private partnership		
	Initiative leadership		



**TABLE 4.9: FRAMEWORK OF THE ROAD FREIGHT TRANSPORT MANAGEMENT IN MONTRÉAL, QUÉBEC, CANADA**

Items	Outline
Policies, strategies for RFTM	<p>2009-2014 Québec road freight transport policy:</p> <ol style="list-style-type: none"> <li>1. Promote the efficiency of road freight transport systems from a sustainable transportation perspective.</li> <li>2. Help keep the Québec trucking industry competitive in the north American market</li> <li>3. Keep road transport infrastructures in good condition and functional and encourage the development of an efficient trucking network.</li> <li>4. Continue to improve road safety</li> </ol> <p>Specific actions such as:</p> <ul style="list-style-type: none"> <li>• deployment of Intelligent transportation systems (ITS),</li> <li>• support to the use of environmental friendly vehicles,</li> <li>• reduction of Greenhouse gases emissions,</li> <li>• the adoption of safe and compliant behavior for heavy vehicles drivers</li> </ul>
Individual actions for RFTM	<ul style="list-style-type: none"> <li>• A ring road development aiming to divert through-traffic.</li> <li>• Extension of highway 30 around the island of Montréal</li> <li>• -Replacement of Turcot complex (an integrated combination of interchanges)</li> <li>• Improving access to the Port of Montréal</li> <li>• Increase the efficiency of truck movements (Extend the trucking network to the whole metropolitan area)</li> <li>• Reduce risks associated with the transportation of dangerous goods.</li> <li>• Integrated Traffic management center</li> <li>• City of Montréal is currently implementing cameras and ITS systems to improve traffic flow. Also, the city has1 monitoring system to detect truck's height to protect railway bridge</li> </ul>

**TABLE 4.10: FRAMEWORK OF THE ROAD FREIGHT TRANSPORT MANAGEMENT IN OSLO, NORWAY**

Items	Outline	
Target area	City of Oslo, Norge	
Legal-Administrative Framework	Norge – County – Municipality - City of Oslo is both a County and a Municipality	
Administrative levels responsible for land use	The Municipal is mainly responsible for the land use planning.	
Administrative levels responsible for transport plan		
Plans	Development plan	
	Transport plan	<ul style="list-style-type: none"> <li>• NTP: National Transport Plan (National level)</li> <li>• Oslopakke 3 (Financing and portfolio composition, mainly funded by the Oslo Toll Ring)</li> </ul>
	Freight plan	<ul style="list-style-type: none"> <li>• No explicit freight transport strategy or plan for Oslo. NTP covers both passenger and freight transport, for all modes</li> <li>• The city of Oslo made the last transport plan for the city in 1994. Transport is now a part of the city plan, but freight transport is not in focus.</li> <li>• City of Oslo and 65 neighboring municipalities have prepared a report called “<i>A common strategy for freight and logistics in the Oslo region.</i>” April 2012.</li> </ul>
	Guidance	

**TABLE 4.10: FRAMEWORK OF THE ROAD FREIGHT TRANSPORT MANAGEMENT IN OSLO, NORWAY**

Items		Outline	
Legal basis Plans	Plans		
	Designated areas for freight terminals	<ul style="list-style-type: none"> <li>Each municipality has dedicated areas where they want industry to be developed, but normally there is no division between freight industry and other industry.</li> <li>There is a recommendation that industry with few employees per square meter building, few customers coming to the site and high volume of trucks should be located away from city Centre and passenger hubs, and near highways. This is known as the ABC-principle. There is no specific guideline for logistic industry.</li> </ul>	
	Traffic restrictions	Truck routes	Dedicated routes for HGV's have been considered at several occasions. The national roads are the designated truck routes
		Truck restricted areas	No.
Others			
Cooperation	Regional cooperation	The city of Oslo is a member in 6 different regional cooperation bodies which all deal with planning and development but with different focus. It depends on the issue how wide the metropolitan area is defined.	
	Public-private partnership	<ul style="list-style-type: none"> <li>The strategy had stakeholder involvement (seminar and a broad hearing of the document)</li> <li>Joint planning and meeting. This is done during the initial phase of the planning process for large projects.</li> <li>The NTP planning process has a reference group of stakeholders.</li> </ul>	
	Initiative leadership		
Policies, strategies for RFTM		<p>The main objective for Oslopakke 3</p> <ul style="list-style-type: none"> <li>Reduce duration of congestion, particularly for public transport and freight transport. In addition there also are goals for traffic safety and environment.</li> <li>The links from the national road to the gate of important terminals are part of the national road network. They used to be local roads.</li> </ul>	
Individual actions for RFTM		<ul style="list-style-type: none"> <li>The tunnel system under the city center is called "The Opera Tunnel. Tunnels protect the city center from the traffic. The HGV-through traffic in street are thus limited.</li> <li>The general maximum vehicle weight in Norway is 50 tons. Axle load is 10 tons. Total length is 19.5 m. Some parts of the national road network are open for 25.25 meter and 60 tons total weight for a test period, lasting until 2017</li> <li>The streets in the city center are too narrow for large vehicles and normally possible to enter for vehicles shorter than 12 meter.</li> <li>Three road projects.                             <ul style="list-style-type: none"> <li>Better access to Port of Oslo (Sydhavna)</li> <li>Better access to Alnabru freight terminal (rail)</li> <li>New E18 west of the city, improving a congested motorway.</li> </ul> </li> <li>A new private parking area is planned 60 km (45 min) from the city center.</li> </ul>	

