Deliverable 3

*Urban Logistics Practices*

*Synthesis of Selected Case Studies*

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Foreword

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<tr>
<td>ALU</td>
<td>Air Pollution Action Plan</td>
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<tr>
<td>ANTP</td>
<td>National Private Transport Association</td>
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<td>ANTT</td>
<td>National Agency of Land Transport</td>
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<td>BID</td>
<td>Business Improvement Districts</td>
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<td>BHTRANS</td>
<td>Transport and Traffic Company of Belo Horizonte</td>
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<td>BMTMC</td>
<td>Beijing Municipal Tobacco Monopoly Bureau</td>
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<td>BTS</td>
<td>Bureau of Transportation Statistics</td>
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<tr>
<td>CABU</td>
<td>Commissie van Advies inzake Bevoorradsaangelegenheden in Utrecht</td>
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<tr>
<td>CBD</td>
<td>Central Business District</td>
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<td>CDC</td>
<td>City Distribution Centre</td>
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<td>CNG</td>
<td>Compressed Natural Gas</td>
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<td>CNT</td>
<td>National Confederation of Transport</td>
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<td>CO₂</td>
<td>Carbon dioxide</td>
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<td>COMAM</td>
<td>Environmental Municipal Council</td>
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<td>COMETRAVI</td>
<td>Metropolitan Commission for Transport and Roadways</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GOVERA</td>
<td>Goederen Vervoer Randstad</td>
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<td>ICT</td>
<td>Information and Communications Technology</td>
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<tr>
<td>Kg</td>
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<td>Km²</td>
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<td>LEZ</td>
<td>Low Emission Zone</td>
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<td>Mexico City Metropolitan Area</td>
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<td>Metropolitan Region</td>
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<td>PLU</td>
<td>Urban Master Plan</td>
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PM Particulate matter
PPP Purchasing Power Parity
PTUS Urban Transport Plan for the City of Santiago
RIC Traffic Impact Report
TMFS Tokyo Metropolitan Region Freight Survey
TMG Tokyo Metropolitan Government
UGM Urban Goods Movement
ULS Urban Logistic Spaces
US or USA United States of America
USDOT United States Department of Transportation’s
VCL Vision of Comprehensive Logistics
VICS Vehicle Information and Communication Systems

Currencies (source: [www.xe.com](http://www.xe.com); accessed on 19-02-2011)
RMB YUAN Renminbi Yuan (of the People's Republic of China): 1 EURO = 9.01 YUAN
R$ Brazilian Real: 1 EURO = 2.28 R$
USD, US$ or $ United States Dollars: 1 EURO = 1.37 US$
YEN Japanese Yen: 1 EURO = 113.82 YEN
EXECUTIVE SUMMARY

This deliverable provides information on urban freight transport practices implemented in nine different cities around the world. The material in the deliverable is taken from nine case studies produced for the TURBLOG_WW project:

- Paris, France: *Chronopost Concorde, La Petit Reine, Monoprix* and the *Freight Oriented Urban Master Plan of Paris*;
- Utrecht, the Netherlands: four measures that are part of a greater urban distribution policy package. These are the *Low Emission Zone; the City Distribution Centres; the Beer Boat and the Cargohopper*;
- Belo Horizonte, Brazil: *Requirements of loading and unloading spaces inside companies with large traffic movements and Internet/telephone sales and deliveries from producer to customer through planned routes*;
- *Mexico City Metropolitan Area, Mexico: Public policies for urban logistics*;
- Santiago de Chile, Chile: *Abertis Logistics Park*;
- Tokyo, Japan: *Shinjuku joint delivery systems*;
- Beijing, People's Republic of China: *Beijing Tobacco Logistics Centre*;
- New York, United States of America: *Off-hour delivery program programme*;
- Mumbai, India: the *Mumbai Dabbawalas*.

The cities mentioned above have been selected for a number of reasons. First, in order to present a broad variety of urban logistics practices around the world, both in developed countries as well as in less developed ones. Each city is also different with regard to its characteristics, such as size, important economic sectors, transport infrastructure and traditions. Also each case study presents one or more types of good practices, which vary from the practices presented in the other case studies. Some of the cases were also consciously chosen due to the “specialty” of country. For example, with regard to urban distribution Mumbai is well-known for its lunch-box delivery system and Japan for its co-operative distribution systems.

This deliverable gives a broad overview of some of the most important characteristics of the selected countries and cities, including urban freight data collection, current and expected transport problems, the institutional framework and the focus of their policies and the main measures used in the selected cities. One or more of the main instruments
used in the selected cities is explained in more detail, together with the main impacts and
the potential for transferability. The main purpose of this report is to present a summary of
each case study, and to compare the different urban logistics context and practices around
the world.

One aspect that all of the selected countries have in common is that around 80% of the
population live in urban areas. Also, the predominant transport mode is road
transportation. A clear difference can also be seen in the density in which the population
live and the economic development of each country.

The collection of freight transport data is typically the responsibility of the national bureau
of statistics. However, these freight data are mainly on a national level and not on an urban
or regional level. The urban freight data that is collected is mainly for studies aimed at
solving a specific problem at a certain time. There is little continuous or even regular
collection of urban freight data performed in the selected cities. Exceptions are Paris,
Utrecht and Tokyo, where urban freight surveys take place every 5 to 15 years. The main
reason for not collecting urban freight data in a systematic and continuous way is the lack
of financial resources to cover these surveys. Another reason is the fragmented institutional
framework in which the country and city works. Also, more priority is given to urban
passenger transport data collection than urban freight transportation.

When comparing the current and expected main transport problems in the nine selected
cities, it is clear that there are two common issues: (1) congestion and (2) environmental
pollution. All the selected cities seem to experience a similar set of problems, some more
than others. However, the policies and instruments they use are different in each city.

The case studies also demonstrate that on an urban level there is often no dedicated
administrative authority for urban freight transport policy, but the tasks are scattered over
various institutions. The fragmented structure, each with their own particular agendas for
the transportation system, makes it more difficult to maximise the efficiency of the system
as a whole and to incorporate an overall urban transport policy for the area. The cities
where there is a dedicated administrative authority or person responsible for urban
transport policies are Utrecht and Paris. This has been important in putting urban freight
distribution on the agenda and consolidating the various stakeholders and/or initiatives
under one umbrella.

The different measures used in the selected cities have also been described. Most of the
measures that are introduced are singular solutions for specific problems, without defining
them as an integral part of a larger long-term strategy for urban transport policy. In this study a policy package is described as two or more type of measures, *consciously aggregated* to reach a specific *(long-term)* objective. Thus, it is not only a set of different single measures solving individual short-term problems. Of the selected cities, only Paris and Utrecht meet this criterion. The urban freight policies in these cities, exemplify a win-win situation, where the Municipality acts as a facilitator and the business sector takes up the role of the investor and operator. These cities have mixed the more traditional approaches aimed at restricting freight movements (such as delivery time windows, vehicle restrictions and environmental zones), with more voluntary initiatives for innovative solutions taken up by local businesses. The combination of a policy-mix, for instance restrictive and incentive-based measures, requires less public financial commitment and achieves a greater acceptability by the stakeholders involved. Therefore the implementation of a comprehensive long-term urban freight policy is more likely to succeed.

A clear difference can also be seen in the stage at which the logistics sectors of the selected cities currently are. In spite of the relatively rapid development of emerging economies, such as China, India, Mexico, Chile and Brazil, the logistics sector still seems to be at an early stage of development as a whole, compared to more developed countries, such as France, the Netherlands and Japan. This can also been seen from the measures used in the selected cities. The more developed countries show a broader range of measures, varying from restrictions to incentives and often including market-oriented initiatives by companies. In contrast, other cities in Latin America, India and China seem to focus more on restrictions and/or measures influencing freight transportation in general.

However, the economic development of a country is not the only factor. The United States is considered to be a developed country, but there is no overall urban transport policy or broad range of measures in place in New York. One of the main the reason for this is the fragmented institutional structure of the city. A fragmented structure, where the tasks are scattered over various institutions, each with its own particular agendas for the transportation system, makes it more difficult to maximise the efficiency of the system as a whole and to incorporate an overall urban transport policy for the area. There is a need for a dedicated administrative authority for urban freight transport policy. The cities with a dedicated administrative authority, or person responsible for urban freight transport policies, are Utrecht and Paris. This has been important in putting urban freight distribution on the agenda and consolidating the various stakeholders and/or initiatives under one aggregated long-term policy package.
One or more urban logistics practices from each of the case studies is described in more detail, together with the main impacts and the transferability potential. It can be concluded that all the measures contribute toward making the city more attractive and the environment more sustainable. The majority of the measures are related to the consolidation of deliveries, which in most of the cases, demonstrated an increase in the productivity and less trucks needed. By using fewer polluting vehicles and by decreasing the amount of unnecessary and necessary trips, the pollution levels decrease, which also makes the city more attractive. The regulations investigated, although they increase the costs, improve the environment, the quality of life, the city attractiveness and they improve safety. The use of low-emission transport modes decreases the quantity of travelled kilometres with polluting vehicles and replaces these with low-emission transport modes, which reduces emission and noise pollution and improves the quality of life.

Comparing the different practices, there are a few lessons that can be learned when implementing a measure in another city:

1) The need for strong political commitment and cooperation between the private and the public sector;
2) The need for well-located logistics areas for successful operations;
3) The need for long-term stability with regard to decisions taken by the government;
4) The existence of some restrictions to truck movements inside the city can encourage the private sector to invest in other alternatives for urban distribution;
5) It is difficult, but certainly possible to use the urban public transport system to deliver goods;
6) Customer focus and continuous adjustments and innovation are important for sustainable business operations.

A critical issue when transferring a measure is to keep in mind the characteristics of the area. A measure used in a specific city cannot be expected to have exactly the same results in another city. The results of a measure are not only heavily influenced by the geographical and institutional characteristics of the area, but also by the quality of implementation, the acceptance by the stakeholders and by other measures and polices implemented.