**TABLE 4.11: FRAMEWORK OF THE ROAD FREIGHT TRANSPORT MANAGEMENT IN ADELAIDE, AUSTRALIA**

Items	Outline
Target area	City of Adelaide, Australia
Legal-Administrative Framework	Federal (Australia) – State (South Australia) - Metropolitan Local Government Group – Adelaide City Council
Administrative levels responsible for land use	South Australia's Government
Administrative levels responsible for transport plan	South Australian councils (Adelaide City Council)

**TABLE 4.11: FRAMEWORK OF THE ROAD FREIGHT TRANSPORT MANAGEMENT IN ADELAIDE, AUSTRALIA**

Items		Outline	
Plans	Development plan	The 30-Year Plan for Greater Adelaide (All South Australian councils must align their Development plans. This is done through the development plan amendment (DPA) process.)	
	Transport plan	The draft Integrated Transport and Land Use Plan for South Australia (released in October 2013). A specific freight strategy is being prepared (i.e. SA Freight Directions)	
	Freight plan	The Draft Integrated Transport and Land Use Plan include overarching freight plans.	
	Guidance	Provide Freight Operators with relevant information. RAVnet Freight Transport route map for 23m B-Double	
Legal basis Plans	Plans	There is no legal requirement to include freight transport elements in the Plan	
	Designated areas for freight terminals	Under the Planning Strategy and Development Plans areas are zoned for freight terminals.	
	Traffic restrictions	Truck routes	Designated Truck routes for 23m B-Double vehicles
		Truck restricted areas	No. Local Government may enforce restrictions on selected roads.
Others			
Cooperation	Regional cooperation	Local Government Association (Metropolitan Local Government Group -19 councils)	
	Public-private partnership	- Advocacy role - Consulted during preparation of plans - Regular meetings to discuss/resolve issues (e.g. Ministerial Heavy Vehicle Forum)	
	Initiative leadership	The South Australian Freight Council (SAFC)	
Policies, strategies for RFTM		<ul style="list-style-type: none"> <li>• Seven Strategic Priorities for South Australia's future (not only for RFTM): <ol style="list-style-type: none"> <li>1. Creating a vibrant city</li> <li>2. An affordable place to live</li> <li>3. Every chance for every child</li> <li>4. Growing advanced manufacturing</li> <li>5. Safe communities, healthy neighborhoods</li> <li>6. Realizing the benefits of the mining boom for all</li> <li>7. Premium food and wine from our clean environment</li> </ol> </li> <li>• The Heavy Vehicle Access Framework (provides the policy and guidelines for the strategic development of heavy vehicle freight networks in South Australia)</li> </ul>	
Individual actions for RFTM		<ul style="list-style-type: none"> <li>• 11 Road Freight Projects (ex. Northern Expressway, Anzac Highway/ South Road Grade Separation, Dukes Highway Rest Areas, Bakewell Bridge Replacement)</li> <li>• Major Traffic and Freight Routes</li> <li>• A rest area on the South Eastern Freeway – just outside the metropolitan area.</li> <li>• On-road loading zones exist in many places within the Central Business District and across the metropolitan area.</li> <li>• A number of Intelligent Transport Systems (ITS) measures have been implemented</li> </ul>	

#### 4.4 FRAMEWORK OF INDIVIDUAL FREIGHT MANAGEMENT BY AREA/CITY

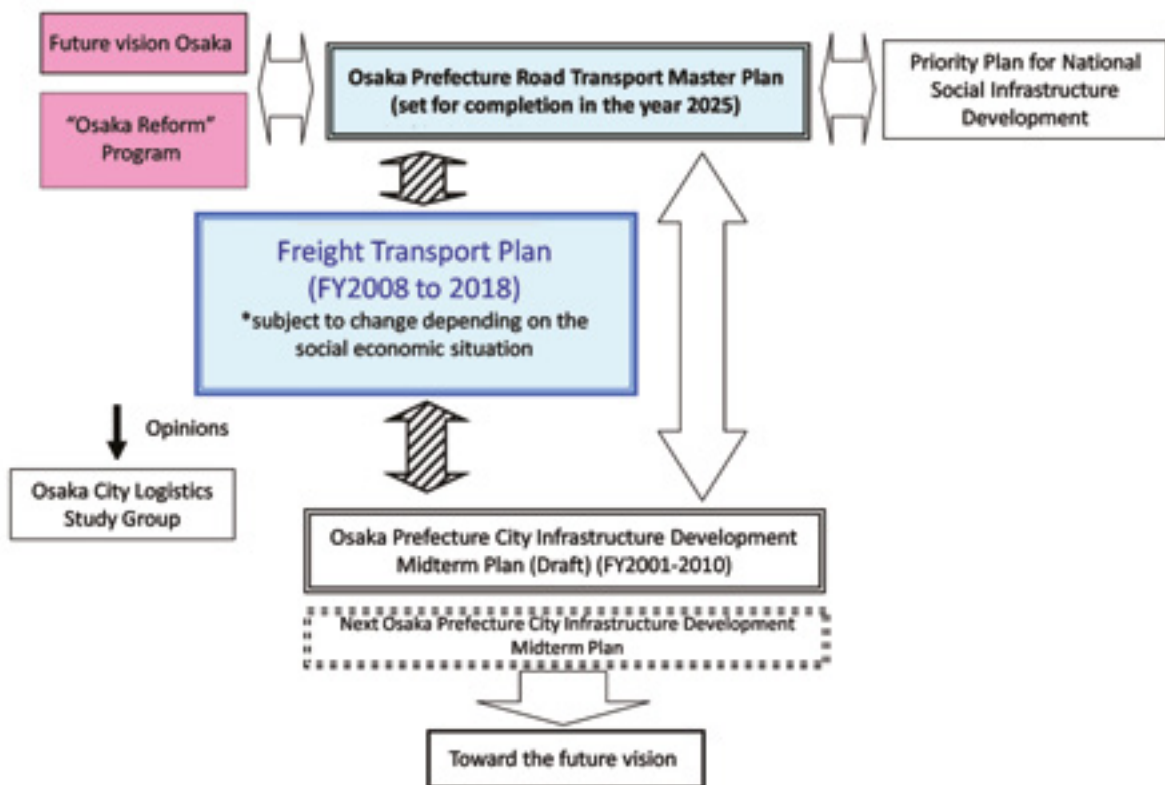
In this section, each representative city’s (area’s) freight management activities are described in summary. For the detailed information, see the Appendix A.

*Population size: Cities/areas*

- Large: Osaka Prefecture and Chicago
- Middle: Lyon, Adelaide and Montréal
- Small: Oslo

##### 4.4.1 Osaka prefecture Japan

Osaka developed the “Freight Transport Plan” in March 2009, which specify roads that are structurally suitable for heavy vehicles. *Illustration 4.1* shows the position of the Freight Transport Plan in the whole framework of the transport plan of Osaka prefecture.



*Illustration 4.1 - Freight transport plan’s position in the whole framework of transport plan*

Under the “Freight Transport Plan”, there are several measures in place.

##### 1. Ring road development

Osaka is developing Yamato River Road and Yodo River Left Bank Road (see *illustration 4.2*) to complete the ring road so that the current through-traffic into the Osaka city area can be reduced.



Illustration 4.2 - Yamato River Road & Yodo River Left Bank Road

## 2. Designation of recommended roads for heavy vehicles

Japanese national government is responsible for designating particular routes to which heavy vehicles are guided under the Amended Road Act (Act n°.30 of 2013). This designation of truck routes takes into account of aspects of protecting road facilities, reducing safety risks and streamlining road maintenance. The government designates routes that are desirable for heavy vehicle traffic (see *illustration 4.3*).



Illustration 4.3 - General road sections to be added to the road network suitable for heavy vehicles (light green lines and orange lines)



### 3. Incentive to use recommended roads for heavy vehicles

It usually takes couple of weeks for the authority to issue a permit for oversize/overweight vehicle use on roads, because the authority has to go through a detailed examination to ensure that the vehicle can turn with no hindrance and vertical clearances at each intersection on the particular routes and sufficient strength on every section of road structure, such as bridges. This approval process, however, will be quicker if the applicant intends to use the designated recommended roads for heavy vehicles, because the procedure is simplified (more detailed description is found in Appendix).

### 4. Development of exclusive truck parking areas

A new parking area mainly for freight vehicle use was developed on the Osaka Central Ring Road in East Osaka city, where a cluster of logistics-related facilities is located.