In order to be able to transfer a specific measure within or to another city, one has to examine the basic elements of the measure and adapt these to the legal, geographical,
economic and social characteristics of the area and needs of the stakeholders involved. In other words: not copy-paste, but copy-adapt.
1 INTRODUCTION

1.1 URBAN DISTRIBUTION AROUND THE WORLD

Urban freight distribution is an issue that significantly affects the economic, social and environmental aspects of most cities around the world. As acknowledged in the EC Thematic Strategy on Urban Environment¹, urban freight typically represents between 20% and 25% of road space use, thus contributing to between 10% and 20% of urban road traffic. This clearly highlights how indispensable urban freight is for the economy of the cities, but also how it may significantly affect the attractiveness and quality of life in urban areas.

The impacts of urban distribution can be divided into the 3 P’s²:

- “People” (for example, impacts of local emissions on human health, noise pollution and accidents);
- “Planet” (for example, local emissions, such as NO₅, PM₁₀ and global emissions such as CO₂);
- “Profit” (for example, difficulty of planning efficient routes due to congestion, local regulations and reduced urban accessibility).

Policies on sustainable urban freight distribution contribute toward optimising the impacts of the 3 P’s. The chosen policy must take into account the interests of the different stakeholders. This is where this issue becomes complex. City logistics is a complex, multi-actor phenomenon, where shippers, logistics operators, receivers, local authorities, investors, local inhabitants, employees and visitors all have different requirements and interests. Figure 1 illustrates the complicated relationships between the different actors.

Furthermore, urban freight is strongly interrelated with many other activities and aspects of the urban system: urban passenger transport system, land use, regional development, socio-economic environment, employment and the institutional, regulatory, social,

geographical, infrastructural and technological framework of the city. This requires a joint and co-ordinated action of the different stakeholders in the urban logistics arena.

**Figure 1: Urban distribution: relationship between the different stakeholders**

![Diagram of urban distribution relationships](image)

*Source: Quantification of Urban Freight Transport Effects I, BESTUFS II, 2006*

Many national governments consider urban freight transport a local problem, which means cities are responsible for dealing with urban freight. However, in most cities, those who are responsible for urban transport policy and planning have paid more attention to the movement of people than the movement of goods. In spite of this, many cities around the world have tackled aspects of urban freight in an attempt to solve a specific or local issue or they have introduced different urban freight policies to reach a long-term objective.

Although most of these cities face common problems, they are in different phases with regard to policy development on urban freight distribution. The intensity in which they act is closely related to the perceived urgency of freight transport problems in urban areas.

This report will give an overview of specific urban logistics policies and practices in nine different countries around the world and will present a cross-comparison between them.
1.2 **OBJECTIVE OF THE REPORT**

The main objective of this report is to give an overview of specific urban logistics practices in different parts of the world, in order to analyse in a later stage of the project, the potential transferability of the selected practice to other cities around the world and especially in Brazil and Peru.

A total of 9 extensive case studies have been carried out over the world by a group of international experts in this area. The aim of this report is to present the main contents of each case study, and to compare the different urban logistics practices around the world.

1.3 **SCOPE OF THE REPORT**

A total of 9 cities world-wide and different practices used in these cities have been selected for the case studies (see figure 2):

- Paris, France: *Chronopost Concorde, La Petit Reine, Monoprix* and the *Freight Oriented Urban Master Plan of Paris*;
- Utrecht, the Netherlands: four measures that are part of a greater urban distribution policy package. These are the *Low Emission Zone; the City Distribution Centres; the Beer Boat* and the *Cargohopper*;
- Belo Horizonte, Brazil: *Requirements of loading and unloading spaces inside companies with large traffic movements and Internet/telephone sales and deliveries from producer to customer through planned routes*;
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- New York, United States of America: *Off-hour delivery program programme*;
- Mumbai, India: the *Mumbai Dabbawalas*.

It is important to note that there might be better practices known in other cities or countries in the world. However, the cities mentioned above have been selected for a number of reasons. First, in order to present a broad variety of urban logistics practices around the world, both in developed countries as well as in less developed ones. Each city
is also different with regard to its characteristics (for instance size, important economic sectors, transport infrastructure and traditions). Also each case study presents one or more types of good practices, which vary from the practices presented in the other case studies. Some of the cases were also consciously chosen due to the “specialty” of country. For example, Mumbai is well-known for its lunchbox delivery system and Tokyo for its co-operative distribution systems.

The report only focuses on urban freight transportation and not on passenger transportation; although in some cases information on passenger transportation is presented if it is closely related to the transport mode used in the selected practice. The measures described in this report are measures already implemented or put into practice through a successful pilot.

Each case study starts with a presentation of some of the main characteristics of the selected countries and cities (for instance geographical, demographical, economic and freight transport aspects and other information). Next, the institutional framework and policies used in the chosen countries and cities are presented. A broad overview is then given of the different urban logistics instruments used in the selected city. Each case study selects one or several of these urban logistics instruments and investigates these in more detail. Aspects such as stakeholders, products and/or services involved and the transferability potential are presented, followed by the main impacts and some implementation issues. The following types of measures can be identified in the case studies:

- Interventions for loading/unloading (for instance on-street loading bays; time regulations on vehicle loading/unloading and night deliveries);
- Emerging updated concepts on how freight distribution and collection can be integrated within comprehensive urban passenger and freight transport and land-use planning (for example lorry routes, signage, urban freight information and maps, urban consolidation centres, “last mile” solutions, vehicle weight and size regulations, environmental zones, lorry lanes, road charging systems, and alternative modes);
- Business arrangements, focusing upon public-private partnerships and private associations;
- Technological developments that are relevant to urban freight (such as Information and Communication Technologies (ICT) for urban goods transport, and vehicle and fuel technology);
• Policy packages: two or more types of measures, as described above, *consciously aggregated* to reach a specific (long-term) objective.

This report will present the main content of each case study and will make a cross-comparison between the different urban logistics practices around the world.

### 1.4 Report structure

The present report has the following structure. Chapter 2 gives a broad overview of some of the most important characteristics of the selected countries and cities, the urban freight data collection, the current and expected transport problems, the institutional framework and focus of their policies and the main measures used in the selected cities. In chapter 3, one or more of the main instruments used in the selected cities is explained in more detail, together with the main impacts and potential for transferability of the instrument. The last chapter provides the conclusions based on the results of the study.
Figure 2: Selected cities for the case studies
2 OVERVIEW AND COMPARISON OF THE SELECTED CITIES

2.1 INTRODUCTION

This chapter gives an overview of the macro context (within the country) and micro context (within the city) of the selected cases. The most important parts of each case study will be presented, regarding the country and city profile, urban freight data collection, current and expected transport problems, institutional framework and focus of policies and general instruments used in the selected cities. The main purpose of this report is to present a summary of each case study, and compare the different urban logistics context and practices around the world.

2.2 SELECTED CITIES IN THE MACRO AND MICRO CONTEXT

2.2.1 Profiles of the Selected Countries and Cities

In order to analyse and compare the main context of the selected cities, it is important to understand the different characteristics of the areas investigated, specifically the geographical, demographical, economic and freight transport aspects and other relevant information.

France is a country of 550,000 km² and 62 million inhabitants located in the western part of the European Union. The population density is 112 inhabitants per km². Currently, 77% of the French population live in urban areas. France’s GDP ranks fifth in the world, with a GDP per capita of close to €28,000, which is slightly higher than the EU average. Like most Western economies, the French economy is mostly based on the tertiary sector (82% of the working population). Freight transport in France relies mostly on road. The modal split for domestic freight transport is: 83% road, 10% rail, 2% waterways, 5% pipelines (in tonnes-km).

The City of Paris has a population of 2.2 million inhabitants and covers 105 km². Its population density is 21,000 inhabitants per km². Paris’ GDP is €150 billion; the city’s GDP per capita is 120% higher than the rest of the country’s. The economic base of the City of Paris is quite specific compared to the rest of France. Paris has a concentration of high level services to businesses, high level administration services, high level research and education. Retail

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3 All the data from France come from INSEE, the French National Institute for Statistics and Economic Studies. The year of the data is 2008.

and tourism have also an extremely important share of Paris’ economy. All these categories are quite specific to Paris compared with the rest of France, or at least are much more concentrated in Paris than they are in other cities. They generate specific and sometimes problematic delivery patterns (Dablanc et al., 2010). Paris is at the heart of one of the largest metropolitan areas of Europe, the Ile-de-France Region. Accessing the city centre, therefore, is challenging. The City of Paris can be accessed by three different transport networks. The modal split (in tonnes) is approximately: 89% road, 8% waterways and 3% railways. With regard to road transportation, one of the most salient features of Paris is that it is surrounded by three ring roads, all of which are heavily used by transit trucks. Delivery trucks have difficulties in accessing the City of Paris. However, once inside the city’s walls, commercial vehicles meet with fewer difficulties than was the case a few years ago, in circulating on the streets of Paris. This is due to the successful car use reduction policy of the City of Paris. The Seine River has also presented a key means of transporting goods since the beginning of the City’s history. Today the Seine is still commonly used for the transport of aggregates and building material waste.

The Netherlands has about 16.5 million inhabitants and is one of the most densely populated countries in the world (401 inhabitants per km$^2$). Around 80% of the Dutch population live in urbanised areas (2006 figures). The Netherlands economy can best be characterised as a relatively small open economy. The Port of Rotterdam, the largest port in Europe, receives many goods that are transported within and transited through the Netherlands by rail, road and water. The modal split of the domestic freight transport is: 60% road, 35% inland waterway transportation and 5% rail (in total inland tonne-km). The Netherlands is well known for its extensive use of inland waterway transportation, especially given the geographic characteristics of the country. The GDP of the Netherlands was €595 billion in 2010. The most important sectors in terms of employment are healthcare, financial services and trade.

In 2010 the City of Utrecht had around 300,000 inhabitants living in an area of 95.35 km$^2$. Utrecht is the fourth biggest city in the Netherlands after Amsterdam, Rotterdam and The Hague and has a population density of approximately 3,146 inhabitants per km$^2$. Utrecht is one of the most accessible cities in the Netherlands, despite the congestion around the city.