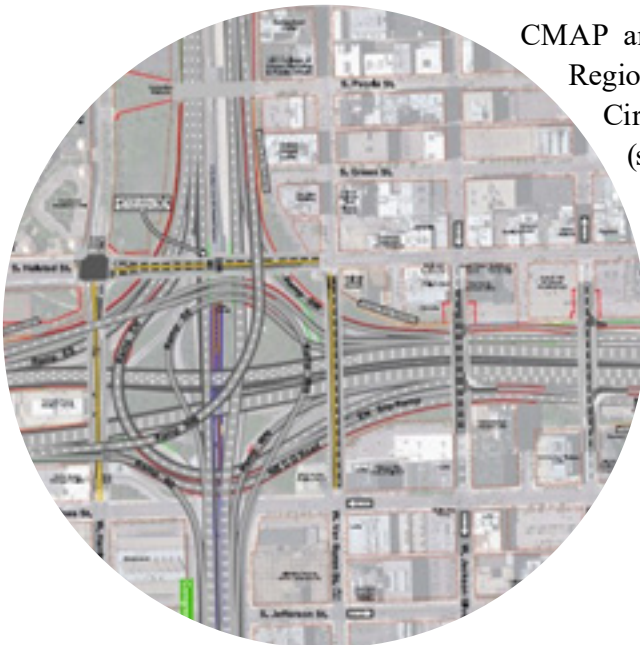
### 5. Freight Quality Partnership (FQP)

East Osaka FQP was established in 2006 with the aim of addressing freight-vehicle-related issues in and around the East Osaka distribution business district. The FQP developed the “*East Osaka FQP Action Plan*”, which includes a variety of freight management measures.

#### 4.4.2 Chicago, USA

The Chicago Metropolitan Agency for Planning (CMAP) developed an area-wide freight management plan and implements the following measures:

##### 1. Circle Interchange



CMAP amended its GO TO 2040 Comprehensive Regional Plan to include congestion relief at the Circle Interchange near downtown Chicago (see *illustration 4.4*). The interchange has consistently been ranked as the number-one freight bottleneck in the United States by the American Transportation Research Institute, a research affiliate of the American Trucking Associations.

*Illustration 4.4 - Circle interchange near Downtown Chicago*



## 2. Illiana Corridor

CMAP amended its GO TO 2040 Comprehensive Regional Plan to include a new freight-oriented highway along the southern tier of the region (see *illustration 4.5*). It is anticipated that the highway will involve a public-private partnership with substantial private-sector financing.



*Illustration 4.5 - Illinois Corridor*

## 3. Chicago Truck Route Study



A designated truck route system indicated in *illustration 4.5* that allows truckers to find the most effective routing from origin to destination, enables the city of Chicago to enforce truck size, weight and route laws, and encourages economic development.

*Illustration 4.6 - Designated truck route system*

## 4. Regional Freight Leadership Task Force

Freight stakeholders and transportation implementers convened to discuss potential institutional models for a Regional Freight Authority, including consideration of revenue sources and governance issues.

## 5. Freight Cluster Analysis

This analysis explores connections between the freight cluster and the regional economy, identifies key infrastructure, workforce, and innovation challenges and opportunities influencing future cluster growth.

## 6. CREATE Rail Capacity Projects

Chicago Region Environmental and Transportation Efficiency (CREATE) Program consists of rail capacity and highway-rail grade separation projects, which affects highway users because of the high volume of intermodal transfers in the region and because of the delay caused by level crossings.

## 7. Illinois Tollway

*Move Illinois*, a 15-year, \$12 billion capital program to improve mobility, relieve congestion, reduce pollution, and link economies across Northern Illinois.

### 4.4.3 Lyon, France

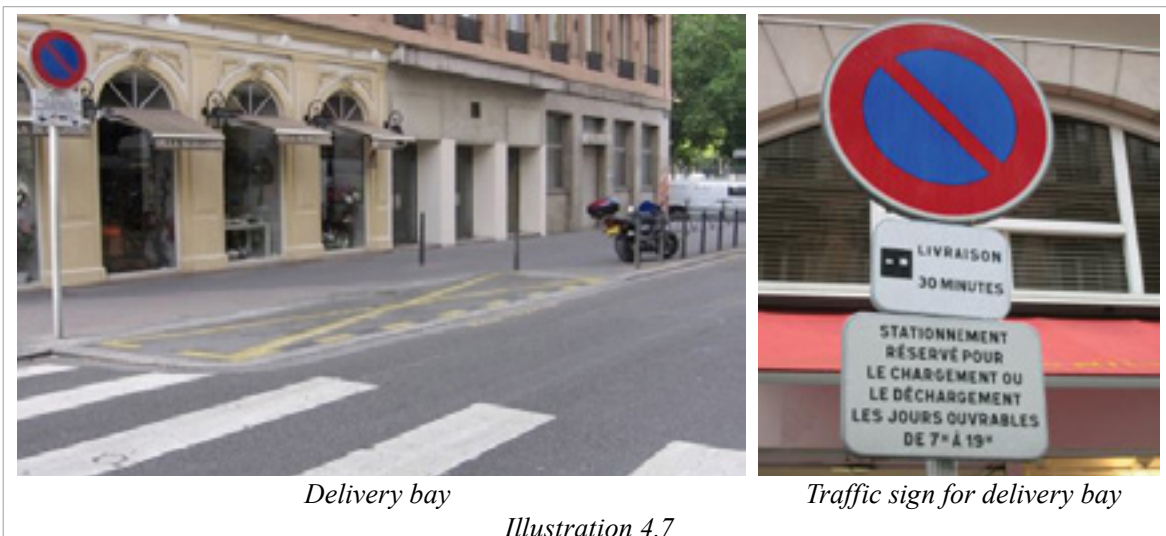
Greater Lyon Authority (consisting of 58 municipalities) carry out a wide variety of RFTM measures, including vehicle restriction, delivery bay, designation of delivery facilities, designation of truck-only parking spaces, joint delivery, use of ITS, PPP, and a research project called “*CityLog*”.

#### 1. Vehicle restriction

To realize smoother freight traffic flow and traffic safety for citizens, the authority allows only low-emission vehicles (EURO 3) to access to the city center of Lyon and Villeurbanne (the second city of Greater Lyon).

#### 2. Delivery bay

Deliveries on delivery bays (see *illustration 4.7*) permitted only from 7am to 7pm and for vehicles of less than 29 m<sup>2</sup>. Delivery time is a maximum of 30 minutes. The delivery bays can be used by the residents at night time (from 7pm to 7am).



*Delivery bay*

*Traffic sign for delivery bay*

*Illustration 4.7*

In the Peninsula Area, the implementation of the new regulation in 2007 helped 20% decrease in unauthorized delivery vehicles stops and 30% increase of vehicles using the delivery bays.

#### 3. Designation of delivery facilities

The authority is trying to organize “*freight villages*” such as the 1,200 hectare logistic terminal, realizing efficiencies by bringing together similar activities. Also, affordable truck parking is provided for the freight operators by authority-related companies.

#### 4. Designation of truck-only parking areas

The authority is studying the demand for truck-only parking areas in the industrial zones. It is one of the objectives of the 2<sup>nd</sup> workshop of the partnership forum.

### 5. Joint delivery

At the “*Centre d’Echanges Perrache*”, the development of 3 600 m<sup>2</sup> space for joint deliveries is under planning.

### 6. Use of ITS

Under a European Project (Freilot), ecoGreen wave for trucks is going to be tested. ecoGreen Wave is a new cooperative approach to coordinate the traffic light control of neighbouring intersections, in a way that the overall CO<sub>2</sub> emission of passing vehicles is minimised.

### 7. PPP

Since 2004, the Greater Lyon Authority has created a consultation institution for Urban Freight Transport. Under the Greater Lyon patronage, this institution regroups various public and quasi-public actors, as well as professionals from the transport and logistic sectors, and research and innovation representatives. 3 thematic groups have been created inside this instance to work on: delivery conditions, trucks parking and logistics terminals.

### 8. CityLog

CityLog is a research project financed by the European Commission. The main idea of this project is adapt the size of the freight vehicle to the area in which it is making the deliveries. The solution proposed by the CityLog is to use load units to transport the goods. These could possibly be carried by a heavy goods vehicle or a van and can be easily transferred from one vehicle to another via fully integrated equipment (i.e. without additional tools) and with minimum space requirements.

#### 4.4.4 Adelaide, Australia

South Australia developed has contributed to the development of the National Land Freight Strategy and is also currently preparing SA Freight Directions, which will be a strategic document guiding the freight network in the State in response to the National Land Freight Strategy. The measures include:

#### 1. Road network structurally suitable for heavy vehicles



The role of major traffic and freight routes (see *illustration 4.8*) is to cater efficiently and safely for all types of road users, for up to 24 hours a day, seven days a week. These routes provide optimal travel efficiency and reliability of travel times throughout the day for heavy vehicles, especially when freight and commuter peaks coincide.