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5 Source: Paris Department of Transport.
6 Source: Statistics Netherlands (CBS), 2009.
7 Source: EUROSTAT, 2008.
8 Source: Statistics Netherlands (CBS), 2010.
About 6 million people in the Netherlands can reach the city centre within an hour. This is due to the central geographic position of Utrecht in the Netherlands, including a central position in the national road, rail and inland waterways system. The inner city of Utrecht is characterised by canals, many historical buildings and narrow streets. This setting causes several problems for freight deliveries, such as congestion. On the other hand, the canals also provide an opportunity, such as transport by water.

Brazil is the largest country in square kilometres (km²) and in population in South America, with a territory of 8,511,965 km², it is the fifth largest country in the world. In 2007 Brazil had a population of 184 million inhabitants. Its population density is approximately 21 inhabitants per km², which means that a large part of Brazil is still sparsely occupied. In 2000 around 81% of the Brazilian population was located in urban areas, with a large population concentration in the Southeast, the South and in the coastal regions. The Gross National Product (GNP) of the country in 2009 was R$ 3,143,015 billion (around US$ 1,796,000 billion), and the GNP per capita was of R$ 16,414 per inhabitant (around US$ 9,380 per inhabitant). The tertiary sector had the highest production figures in 2002 (54% of the GNP), followed by the primary sector (20% of the GNP). Freight transport in Brazil is carried out with various modes. However, the largest modal share (in tonne-km) belongs to road transportation (61.1%), followed by rail transport (21%) and water transportation (14%).

Belo Horizonte is the capital city of the state of Minas Gerais in Brazil. The City of Belo Horizonte has a territory of 330.9 km². In 2007, Belo Horizonte had a population of approximately 2.3 million inhabitants (7,071 inhabitants per km²), making it the sixth largest city of Brazil. The GDP of Belo Horizonte was R$ 38.2 billion in 2007, with a GDP of R$ 15,835 per capita. The most important sector is financial and business services.

Mexico has a territory of around 2 million km². Mexico has 110.8 millions of inhabitants (around 56 inhabitants per km²). More than 78% live in urban areas. The main cities with metropolitan characteristics are Mexico City, Guadalajara and Monterrey. The per capita GDP in 2009 was 8,143 US dollars. The main sources of the Mexican economy are mining, the

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9 Source: Utrecht traffic monitor, 2008.
10 Source: Census 2007, Brazilian Institute of Geography and Statistics (IBGE).
industrial sector and tourism. Mexico is also an important oil world exporter. The modal
distribution of the total volume of freight is 58% for road transportation, 11% by train, 30%
maritime transportation\(^\text{15}\) and less than 0.1% by air transport.

The **Mexico City Metropolitan Area (MCMA)** is centred in a closed basin that contains the
Federal District, which is Mexico City, at an altitude of 2,250 m and it goes beyond the
central high plateau, in some cases reaching 3,000 m or more. The MCMA covers more than
7,800 km\(^2\). The Federal District covers 1,477 km\(^2\). The MCMA has approximately 20.1 millions
inhabitants and in the Federal District alone, there are 8.8 million inhabitants\(^\text{16}\). The density
of the population in the Federal District is of almost 6,000 inhabitants per km\(^2\) and in the
MCMA altogether there are around 3,000 inhabitants per km\(^2\). The economic activity of the
MCMA concentrates more than 33% of national GDP. Services is the economic activity with the
highest development. Mexico City is characterized by a growing index of motorization and
amount of vehicles on the roadway net, encouraged by poor public passenger transport
service and the relatively low price of petrol.

The total population of **Chile** was around 15.1 million inhabitants in 2002\(^\text{17}\). Chilean territory
encompasses around 2 million km\(^2\) (excluding the Chilean area in the Antarctic region), which
means a population density of approximately 20 inhabitants per km\(^2\). About 85% of the
country's population lives in urban areas. According to figures released by the IMF, the GDP
per capita in Chile reached US $14,461 in 2009. According to 2007 data, mining occupies the
first place in terms of contributions to the country’s income, followed by business and finance
services and lastly the manufacturing industry\(^\text{18}\). Together this comprises a little more than
50% of the total economic activity in Chile. In terms of national freight transport, the
principal mode in 2009 was road transport (88%), followed by shipping (7%) and rail transport
(5%).

The city of **Santiago** is the capital of Chile and the centre of the Santiago Metropolitan Region
(MR). The MR occupies an area of 15,403.2 km\(^2\), which represents 2.0% of the total area in the
country. The regional population consists of 6,061,185 inhabitants, which is equivalent to
40.1% of the national population. In 2002 it reached a density of 393 inhabitants per km\(^2\).
Almost 90% of the population of the Metropolitan Region is concentrated in Santiago and the
rest is dispersed throughout small urban areas around the city. The GDP per capita in the

\(^\text{15}\) Essentially PEMEX operations (ferry with Baja California) on the Pacific and with Cozumel Island and
Muñecas Island on the Caribbean.


\(^\text{17}\) Source: National Institute of Statistics (http://www.ine.cl).

\(^\text{18}\) Source: Central Bank of Chile (http://www.bcentral.cl).
Metropolitan Region reached US $10,111 in 2004 (PPP). The most important sector is financial and business services, followed by the manufacturing industry, commerce, restaurants and hotels, together encompassing more than 60% of the regional GDP (2008 figures)\footnote{Source: Central Bank of Chile (http://www.bcentral.cl).}

**Japan** is an island country with a total surface area of approximately 377,944 km\(^2\). In 2008 the total population of Japan was 127,690 million. The population density in 2005\footnote{Source: Statistical Handbook of Japan, 2009.} was about 343 inhabitants per km\(^2\). In 2008, approximately 66% of the total population lived in urban areas\footnote{Source: The World Factbook (http://www.cia.gov).}. The GDP of Japan has been reported as 5,109,247 trillion yen (2005 figures), which accounts for a per capita GDP of approximately 4 million yen per person. Regarding the economic structure, the tertiary sector contributed around 72% of the GDP in 2009, the secondary and primary industries around 26% and 1%, respectively. Japan has been an icon of technology and innovation, whether it concerns high precision equipment or large industrial plants. With regard to domestic freight transport, road-based transport has a modal share of 61% in terms of freight intensity (in tonne-km; 2007 figures) followed by coastal shipping (35%) and railways (4%)\footnote{Source: Ministry of Land, Infrastructure, Transport and Tourism (MLIT), 2009.}.

**Tokyo** is the administrative as well as the economic hub of Japan. Tokyo is 2,188 km\(^2\) (only 0.6% of Japan's land area) and hosts approximately 10% of the total population. The total population of Tokyo amounts to 12,989 million people. Tokyo is the most densely populated area in Japan, with a population density of 5,937 inhabitants per km\(^2\) (2009 figures\footnote{Source: Tokyo Metropolitan Government (TMG), 2009.}). Its economy is mainly based on the sector (84.4%). Almost all the freight movements (99.4%) within Tokyo is based on motor vehicles, whereas the share of road transport is 84.9% in regional freight transport followed by a 12.8% share of coastal shipping (BILA, 2009).

**China**'s total territory covers about 9.6 million km\(^2\). In 2008 China had approximately 1,328 million inhabitants, making it the most populous country in the world. Its population density is approximately 138 inhabitants per km\(^2\). In 2008, approximately 66% of the total population lived in urban areas\footnote{Source: The World Factbook (http://www.cia.gov).}.
**Beijing** is the capital, political, cultural and international exchange centre of China. In 2008 the population of Beijing amounted to 16.95 million people\(^{25}\). Beijing covers a land area of 16,410 km\(^2\), which means a population density of approximately 1,033 inhabitants per km\(^2\). Since the founding of new China, the built-up urban area in Beijing has been expanded almost 5 times and the urban population has increased by nearly 4 times. The size of the city centre is continuously expanding along with the construction of Beijing’s ring roads. Among several modes of transport taken by Beijing’s logistics enterprises, freight volumes on road, railway and air transports account for 92.5%, 7.3% and 0.2%, respectively. This shows that road transportation is the main transport mode in Beijing.

The **United States of America (USA)** covers a geographical area of 9,826,675 km\(^2\). The total population of USA in 2010 was approximately 307 million people, which results in a population density of 31 inhabitants per km\(^2\). In 2008, around 82% of the population lived in urbanised areas\(^{26}\). The economy is highly diversified with a per capita GDP of $46,400.

**New York City** consists of five boroughs (Manhattan, The Bronx, Queens, Brooklyn, and Staten Island) and has a total land area of 785\(^{27}\) km\(^2\). The population in 2009 was estimated at around 8,391,888 people\(^{28}\), which means a density of 10,682 people per km\(^2\). The mode shares are as follows: 72.6% by road, 0.9% by rail, 0.3% by air and 26.2% by water. Most of the freight transported by water consisted of bulk commodities for no alternative transport mode was available and if excluded from the analyses, the share of freight transported by truck would increase to 98.4% (Holguín-Veras & Thorson, 2001). This illustrates that the region relies heavily on trucks to transport freight. New York City’s location on the coast where the Hudson River flows into the Atlantic Ocean has resulted in the region being home to one of the world’s largest ports. New York City and the surrounding metropolitan area had a 2005 GDP of 1,056 trillion dollars\(^{29}\). The New York City metropolitan area includes three airports, dozens of container terminals, and intermodal yards, thus making the area one of the highest concentrations of transportation facilities in the world (Holguín-Veras, 2000). The borough of Manhattan, which is the focus of the selected case study, is an island with a total land area of

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\(^{26}\) All the statistics are taken from the Central Intelligence Agency’s (CIA), The World Factbook (https://www.cia.gov).

\(^{27}\) Source: U.S. Census Bureau, Census 2000 Summary, File 1.