*Illustration 4.8 - Major traffic and freight routes*

**2. Ring Roads or by passes**

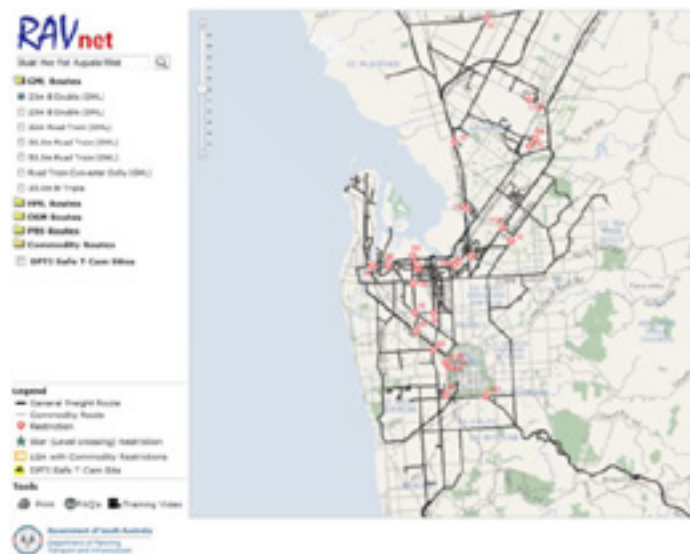
A non-stop north south corridor in Adelaide has been provided for an effective connection between expanding industrial and residential areas. This includes South Road Upgrade, Gallipoli underpass (completed) indicated in *illustration 4.9* and the Superway (under construction).



*Illustration 4.9 - The completed gallipoli underpass*

**3. Interactive Route Map System**

An interactive mapping system has been provided. This map enables freight transport operators to determine appropriate routes. The Heavy Vehicle Access Framework provides the policy and guidelines for the strategic development of heavy vehicle freight networks (see *illustration 4.10*) in South Australia.



*Illustration 4.10 - Freight transport route map for 23m b-double vehicles at general mass limits (gml) in the adelaide inner city.*

#### 4. Development of truck parking bays/rest areas

A rest area on the up track and the down track at the same location on the South Eastern Freeway - just outside the metropolitan area.

#### 5. Designation of on-road strips for loading or unloading activity

On-road loading zones exist in many places within the Central Business District and across the metropolitan area. These allow commercial vehicles to park adjacent to the curb at appropriate times.

#### 6. Traffic Flow Improvement

A number of Intelligent Transport Systems (ITS) measures have been implemented to manage traffic movements at targeted locations across Adelaide, including:

- Traffic signal coordination
- reversible lanes
- variable speed zones
- variable message signs
- speed cameras
- CCTV

#### 7. Organizational activities

The South Australian Freight Council (SAFC) is focused on identifying key freight logistics issues for South Australia, and developing solutions to them. Its members are drawn from all industry sectors along the supply chain, ranging from buyers and users of freight to freight service providers and Government. It covers all transport modes and activities – road, rail, sea, air and storage as well as the interactions between these modes.

#### 4.4.5 Montréal, Quebec, Canada

The Ministère des Transports du Québec (provincial transportation authority) has a road freight transportation policy that gathers views and makes policies to support trucking activities within the development of a safe, secure and sustainable freight transportation system. Also, there is a policy for heavy vehicle traffic on the municipal road network. City of Montréal has its own transport plan, called “*Plan de transport 2008*”, which aims for increasing mobility and quality of life within the metropolitan area.

##### 1. Extension of highway 30 around the island of Montréal (Infrastructure project)

The Québec Ministry of Transportation (provincial level) completed, in 2013, the extension of highway 30 (see *illustration 4.11*), allowing transit traffic to bypass the island of Montréal, where frequent congestion is observed. One section of the highway is operated by a public-private partnership and tolls are used to finance the infrastructure. The city of Montréal is located in an island accessible with bridges and a tunnel. Extension of highway 30 (South of the island) had for objectives of providing a bypass alternative to avoid the island and increase integration of other highways that support the transportation of freight to, from and within the Montréal metropolitan area.





*Illustration 4.11 - Extension of Highway 30 around the Island of Montreal.*

## **2. Replacement of Turcot complex (infrastructure project)**

The Turcot complex is an integrated combination of interchanges that link key highways within the City of Montréal (15, 20 and 720) and facilitate access to Champlain Bridge. It also provides link between the Pierre-Elliott Trudeau international airport and Montréal downtown district.

## **3. Improving access to the Port of Montréal**

The intention of the Montréal Port authority is to double the capacity of the port by the year 2020 up to 2 million TEU with the induction of more trucks on the municipal road network.

## **4. Reduce risks associated with the transportation of dangerous goods**

Within the metropolitan area, 6% of the truck movements involve hazardous materials. The management of the heavy vehicles network will take into account hazardous material to protect people and infrastructure

## **5. Integrated traffic management center**

The Center is operated on a 24 a day basis and gathers information taken from meteorological stations for winter maintenance, traffic cameras and resources on the field. To inform road users, the center links to many Variable Messages Signs to send information to road users and to suggest alternative routes in case of traffic congestion.

## **6. Truck routing**

The policy for the routing of heavy vehicles on the municipal road network allows the provincial government (Ministry of Transportation) to insure consistency between regulations for truck restrictions. All cities in the province wishing to regulate to restrict the routing and access of trucks require approval by the ministry. The objective is to guide trucks on the most suitable roads to support efficient traffic flow and freight movements without compromising road safety and protecting the road infrastructure.

#### 4.4.6 Oslo, Norway

There is no explicit freight transport strategy or plan for Oslo. The National Transport Plan (NTP) is the senior strategic document for managing the transport system in the city and the metropolitan area.

##### 1. Main Road network structurally designed for heavy vehicles

The main roads are structurally designed to accommodate heavy vehicles. Most truck traffic accessing the city centre use a suitably designed road tunnel, this limits the volume of truck traffic travelling through the urban streets.

##### 2. Truck length and weight regulations

The general maximum vehicle weight in Norway is 50 tons. Axle load is 10 tons. Total length is 19.5 m this is current regulation for most of the road network. In Oslo and Akershus and some parts of the national road network are open for 25.25 meter and 60 tons total weight for a test period, lasting until 2017.

##### 3. Road projects important for freight

There are three important road projects in Oslo important for freight. These are firstly better access to Port of Oslo (Sydhavna) (see *illustration 4.12*), and second better access to Alnabru freight terminal (rail). The Port of Oslo has the largest container terminal for imported goods in Norway (Sydhavna, see map fig 3). The railway freight terminal (Alnabru) is located only 10 km from the city center and is the main hub for rail transport in Norway. Several transport companies and wholesalers are located nearby. The third project is new E18 west of the city, improving a congested motorway.



*Illustration 4.12 - Planned new access to Port of Oslo, Sydhavna*

##### 4. Parking area exclusively for Trucks

A new private parking area is planned 60 km (45 min) from the city center. The owner has a contract with the NPRA (Norwegian Public Roads Administration), whereby the NPRA will pay an annual fee for the service providing truck parking and driver rest facilities. The service includes maintenance of the parking area, cameras for security, showers and rest rooms. There is a cafeteria nearby, and the owner is planning other services for the truck drivers.

##### 5. Information to truck companies

Information to truck companies about driving in Norway is given in maps published on the internet, and through a Truckers guide. The internet map illustrates real time congestion on the main roads. Information of expected travel times on the different links in minutes and information if the congestion is stable, increasing or decreasing is also given.



## 5. CONCLUSION

This report of WG1, TC2.3 “*Freight Transport*” presents the findings and discussions on the implementation of a framework of road freight transport management (RFTM). We discussed the importance of framework to efficiently plan, implement and evaluate the policy measures on RFTM based on case studies that we have conducted for several cities in PIARC member countries. Conclusions and recommendations are summarised.

### **Need for establishing the framework for urban? RFTM**

1. RFTM issues are complicated and challenging, since we need to balance factors such as economic growth and environment, energy consumption and safety improvement.
2. There are multiple stakeholders involved in urban freight transport, namely shippers, freight carriers, administrators, and residents. Therefore, the interactions between private and public entities should be coordinated regarding the implementation of policy measures.
3. Collaboration among multiple municipalities in the same region as well as between organisations at the city, regional, national, and international levels is required.
4. There is a strong need for establishing a framework for RFTM..

### **Institutional factors for RFTM**

1. Institutional factors for RFTM include legal issues, organisations, and functionality.
2. In various countries, organisations in charge of RFTM, based on laws or ad-hoc, are found at the city, regional, national, and international levels.
3. The common functions of these organisations are recognising the importance of RFTM, sharing ideas and perspectives on RFTM for creating visions of future social and economic development of the area, finding the appropriate approaches and measures to solve related problems, and implementing policy measures.

### **Common strategy for RFTM**

1. Multi-jurisdictional freight planning can provide the policy direction and context for RFTM.
2. Regional cooperative arrangements among jurisdictions are needed for the implementation of freight management activities.
3. Public-private partnerships play a key role for needs identification, development of solutions, and potential sharing of benefits and costs.
4. A dedicated freight planning and management function is essential within city government.
5. Leadership is important to define a common vision for RFTM and promote a strategic initiative.
6. Ongoing evaluation of RFTM performance is required including the evaluation of its impacts on the transportation system and its users.