59.5 km² and an estimated population of 1,537,195 people in 2009 (25,850 inhabitants per km²). The majority of the freight is transported by truck. The street network of Downtown Manhattan contains few avenues and most of the streets are narrow and winding due to the historical development of the area (Schaller et al., 2010). The two Central Business Districts (CBDs) in Manhattan are the largest (Midtown) and third largest (Lower Manhattan) CBDs in the country.

India is the seventh largest country in the world, with a geographical area of 3.28 million km². India is the second most populous country in the world, with an estimated 1,173 million inhabitants and an average population density of 357 inhabitants per km² (estimate for July 2010). In 2008, approximately 29% of the total population lived in urban areas; however, there is a large variation in population density across India. In 2008, India represented the second fastest growing major economy. According to the IMF, the Indian economy is the eleventh largest economy in the world by nominal GDP. India’s per capita income in 2009 was US$ 1,031, while the GDP per capita (PPP) was US$ 2,941. Agriculture constitutes India’s largest economic sector in terms of the total workforce. In terms of GDP, the service sector has the largest share (55%). In 2007, the modal share for inter-regional freight transport in India was dominated by road at 50% (in tonne-km), followed by rail transport (36%) and coastal shipping (6%). The rest was done by air and inland waterways.

Mumbai, or formerly Bombay, had a population of 13,662,800 in 2008, with an average population density roughly estimated to be 22,000 people per km². Mumbai is considered the financial capital of the country as it generates 6% of the total GDP of the nation. In 2009, Mumbai’s GDP was around US$ 42.7 billion and the per capita income was approximately US$ 2,730, which is almost 3 times the national average (FT, 2008). Road users are diverse and employ slow, medium and fast motorised and non-motorised vehicle types (mixed traffic) on the same road infrastructure. The transportation of goods is done by road, rail and water, with road being the predominant transport mode. Mumbai’s commuter rail services are not only used for passenger movements, but also for freight movements (dedicated goods compartment in the commuters train).

32 Source: http://www.australiannews.net/story/366072.
2.2.2 Cross-Comparison of the Geographical, Demographical, Economic and Freight Transport aspects of the Selected Countries and Cities

One aspect that all of the selected countries have in common is that around 80% of the population live in urban areas (see table 1). Also, the predominant transport mode is road transportation. However, countries such as France and the Netherlands are known for their extended use of inland waterway navigation for the transport of goods, especially given the geographic characteristics of the country. A clear difference can also be seen in the density in which the population live and the economic development of each country (see table 1). For example, from the selected countries, the Netherlands and India have the highest population densities. However, the GDP per capita (PPP) of the country shows a clear difference of the national wealth. This is also the case for the population density of the selected cities.
Table 1: Demographic and economic characteristics of the selected countries and cities

<table>
<thead>
<tr>
<th>Country</th>
<th>City</th>
<th>Share of population living in urban areas</th>
<th>Population density (in km²)</th>
<th>Country GDP (PPP) per capita (in dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>of the country</td>
<td>of the city</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>Paris</td>
<td>77%</td>
<td>112</td>
<td>21,000</td>
</tr>
<tr>
<td>The Neth.</td>
<td>Utrecht</td>
<td>80%</td>
<td>401</td>
<td>3,146</td>
</tr>
<tr>
<td>Brazil</td>
<td>Belo Horizonte</td>
<td>81%</td>
<td>21</td>
<td>7,071</td>
</tr>
<tr>
<td>Chile</td>
<td>Santiago de Chile</td>
<td>85%</td>
<td>20</td>
<td>8,964&lt;sup&gt;36&lt;/sup&gt;</td>
</tr>
<tr>
<td>Mexico</td>
<td>Mexico City</td>
<td>78%</td>
<td>56</td>
<td>6,000&lt;sup&gt;37&lt;/sup&gt;</td>
</tr>
<tr>
<td>U.S.</td>
<td>New York</td>
<td>82%</td>
<td>31</td>
<td>10,682</td>
</tr>
<tr>
<td>Japan</td>
<td>Tokyo</td>
<td>66%</td>
<td>343</td>
<td>5,937</td>
</tr>
<tr>
<td>China</td>
<td>Beijing</td>
<td>43%</td>
<td>138</td>
<td>1,033</td>
</tr>
<tr>
<td>India</td>
<td>Mumbai</td>
<td>29%</td>
<td>357</td>
<td>22,000</td>
</tr>
</tbody>
</table>

2.3 (URBAN) FREIGHT DATA COLLECTION

2.3.1 Urban Freight Data Collection in the Selected Countries and Cities

In France in 1993 a National Programme for Freight in Cities (Programme national marchandises en ville) was established and financed by the French Ministry of Transport and the Agency for the Environment. Under this Programme, urban freight surveys (Urban Goods Movement surveys - UGM surveys) were implemented in different cities around the country by using a common methodology. The main drawback of these surveys is their cost. To promote data collection in cities that do not have a sufficient budget to do an UGM survey, a simulation model called FRETURB was also designed. The first freight data collection initiatives were taken in 1995-1997 with large scale surveys organised in three different cities (Marseille, Bordeaux, and Dijon). A second phase of the data collection work started in 2010,


<sup>36</sup> Population density of Santiago (the city) in 2009 and not the Metropolitan Region. Source: http://www.wikipedia.com.

<sup>37</sup> Population density of Mexico City and not the Metropolitan Region.
with a major survey (September 2010) being prepared for the Paris region. Bordeaux and Marseille will also be surveyed in 2011-2012, which will allow detailed comparisons with the 1995-1997 surveys.

In the Netherlands the national statistical agency CBS produces information about national freight transport, but only very limited amount of information about urban freight transport. In 2002 a consortium that consisted of several public and private parties developed a standardised method for analysing urban distribution in a city. This method is called “Delivery Profiles”. Since then several Delivery Profiles have been set up for various cities (for instance Amsterdam, Rotterdam, Utrecht and The Hague). The delivery profiles aim to show existing problems in urban distribution and the underlying problems. Utrecht also participated in this project in 2003 and in 2008 the research was repeated. The delivery profile of Utrecht is largely based on surveys of residents, downtown businesses and truck drivers. The main indicators are vitality and attractiveness (economy and development), liveability (air quality and noise level), road safety (involvement of freight transport in traffic accidents), accessibility (restrictions and deliveries in time windows) and the quality of the deliveries.

There is a lack of specific data on urban freight transport in Brazil as most of the available databases are related to freight and logistics in general. The National Confederation of Transport (CNT) collects the data at national level. CNT provides a series of studies and documents on its website, with among other things: statistical bulletins, environmental bulletins and a transport atlas. Some federations, state and regional unions also provide information on their websites. The governmental agency responsible for collecting, producing and providing data on logistics is the National Agency of Land Transport (ANTT). Since November 2009, ANTT has been publishing a magazine that provides maps and develops methodologies in order to collect data from reliable information sources regarding urban freight transport. However, there is still sparse information provided by the institutions and public organs responsible for the transport in the municipalities, in the states and in the country.

In Mexico, data on urban freight transport is not systematically collected. In the Mexico City Metropolitan Area, data must be obtained from the two political and administrative instances: the Mexico City Federal District Government and the Government of the State of Mexico. Data that can be obtained from the Metropolitan Commission for Transport and Roadways (COMETRAVI) on urban-metropolitan freight transport are, in general, fragmented,
and from studies performed by foreign consultants for specific problems. In the Mexico City Metropolitan Area there is no matrix of origin-destination for freight transport.

In Chile the main public institutions that allocate resources on transport data collection are the Ministry of Transport and Telecommunications (MTT), the Central Bank and the National Institute of Statistics (NIS). The MTT collects data and information that enable the development of policies. Also involved is the Department of Shipping and Inland Waterways, which predominantly provides statistics of Cargo movement at the state ports. The Central Bank provides various studies on freight transport, especially with respect to exports and imports. The NIS publishes monthly statistics for freight movements per mode. Other organisations that provide international transport statistics (foreign trade) are the National Customs Service and the Department of Export Promotion (ProChile).

In Japan, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) collects and reports freight data and also data on the annual emissions from the freight sector. The National Logistics Surveys (NLS commodity flow surveys) are carried out every five years using postal questionnaire surveys and on-site interviews. The NLS report (2007) contains a variety of freight related data such as freight travel time (in hours), costs for various transport modes (in kg/unit costs and includes origin/destination (OD) freight data). It also provides freight data classified per industry and commodity type, classified for number of employees, lot sizes and for all prefectures including Tokyo. The Transport Planning Commission also carries out a decennial urban freight survey (1972, 1982, 1994 and 2004) in the Tokyo Metropolitan Region called the Tokyo Metropolitan Region Freight Survey (TMFS). This survey is mainly a mail survey. Interviews with large companies are also carried out. In Japan it is also possible to collect data using the traffic information system of VICS (Vehicle Information and Communication Systems). This system provides traffic information, for instance, on travel times, congestion queue length, traffic accidents and parking. It covers about 70% of the roads in urban areas. Data collection can also be done using probe vehicles, this is done by the Kyoto University, which are vehicles with an on-board unit that provide real-time and historical vehicle data through a wireless LAN access point. Probe vehicle data complements the lack of data on the VICS network.

Freight data collection in China is carried out by the National Bureau of Statistics of China, mainly at a national level. At an urban level, the data that is collected mainly covers the

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number of vehicles (freight and passenger vehicles), the freight volume (in tonnes) and the transport performance (in tonne-km). In Beijing, the Beijing Municipal Bureau of Statistics is responsible for the collection of data.

There are no regularly scheduled programmes to collect urban freight data in the United States. For the most part, each municipality decides if and when to collect urban freight data. The United States Department of Transportation’s (USDOT) Bureau of Transportation Statistics (BTS) collects general transportation statistics. The data collected by the BTS tends to be aggregated data and is not detailed enough to be useful at the local level. For the New York City metropolitan area, five sources of useful data have been identified:

1) ZIP (Postal) Code/County Business Patterns (US Census Bureau);
2) U.S. County Level Freight Movement Data (IHS Global Insight);
3) Regional Economic Information System (Bureau of Economic Analysis);
4) Highway Performance Monitoring System (Federal Highway Administration) and
5) Vehicle Inventory and Use Survey (US Census Bureau) (discontinued).

The availability of statistical data about urban goods movements in India is almost non-existent when compared to the situation in general traffic and in passenger transport. There is not yet an institutionalised collection of freight transport data in any of the urban or inter-urban transport flows. The main sources for data collection in India for urban freight movements are Permit System, Vehicle Registrations and Octroi charges (Sriraman et al. 2006). Very often, working committees have commissioned studies for the purpose of their work and each committee looks at specific issues that required specific data to be generated (Sriraman et al. 2006). As a result, no systematic time series data is available.

2.3.2 Cross-Comparison of Urban Freight Data Collection in the Selected Countries and Cities

Freight data collection usually takes place on a national basis, generally by the national bureau of statistics. However, these freight data are mainly on a national level and not on an urban or regional level. The urban freight data that is collected is mainly for studies solving a specific problem at a certain time. There is little continuous collection of urban freight data in the selected cities. Exceptions are Paris, Utrecht and Tokyo. Urban freight surveys take place in these cities every 5 to 15 years. The main reason for not collecting urban freight data
in a systematic and continuous way is the lack of financial resources to cover these surveys. Another reason is the fragmented institutional framework in which the countries and cities work. In general, more priority is given to urban passenger transport data collection than urban freight transportation.

2.4 CURRENT AND EXPECTED URBAN TRANSPORT PROBLEMS

2.4.1 Urban Transport Problems in the Selected Countries and Cities

The three major problems in Paris, caused by urban freight transport are air pollution (especially the increase of fine particulate matters and NO$_x$), global warming (increased levels of CO$_2$) and road safety, following the rapid development of bike use after introduction of the Velib system$^{39}$. The most severe expected urban problems in Paris remain air pollution (NO$_x$ and particulate matters) and CO$_2$ emissions.

The biggest problem that urban transport in Utrecht faces is congestion during rush-hours on the highways around Utrecht and the roads in the inner-city and also the air quality problems resulting from it. During the period leading up to and during 2015, several road widening projects are being or will be carried out in the Utrecht region. This is causing and will cause temporary inconvenience for transporters and passenger cars. Due to these construction projects, about 60% of all transport movements in Utrecht, except cars, are construction or construction-related traffic. However, in the long term, it is estimated that the traffic movements within Utrecht will increase by 30% in the period 2005-2020$^{40}$.

The main problem that Belo Horizonte is currently facing is congestion. In the freight sector, this problem is not only caused by trucks. There is a large quantity of vans delivering and collecting goods daily. Although the size of most vans has less impact on traffic than trucks do, there are not enough parking areas for loading and unloading, forcing them to park in prohibited areas, thus reducing the traffic flow of the road system and causing congestion. Another problem is related to motorcycles. Besides noise and environmental pollution, the number of accidents in which they are involved is relatively high. The proliferation and operation of vans and motorcycles in the road system is difficult to control, as it is a practical solution for consumers and companies demanding fast and efficient deliveries at low cost. It

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can be expected that the conflict between the movement of freight vehicles and other types of vehicles (for instance, public transport vehicles) will worsen over the next few years, because of the increase in the quantity of freight vehicle movements and because of the lack of infrastructure capacity. The current and expected growth in the economy and the changed pattern associated with the purchasing of goods (for example, the increase of telephone and internet shopping) and trade storage (for example, the “just in time” method) has in the past, and is also expected in the future, to increase the number of trips made.

The main urban transport problems in the **Mexico City Metropolitan Area** are congestion, pollution and insufficient and poor quality of the public passenger transport. These problems are expected to persist in the near future. It is important to point out that a programme to manage loading and unloading areas on public roadways has not yet been implemented. There are no bays, no designations and no signs for pavement segments for these operations.

In the city of **Santiago**, the main problems with regard to urban transport are congestion and environmental and noise pollution. In the case of congestion, the principal cause is the extensive quantity of automobiles that circulate the city in relation to the road capacity that they utilise. There has also been an increase of truck traffic due to the economic growth of the country, as practically all cargo is transported this way. The concentration of pollution in Santiago is also influenced by thermal inversion\(^41\), causing high levels of smog and air pollution to be trapped and to concentrate within the Central Valley during winter months. For the future, the city expects even higher levels of congestion, air and noise pollution, due to an expected increase in the number of cars and trucks.

The most important urban transport problem in **Tokyo** is congestion. The overall average annual loss due to congestion in Tokyo is 435 million Yen/km\(^42\). The average rush hour travel speed in Tokyo is approximately 21.2 km per hour (2008 figures)\(^43\). On-street, or on-road, parking of vehicles, including delivery vehicles, is one of the causes of high congestion levels. The environmental pollution and the lack of parking/loading/unloading places is another important issue in Tokyo. Although these problems have shown a downward trend in recent years, they are still considered to form future urban transport problems.

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\(^{41}\) Thermal inversion is a meteorological phenomenon whereby a stable layer of warm air holds down colder air close to the ground.


\(^{43}\) Source: Tokyo Metropolitan Environmental Master Plan.
There are three major freight transport problems in **Beijing**. First, in recent years, Beijing’s transport demand has a sustained rapid growth, especially on city centre roads. The daily traffic volume has seen an average annual increase of 12.8%, which represents a cumulative increase of 43.5% in the last 3 years. As a consequence, traffic jams are seriously reducing the efficiency of logistics and transport in Beijing. Second, the irrational functional structure of highways and relatively concentrated spatial distribution of logistics enterprises have increased even more the concentration of traffic in the city centre. Third, the widespread practice of serious overloading has damaged the transport infrastructure and the environment. In the future it is expected that the increase of private cars and freight transport volumes in Beijing will continue, leading to more traffic jams and problems regarding safety, energy use and environmental pollution.

In the **New York City borough of Manhattan** the dense concentration of population and business activities has led to significant problems for urban freight. Two of the predominant issues in Manhattan are the level of congestion, particularly in the central business districts, and the lack of available curb space, which also contributes significantly to the level of congestion. Since most of the loading and unloading of goods happens at the curb, due to the lack of alleys and the limited number of loading docks, the lack of curb space is a very significant problem. This lack of curb space contributes to congestion by causing double parking and by forcing vehicles to drive around in search of a legal parking spot, which causes more vehicle km, and thus keeping them in the traffic flow. The density of the region makes building new facilities extremely difficult and costly. Thus the current urban freight issues in New York City will increase in magnitude as the population of the metropolitan area continues to grow. New York City is expected grow with 13.9% and Manhattan with 18.8% by 2030.

In **Mumbai**, the main urban transport challenge is congestion. Urban freight transport demand has increased as a consequence of the growing urban population and the changed consumption patterns due to the increased economic activity, for instance the rising number of shopping malls, which has caused a strong increase in the number of vehicles and movements. Congestion is caused by a number of reasons, such as insufficient road capacity given the growth of transport demand, poor road surfaces, lack of parking spaces, proliferation of slums and fragmented transport planning and decision-making. Road traffic density during peak hours in some areas of the city is so high that the average traffic speeds are as low as 6 km per hour. As a direct consequence of road congestion and vehicular growth, negative externalities such as delays, air pollution and increased fuel consumption
negatively impact India’s economy and human health. Mumbai is considered as one of the most polluted cities in the world. There is also an increasing trend in the number of road and rail accidents as a consequence of traffic growth. The annual growth rate of goods vehicle traffic, assessed from past growth trends, is expected to be around 5.9% per annum. In the case of Mumbai, as the vehicular growth is increasing faster than the population growth, this could have serious implications on the sustainability of economic growth.

2.4.2 Cross-comparison of the Urban Transport Problems in the Selected Countries and Cities

It is thus clear that the current and expected main transport problems in the selected cities are: (1) congestion and (2) environmental pollution. All the selected cities seem to experience a similar set of problems, some more severely than others. However, the policies and instruments they use are different in each city.

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44 Source, retrieved on 15 August 2010):
2.5 INSTITUTIONAL FRAMEWORK AT THE URBAN LEVEL AND FOCUS OF POLICIES

2.5.1 Institutional Framework and Focus of the Policies in the Selected Cities

Paris, France

At the municipal level, two agents are in charge of managing/regulating freight transport in the Paris metropolitan area: the City’s Freight Project Manager and a freight transport engineer, acting as the Deputy Freight Project Manager. In addition to the Municipality, the other public stakeholder participating in managing/regulating freight transport in the Paris metropolitan area is a full-time Freight Expert appointed by the Regional Council and the Departments around Paris. Even more important than the Region and the Department for Freight Policies is the Préfecture de Police. The Préfecture de Police does not have one specific freight expert, but it is responsible for traffic and parking rules’ enforcement. Two major private stakeholders active in consulting the City of Paris on freight issues are the Chamber of Commerce of Paris and GATMARIF (a carriers’ organisation).

The Paris region is currently facing a major institutional challenge that affects freight traffic and logistics activities. The main problem of the region in terms of governance is its considerable municipal fragmentation. The Paris region is composed of 1,280 municipalities, among them the City of Paris. All of these municipalities, some of which are extremely small, have the legal power to establish traffic and parking rules on their territorial limits. There is no regional harmonisation of the local freight rules, and truck companies find it extremely difficult to follow the different local rules. One of the conclusions of a project called “The Grand Paris” was the proposal to create a unified metropolitan government for the City of Paris and neighbouring municipalities. However, this generated a controversy. The fear was that the national government would try to reoccupy the political arena in the Paris region and recentralise the decision-making process.