**Lessons learned based on case studies on RFTM**

1. Multiple cities in a metropolitan area have developed a collaborative relationship in their freight transport management.
2. Typical public-private collaborative activities involve national and municipal governments, multi-modal freight carriers using railways and roads, consultants, and researchers.
3. These public-private collaborative activities bring about an establishment of a leading group that plays an important role in promoting freight transport management in the city/area.
4. There are a variety of styles in the freight transport management among cities; some cities have developed an overall picture of freight transport management that focuses particularly on logistics, while other cities implement individual measures to respond to each different issue. In any case, each city makes its own efforts toward the realization of a desirable freight transport.
5. All areas/cities surveyed have designated truck routes (in either regulatory or guiding manner) to separate truck traffic from others within the road network.
6. These cities/areas are making efforts in improving logistics and environment by providing an arterial road network, including ring and radial roads, after a careful consideration of the structure of the surrounding metropolitan area.
7. The development of arterial roads, which is suitable for truck traffic, will bring logistics centres and industrial bases in the roadside areas. This “new-highways-bring-industries” effect results in clusters of these centres/bases along the arterial road network.
8. Countries put emphasis on benefits of access to the public resources, whereas other countries adopt regulatory approaches to freight vehicle traffic in addressing each political issue.

**Recommendations**

1. We recommend PIARC member countries to establish efficient frameworks based on public-private partnerships for performing RFTM initiatives to tackle complicated urban freight transport problems towards mobile, sustainable and liveable cities. The features of framework might be different in different counties, which reflects the historical and cultural development of cities.
2. Further research through international collaboration is needed on RFTM.

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## 7. GLOSSARY

TERM	DEFINITION
<b>ABC-principle</b>	A recommendation that industry with few employees per square meter building, few customers coming to the site and high volume of trucks should be located away from city Centre and passenger hubs, and near highways (Norway).
<b>AOTU</b>	Authority for Urban Transport (France)
<b>CCC</b>	Construction consolidation centre
<b>CMAP</b>	Chicago Metropolitan Area Planning
<b>CREATE</b>	CREATE is a first-of-its-kind partnership between U.S. DOT, the State of Illinois, City of Chicago, Metra commuter rail, Amtrak passenger rail, and the nation's freight railroads. A project of national significance, CREATE will invest billions in critically needed improvements to increase the efficiency of the region's passenger and freight rail infrastructure and enhance the quality of life for Chicago-area residents.
<b>CityLog</b>	A research project financed by the European Commission
<b>DPA</b>	Development plan amendment (Australia)
<b>DTADD</b>	The Territorial Directive for land planning and sustainable development (France)
<b>EPCI</b>	Public body of Intercommunal cooperation
<b>FHWA</b>	Federal Highway Administration (USA)
<b>PQF</b>	Freight Quality Partnerships or FQPs are groups of transport operators and local authorities that come together to tackle the issues around freight access and deliveries in a particular location.
<b>Freilot</b>	Frame of an European Project
<b>GML</b>	General Mass Limits (Australia)
<b>GMSA</b>	The Greater Melbourne Statistical Area
<b>GO TO 2040</b>	A comprehensive regional plan to help the seven counties and 284 communities plan together for sustainable prosperity through mid-century and beyond (USA).
<b>PL</b>	Heavy goods vehicles
<b>STI</b>	Intelligent Transport Systems
<b>JIT</b>	JIT or Just-in-time delivery is a system in which parts or materials are only delivered to a destination just before they are needed.
<b>KPI</b>	Key performance indicators
<b>LAURE</b>	A French law called " <i>Law on Air and Rational Use of Energy</i> "
<b>MAP-21</b>	The Moving Ahead for Progress in the 21st Century Act (MAP-21) is a funding and authorization bill to govern United States federal surface transportation spending.
<b>MPO</b>	Metropolitan Planning Organization (USA)
<b>NPRA</b>	Norwegian Public Roads Administration
<b>NTP</b>	The National Transport Plan (Norway)
<b>PDU</b>	Urban Mobility Plan which is required every city or agglomeration over 100,000 inhabitants.
<b>PPP</b>	Public-private partnership
<b>PRQA</b>	The Regional Plan for Air Quality (France)
<b>GTRM</b>	Road Freight Transport Management, or RFTM measures are a set of policies designed to improve the safety and economic efficiency of freight vehicles, as well as reducing their associated environmental burdens and local quality of life.
<b>RUL</b>	Urban Region of Lyon
<b>SA Freight Directions</b>	A strategic document guiding the freight network in the state in response to the National Land Freight Strategy (South Australia)
<b>SAFC</b>	The South Australian Freight Council
<b>SCoT</b>	Schema for Territorial Coherency (France)
<b>SYTRAL</b>	Grand Lyon's Authority for Urban Transport Organization
<b>TEU</b>	Twenty-foot equivalent unit



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