In the past, the authorities in Paris restricted their activities to regulating traffic and delivery vehicles loading or unloading goods. Since 2001, as part of a new policy on sharing urban space and managing mobility, the City of Paris has expanded its freight-specific scope of action incorporating, in particular, city planning, environmental, economic and social aspects. The municipality considers the transport of goods as a priority amongst its policies on urban development and transport and mobility. The City of Paris has focused on a deliberate strategy of policy-mix, mixing traditional but updated policies (such as traffic and parking regulations) with more innovative approaches (such as the promotion of rail and waterways, and the promotion of city logistics experiments). This “policy mix” is an important principle
for the City and is a direct result of the Charter of Goods Deliveries, which is the basis of the current reformulation of the Paris freight policy. Underlying its policy, a consultation process dedicated to freight transport provided the ground for all subsequent measures taken by Paris decision-makers.

**Utrecht, Netherlands**

Two organisations play an important role in urban distribution in Utrecht at the city level. These are the CABU and GOVERA. The CABU is an independent committee that has the task to advise the Municipality of Utrecht on topics regarding freight transport in the city. The business sector of Utrecht is involved in the local freight transport policy through the CABU. On a regional scale, Utrecht participates in GOVERA, a private-public partnership focusing on freight distribution in the Randstad area\(^{45}\), where the government and the business sector work towards a common approach and solutions for freight transport problems. The Municipality has also appointed a part-time policy advisor on urban freight transport.

The main objective of the municipality of Utrecht is to optimise the transport of goods and improve the air quality of the city. To reach this long-term goal, the municipality has introduced an Air Pollution Action Plan (ALU) aimed at the improvement of air quality, for example with measures such as the environmental zones, as well as the Action Plan Freight Transport 2010 aimed at stimulating innovation in freight transport, such as new delivery concepts, stimulating transport for water transport and the streamlining of freight transport in Utrecht. The programme VERDER, which is collaboration between several municipalities, regional parties and the Ministry of Infrastructure and the Environment, contains various measures to increase the accessibility of, amongst others, the Utrecht region. Under this programme, a new low emission Beer Boat has been subsidised. Another programme is Utrecht Bereikbaar (Accessible Utrecht), which has to ensure that Utrecht remains accessible, in spite of the different infrastructural projects taking place in Utrecht and that are causing negative temporary impacts on the accessibility of the city.

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\(^{45}\) The Randstad area is a conurbation in the Netherlands. It consists of the four largest Dutch cities (Amsterdam, Rotterdam, The Hague and Utrecht) and the surrounding areas.
Belo Horizonte, Brazil

In Belo Horizonte the main governmental agents involved in the transport and logistics sector are the Transport and Traffic Company of Belo Horizonte (BHTRANS) together with the Municipal Administration. In the private sector there are several stakeholders in the transport and logistics system, such as the Syndicate of Cargo Transportation Companies of Minas Gerais State, the Road Department of Minas Gerais and the Chamber of Shopkeepers.

Belo Horizonte has a Mobility Plan for 2020 called PlanMob-BH, that was introduced by the Belo Horizonte City Hall and BHTRANS (transport and traffic municipal authority). It is an important document presenting the current and future mobility needs of the population of Belo Horizonte. PlanMob-BH also has certain objectives for 2014, an important milestone in terms of investments in infrastructure motivated by the FIFA World Cup. Most of the measures of the PlanMob-BH are not directly related to urban freight distribution. Examples are: (1) structuring the public transport network, (2) different road system projects to support the prioritization of public transport systems, (3) infrastructure projects for bicycles and (4) improvement of sidewalks and crossings. Measures related to urban freight distribution have to do with the control of irregular operations of loading and unloading and stimulate the use of distribution centres in the city, highways and areas with compatible land use and transportation system. But the most important action proposed is to develop research to create a database and comprehensive diagnosis to develop an Urban Logistic Plan. Parallel to this Mobility Plan, the City of Belo Horizonte has also introduced restrictive measures for the movement of vehicles and for loading and unloading operations in the central area of the city.

Mexico City, Mexico

At the municipal level, there is a local authority for the regulation of transports in Mexico. Freight transport in the Mexico City Metropolitan Area is coordinated by the Metropolitan Commission for Transport and Roadways (COMETRAVI). The main private organizations that participate to defend their interests regarding urban freight transport and urban merchandise distribution are: (1) the National Freight Transport Chamber and the National Private Transport Association (ANTP). At national and federal levels in the country there are no specific policies for urban freight transport. The technical regulations for federal public service vehicle transport in federal highways are applied by extension to vehicles in the urban context. In particular in the Mexico City Metropolitan Area, there are neither formal policies

on urban transport of merchandise nor an official document that regulates it completely. Both in the Federal District and in the State of Mexico there is no integrated body of rules and regulations, but isolated actions, such as restrictions for freight transport vehicles on certain roads or areas and programs for controlling emissions for all types of vehicles (including freight vehicles).

Santiago de Chile, Chile

The Ministry of Transport and Telecommunications is the main national governing body with regard to freight transport. Other institutions that regulate freight transport in Chile are the Ministry of Public Works, the Ministry of Housing and Urbanisation, the Ministry of Health and the Municipalities. These national institutions are also responsible for the urban freight transport policies in the city of Santiago.

In 1996 the General Presidential Secretariat of Chile declared the metropolitan region of Santiago a “saturated and latent zone” due to the pollution that was found. This started a series of initiatives to regulate pollution. One of the main policies elaborated was the Prevention and Decontamination Environmental Plan for the metropolitan region, which proposes a set of strategies, action plans and measures that will achieve the targeted emission reductions. A second important policy document is the Urban Transport Plan for the City of Santiago (PTUS). The PTUS consists of eleven activity programmes, two of which are directly related to urban freight transportation. The principal measures under one of these programmes are circulation and access restrictions. The objective of the other programme is to regulate the operation of cargo transport in order to control its externalities and to create a hierarchy of the road transport network in Santiago.

Tokyo, Japan

The Tokyo Metropolitan Government (TMG) is the main policy-making authority at the urban level of Tokyo city. Other urban and national organisations also participate in the development of the policies. Many private organisations also take part in the policy development process as well as in experimental work, for example through the experimental joint delivery system project.

The Tokyo Metropolitan Government (TMG) issued its logistics policy document named “Vision of Comprehensive Logistics” (VCL) in 2006. Consistent with the national policy, the VCL also aims at efficient logistics. Another of its aims is tackling the globalisation effect on Japan’s economy, competitiveness of its businesses and companies and supporting the lifestyle of its citizens, by not only minimising the logistics costs but also by aiming at safe and secure
distribution and low environmental impact. In order to achieve this, five key initiatives were proposed along with many supporting measures:

1) Establishing an efficient logistics network;
2) Reinforcing logistics functions for international trade;
3) Promoting logistics bases development for the Tokyo Metropolitan area;
4) Promoting logistics projects toward local revitalisation, such as for example cooperative delivery systems; and
5) Improving environment and quality of life in urban areas through better logistics.

Beijing, China

Governmental departments related to the municipal logistics administration in Beijing mainly include the Beijing Municipal Commission of Development & Reform, the Beijing Municipal Commission of Commerce, the Beijing Traffic Management Bureau and the Beijing Municipal Environmental Protection.

In June 2005, the municipal Beijing government issued the Beijing Transport Development Programme (2004-2020). The aim of this document is to guide the formulation of transport policies, transport planning and implementation plan during the coming period. With regard to freight transport, the programme states, for example, that the city’s total road freight volume should increase from 280 million tonnes in 2003 to 450 million tonnes in 2010. It also states that it is important to optimise the city’s freight transport hub and logistics parks. It encourages and supports the optimisation and reorganisation of assets of transport enterprises. It also encourages the use of large freight vehicles of high efficiency, low energy consumption and low pollution in inter-city lines, establishes and improves freight delivery systems and the use of low pollution vans as the main means of transport. In April 2007, a second relevant transport policy programme called the “Development Planning of Beijing’s Logistics Industry during ‘Eleventh Five-Year’ Period (2006-2010)” was issued by the municipal Beijing government. An example of one of the objectives of this plan was to complete the construction of an Olympic logistics service system directly serving the Beijing 2008 Olympic Games, and achieving a breakthrough in integrating the existing logistics resources. Other specific targets are:

1) to decrease the ratio of total logistics cost and GDP from 18% in 2005 to about 16% in 2010 and to about 13% in 2020;
2) to increase the added value of the entire logistics industry from RMB 40 Billion Yuan in 2005 to RMB 70 Billion Yuan in 2010 and break through the RMB 120 Billion Yuan mark in 2020; and

3) to increase the proportion of freight volume handled in public logistics area accounting for the freight volume in the whole society from 12% in 2005 to 20% in 2010.

New York City, USA

The institutional framework for transportation in the New York City metropolitan area consists of a group of many different mega-agencies from both the State of New York and the State of New Jersey. The complex institutional structure is a result of various pieces of legislation with each agency having a particular purpose. This fragmented structure consisting of multiple agencies, each with their own particular agendas for the transportation system, makes it more difficult to maximise the efficiency of the system as a whole. This has resulted in an environment where there is no overall urban transport policy for the metropolitan area. As a result, the various agencies have concentrated their efforts on their own operational domains relatively independent of the others. An example of a programme that has been introduced is the curbside parking management programme.

Mumbai, India

In Mumbai, as in general on an urban level in India, the planning and implementation of urban transport policies is divided between multiple agencies, for example the Municipal Corporation of Greater Mumbai, the Mumbai Metropolitan Region Development Authority and the Maharashtra State Road Development Corporation. The current legal institutional arrangements for managing urban transport (passenger and freight together) were developed at a time when urban transport was not a major problem. As a result, there is a high degree of fragmentation and separate enactments covering different transport modes. There is no single dedicated administrative authority in India to administer urban freight transport. The planning and implementation of urban transport infrastructure rests with multiple agencies that do not necessarily work in a coordinated manner.

The City of Mumbai tried to consolidate its policy and to line out its vision in a Comprehensive City Development Plan. Such a plan was also made in other cities in India. It was observed that the transport projects were more of a compilation of requirements of individual agencies/departments within the city administration and lacked an overall transport or mobility plan. This showed the continuance of multiple fragmented decision-making
departments and the absence of a single responsible agency. In 2005 a Comprehensive Transportation Study for the Mumbai Metropolitan Region was carried out. The main objectives of the study were to identify travel and transport patterns of residents in Mumbai and recommend long term comprehensive transportation strategies for the Mumbai Metropolitan Region up to 2031. Some of the urban freight transport specific goals are:

- to minimise adverse environmental impacts that may occur in the process of economic growth;
- to improve the quality of life;
- to improve efficiency;
- to adopt innovative methods; and
- to consider and evaluate significantly different strategies in the long term for development of the Mumbai region.

The vision for the next 15 years will be reflected in the investment programme that will be implemented in a phased and time bound manner.

2.5.2 Cross-comparison of the Institutional Framework and Policies in the Selected Cities

In most cases, the municipalities are responsible for the urban transport policy. The role that the national ministries of transport have with regard to urban freight distribution is quite limited. On an urban level there is often no dedicated administrative authority for urban transport policy, the tasks are scattered over various institutions. The fragmented structures, each with their own particular agendas for the transportation system, make it more difficult to maximise the efficiency of the system as a whole and to incorporate and overall urban transport policy for the area.

Cities where there is a dedicated administrative authority for urban freight transport policies are Utrecht and Paris. In Utrecht, an important stakeholder at city level is the CABU, which is an independent committee whose task is to advise the Municipality of Utrecht on topics regarding freight transport in the city and where the business sector of Utrecht is involved. The Municipality has also appointed a part-time policy advisor on freight transport. In Paris, a full-time freight expert was appointed by the Regional Council and the Departments around Paris. This has been important in putting urban freight distribution on the agenda and consolidating the various stakeholders and/or initiatives under one umbrella.
2.6 General Measures Used

2.6.1 General Measures used in the Selected Cities

The main objectives of the City of Paris (France) are: (1) to alleviate the environmental impacts of freight traffic and (2) to provide the Paris business sector with a choice of efficient and environmentally-friendly solutions for their urban supply chain. To do so, Paris has designed a freight strategy which is served by a “policy-mix” of various and mostly interconnected measures. Most of the measures revolve around a centralised logistics system. Logistics activities should find space and facilities within the Paris urban area, and not be located further and further away generating many additional vehicle km. The second emphasis of the Paris urban freight policy is on rail. Paris is promoting the re-use of rail freight facilities within the city. More recently, it has been promoting and studying a cargo-tram project. This policy-mix incorporates traditional instruments that are updated with more innovative approaches.

Examples of the updated traditional instruments are:

- Promoting consultation with private stakeholders;
- Regulating commercial vehicles’ traffic and parking: linking the trucks characteristics to specific restrictions and time-windows, promoting night deliveries and favouring environmental friendly vehicles;
- Providing more efficient on-street loading/unloading areas, for instance, with the help of a technical guide to delivery areas for the city of Paris and limiting the stopping time for delivery to a maximum of 30 minutes.

Examples of more innovative approaches are:

- Experiments in City Logistics: The City of Paris decided to support innovative urban logistic organisations, by initiating and funding some feasibility studies and providing urban logistics spaces (ULS) at a reasonable price. Goods entering Paris are consolidated and then transported from the different ULS with “green” vehicles for final distribution. Chronopost Concorde and La Petite Reine are examples of companies using these ULS; and
• **Alternatives to road transport**, such as rail and water transport. The re-use of a traditional rail freight terminal in Paris Bercy by Monoprix is a successful example of this. Also the possibility of using the cargo tram service on the future tramway infrastructure is being evaluated. This could lead to a new alternative to road transport in 2013.

Until around 2000, there was relatively little coherence in the policy measures of Utrecht (the Netherlands) in the area of urban distribution. Since 2003, the Municipality of Utrecht has structured its policies and there is a continuous effort on Utrecht’s behalf to improve urban distribution. The measures used in Utrecht to combat congestion and to improve air quality range from enforcing restrictions to public-private partnerships. The following measures for urban freight transport have been identified:

• **Vehicle restrictions**: length and axis load restrictions in order to avoid damage to the bridges and the basements of historical buildings;

• **Time windows** in the pedestrian area in the inner city;

• **City Distribution Centres** since 1994;

• **Beer Boat** since 1996;

• **Delivery Profiles** of Utrecht in 2003 and 2009 (see section 2.3), which provides quantitative and qualitative urban freight transport information of the inner city of Utrecht;

• **Logistic routes** since 2004, in order to help drivers to find their way into the city centre and avoid residential areas as much as possible;

• **Distribution plan** in 2005: under this plan six new unloading zones, a checklist for loading and unloading zones, new road signs, a communication awareness campaign (folder “Bewust Bevoorraden”) and other suggestions for sustainable distribution have been introduced;

• **Environmental zone** since 2007, in order to ban lorries that cause heavy pollution in the city centre;

• **Cargohopper** since 2009, which is a new last-mile transport mode specifically adapted to the city’s characteristics and regulations; and

• **Stimulating clean vehicles** (2010): under the PIEK-programme, the Municipality of Utrecht is currently carrying out pilots with supermarkets to look for interesting options for cleaner trucks that can deliver goods to the supermarkets with silent materials.
In the City of Santiago (Chile), the urban transport policies are *mainly restrictions*. In general, these are restriction on a national level. However, specific regulations also allow municipalities to regulate cargo vehicle circulation at certain times, restrict access and parking on some roads and regulate loading and unloading times. Examples are restrictions on circulation and access to roads, vehicle weight restrictions, dimension restrictions, age restrictions, emission restrictions and regulations related to the transport of hazardous materials and waste. Other measures, such as the *Abertis Logistics Park*, have been introduced by a private company.

The main public policy measures used in the *Mexico City Metropolitan Area* are related to restrictions for freight transport vehicles on certain roads or areas and programs for controlling emissions of pollutant and greenhouse effect gases for all type of vehicles (including freight vehicles). The following measures were identified:

- *Zero Emissions Corridor in the Central Axis*, restricting freight transport vehicles from circulating there;
• **Freight Transport Regulation Programme for Perimeter “A” of the Historic Centre of Mexico City**, restricting the movement of commercial vehicles greater than 3.5 tons, between 7:00 to 22:00 hours;

• **Vehicle Verification Program** for controlling emissions by requiring vehicle inspections every six months;

• **Restriction** on the circulation of freight transport vehicles **on Federal District Freeways**;

• **Restriction** on the circulation of freight transport vehicles **on Insurgentes Sur Ave.** in the Federal District;

• **Time restrictions** for inter-urban freight vehicles to circulate on certain roads that connect with Federal District exits towards tollways;

• **Restrictions** on loading and unloading operations **on roads where Metrobus lines operate**.

The business sector has also introduced several measures to make their logistics more efficient, from the development of innovative alternatives for order processing to technology innovation in vehicles.

In **Belo Horizonte** (Brazil), emphasis has been placed on the reduction of the negative impacts of freight transportation, without ignoring its importance in the dynamics of the city and the stakeholders involved. Eight different types of measures were identified:

• **Loading and unloading parking places** for freight vehicles;

• **Requirement** of loading and unloading parking spaces and docks for **companies with large traffic movements (large traffic generators)**;

• **Time and access restrictions** for loading/unloading operations in central areas according to the size of the vehicle;

• **Time regulations** for vehicle movement on specific roads;

• **Goods Distribution Centres**, such as CEASA-Minas Metropolitan Food Supply Centre and the Postal Distribution Centre for mails and packages;
• Deliveries made with alternative type of vehicles, such as horse drawn vehicles and bicycles;

• Internet/telephone sale and delivery of organic food products through planned routes;

• Consultation between the government, carriers, traders and other stakeholders in order to develop urban logistics policies.

In Mumbai (India), upgrading the infrastructural network and development of goods terminals have been the dominant strategies so far, although other alternative strategies have been envisaged in order to alleviate traffic congestion. Examples of the measures used in Mumbai are:

• Major truck terminals;

• Relocation of wholesale markets, in order to relieve traffic from the congested part of the city;

• Time and access restrictions for freight vehicles;

• Traffic restriction scheme based on number plates for regulating entry/exit to the Mumbai Metropolitan area;

• Improvement of the existing public transportation network and fleet, such as Mumbai’s suburban railway system. This is especially important, as public transportation in Mumbai is also used for urban freight distribution;

• Development of all north-south & east-west arterial roads and missing links;

• Development of freeways around Mumbai and connecting with the hinterland;

• Mumbai Dabbawalas operation system.
With regard to **Beijing** (China), the main measures identified are:

- Freight vehicles’ access restrictions to the city centre in Beijing on certain roads and times of the day;
- Strengthening the coordination for the modern logistics industry by means of *system innovation*;
- *Adjusting the land use policy system* to the development plan of modern logistics of the Beijing Municipality;
- *Financial support*: each year, the Beijing Municipal Government grants appropriate funds to support the development of the industry, and gives special assistance to the construction of logistics infrastructure projects and the development of key logistics enterprises;
- The *selection of registered logistics enterprises* to apply for the key logistics enterprises of Beijing Municipality. Support is granted to the key logistics enterprises, to develop about 10 large-sized backbone logistics enterprises with advanced technology and powerful competitiveness by the end of “Eleventh Five” year plan;
- Accelerating the *construction of intermediary organisations* like trade associations;
- Accelerating the *construction of logistics public information platforms* of the Beijing Municipality;
- *Optimising the custom clearance pattern* and promoting international logistics development;
- Encouraging and supporting *logistics research*.

In **Tokyo**, different types of measures were identified, such as:

- Authorisation system for *streamlining comprehensive local logistics*: the stakeholders of local logistics cooperate and prepare a plan with their improvement ideas. If the Tokyo Metropolitan Government approves their plans, subsidies are granted and priority is given to use of loading/unloading spaces. To be approved, a positive traffic impact, such as reduction in freight traffic, elimination of on-street parking or improvement of traffic safety, must be realised through the project;
- *Mandatory placing of parking lot* for loading/unloading operation for buildings of a certain size;
- *Joint delivery projects*;
• **Environmental improvement measures**, such as measures to reduce the PM emissions. Examples of these measures are:
  
o the "Say No to Diesel Vehicles" scheme in the promotion of low sulphur diesel fuel;
  
o subsidisation programmes for the installation of the PM reduction devices; and
  
o banning diesel vehicles older than 7 years which were unable to satisfy the PM standards (even after installation of PM reduction device).

Low emission vehicles are also promoted and Automobile G-Men were introduced, this is a team of Tokyo Metropolitan Automotive Pollution Inspectors.

In New York, the New York City Department of Transportation (NYCDOT) is continually trying to address the issues of congestion and curb space availability. The programmes include *parking pricing policies* aimed at improving the availability of parking in retail corridors located in residential area as well as in commercial areas, such as the PARK Smart programme which increases parking rates for on-street metered parking during peak hours. Other measures identified are the introduction of *dedicated delivery windows* and the encouragement of *off-peak hour freight deliveries*. With all the programmes, the NYCDOT made sure to work with the different stakeholders to develop the policies.

### 2.6.2 Cross-comparison of the measures used in the Selected Cities

In most cases, the measures introduced are singular solutions for specific problems, without defining these measures as an integral part of a larger long-term strategy for urban transport policy (see Table 2). A policy package is described in this study as two or more types of measures, *consciously aggregated* to reach a specific *(long-term)* objective. Thus, it is not only a set of different single measures solving individual short-term problems. Of the selected cities, only Paris and Utrecht meet these criteria.

The examples of Paris and Utrecht highlight the benefits of creating a policy package to achieve a higher policy goal. The urban freight policies in these cities, exemplify a win-win situation, where the Municipality acts as a facilitator and the business sector takes up the role of the investor and operator. These cities have mixed the more traditional approaches aimed at restricting freight movements, such as delivery time windows, vehicle restrictions and environmental zones, with more voluntary initiatives for innovative solutions taken up by local businesses. The combination of a policy-mix, restrictive and incentive-based measures, requires less public financial commitment and achieves a greater acceptance by the
stakeholders involved. Therefore the implementation of a comprehensive long-term urban freight policy is more like to succeed.

Table 2: Mix of measures

<table>
<thead>
<tr>
<th>Country</th>
<th>City</th>
<th>Mix of measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>Paris</td>
<td>Conscious policy package</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>Utrecht</td>
<td>Conscious policy package</td>
</tr>
<tr>
<td>Brazil</td>
<td>Belo Horizonte</td>
<td>Mix of single measures</td>
</tr>
<tr>
<td>Chile</td>
<td>Santiago de Chile</td>
<td>Mix of single measures</td>
</tr>
<tr>
<td>Mexico</td>
<td>Mexico City Metropolitan Area</td>
<td>Mix of single measures</td>
</tr>
<tr>
<td>United States</td>
<td>New York</td>
<td>Mix of single measures</td>
</tr>
<tr>
<td>Japan</td>
<td>Tokyo</td>
<td>Mix of single measures</td>
</tr>
<tr>
<td>China</td>
<td>Beijing</td>
<td>Mix of single measures</td>
</tr>
<tr>
<td>India</td>
<td>Mumbai</td>
<td>Mix of single measures</td>
</tr>
</tbody>
</table>

Regarding the types of measures, it worth noticing that the emerging economies, such as China, India, Mexico, Chile and Brazil, seem to be at an early stage of development with regard to urban logistics practices, compared to more developed countries, such as France, the Netherlands and Japan. The more developed countries show a broader range of measures, varying from restrictions to incentives and often including market-oriented initiatives by companies. In contrast, other cities in Latin America, India and China seem to focus more on restrictions and/or measures influencing freight transportation in general.
3 SELECTED URBAN LOGISTICS PRACTICES AROUND THE WORLD

3.1 INTRODUCTION

The previous chapter presented, among other things, the main measures used in the selected cities. This chapter will focus on one or more of these practices and present more detailed information. The chapter will first present a summary of the main aspects for each practice. Next, a qualitative cross-comparison of the main impacts of the selected practices is given. The chapter finalises with a presentation of the main criteria for transferability and some implementation issues, such as the barriers, bottlenecks and success factors of these practices.

3.2 SELECTED URBAN LOGISTICS PRACTICES

From the different measures used in the nine selected cities, one or more of these urban logistics instruments have been investigated in more detail:

- Paris, France:
  - Chronopost Concorde
  - La Petit Reine
  - Freight oriented Urban Master Plan of Paris
  - Monoprix

- Utrecht, the Netherlands: four measures that are part of a greater urban distribution policy package. These are:
  - Low Emission Zone
  - City Distribution Centres
  - Beer Boat
  - Cargohopper

- Belo Horizonte, Brazil:
  - Requirements of loading and unloading spaces inside companies with large traffic movements (large traffic generators)
- Internet/telephone sale and deliveries from producer to customer through planned routes

- **Mexico City Metropolitan Area, Mexico:**
  - Zero Emissions Corridor in the Central Axis
  - Freight Transport Regulation Programme for Perimeter “A” of the Historic Centre of Mexico City
  - Vehicle Verification Programme

- **Santiago de Chile, Chile:**
  - Abertis Logistics Park

- **Tokyo, Japan:**
  - Shinjuku joint delivery system

- **Beijing, People’s Republic of China:**
  - Beijing Tobacco Logistics Centre

- **New York, United States of America:**
  - Off-hour Delivery program Programme (New York, United States)

- **Mumbai, India:**
  - The Mumbai Dabbawalas

The following sections will summarise the most important aspects of each practice, by presenting a short description of the measure, how it works, the main stakeholders involved, other information and the main impacts.\(^{48}\)

\(^{48}\)For more detailed information, see the individual nine case studies (deliverables 3.1 to 3.9) of the TURBLOG project.
Chronopost Concorde (Paris, France)

**Brief description:**

Chronopost Concorde is an innovative organisation of parcel deliveries using electric delivery vehicles for final deliveries. An underground parking lot is used as an Urban Logistics Space (ULS).

**How it works:**

The Municipality of Paris leases the ULS to Chronopost. Chronopost developed a new organisation that is based on a main transport link from a hub outside of Paris to the Concorde ULS, and final deliveries using a fleet of electric vehicles from the Concorde ULS to the clients. The following figure explains the process:

**Main stakeholders involved:**

The Municipality of Paris, Chronopost, the Fire Brigade and the Préfecture de Police, the Electricity company of France called EDF and the Agency for the Environment called ADEME.

**Impacts:**

- No wasted time in congestion before delivering to the first customers and higher productivity: 70 addresses per route instead of 56, when the route started from a hub outside of the city limits;
- The total distance travelled by traditional vans decreased by 75%;
- Less noise and environmental pollution: CO₂ emissions calculated over a six month period decreased with 16.6 tonnes. Over one year of activity, local emissions of NOₓ had decreased from 192 to 48 kg and PM₁₀ emissions from 12 to 3 kg;
- Each year 41,000 km by fuel powered vehicles are saved by using electric vehicles;
- The balance between additional costs and savings (compared to the previous situation) is null;
- 19 new jobs within Paris (mainly low qualified jobs) and good working conditions.
La Petite Reine (Paris, France)

Brief description:
La Petite Reine is a company which developed a new delivery service for densely populated urban environments exclusively using “cargo cycles” or electrically powered tricycles with a container at the front or at the back. La Petite Reine uses 2 underground Urban Logistic Spaces (ULS) provided by the City of Paris.

How it works:
La Petite Reine receives parcels from different companies before the morning peak hour and consolidates the parcels by route and destination. The final delivery is done using a cargo cycle. A refrigerated model was introduced in 2010, which allows for fresh product deliveries as well as medical products. These fresh products are stored in the ULS and La Petite Reine manages the inventory and orders. The following figures show the different models used in 2003, 2005 and 2007:

Main stakeholders involved:
The Municipality of Paris, La Petite Rein, customers of La Petite Reine and a tricycle manufacturer called LOVELO.

Impacts:
- Because of the use of cargocycles there are: no parking difficulties; full accessibility to pedestrian areas and cargo cycles are allowed in bus lanes, bike lanes as well as reverse traffic bike lanes;
- Less pollution: replacing diesel vans with 50 clean and silent vehicles. Over a twelve month period:
  - 600,000 tonnes-km hauled by vans in Paris (not counting the hours of illicit parking) were avoided;
  - Savings of 89 tonnes of oil equivalent in engine consumption were generated;
  - Emissions of 203 tonnes of CO₂ and 84 kg of particles were reduced;
  - Noise pollution was reduced;
- 50 new jobs created within Paris over a period of 7 years (mainly low qualified jobs). In 2009, La Petite Reine joined Ares Group (a company specialised in social integration employment, dedicated to the disabled or to people who have been out of the job market for a long time). 13 drivers are currently working under this integration programme.
Freight Oriented Master plan (Paris, France)

Brief description:
In 2006 the City of Paris introduced freight orientations into its new Urban Master Plan (PLU). Measures in the Plan include: (1) compulsory delivery areas for the main generators of urban freight flows, (2) preservation of land in order to develop logistic facilities with railway or waterway access and (3) identification of areas to tranship goods from a boat to a delivery vehicle during certain times of the day.

How it works:
The following changes were made compared to the previous PLU:

- It is compulsory for the main generators of urban freight flows to integrate a delivery area into their premises in order to take care of all the deliveries and pick-ups generated by their activities. The businesses subject to these rules are the ones that have a minimal Net Floor Area Ratio of 500 m² for shops, 2,500 m² for offices, one m² for warehouses. The rule also applies to hotels with a minimum of 150 rooms;
- Specific spaces have been reserved for logistics areas accessible by rail or waterways. Specific land-use areas called UGSU areas must accommodate logistics activities. Some areas with direct access by train or waterways cannot eliminate logistics activities in future developments. This provision makes it possible to design specific areas for intermodal logistics activities;
- Thirteen “part-time transit ports” have also been identified in the “UV” or green areas of Paris along the Seine, between the bridges Pont de Bercy and Pont de Grenelle: these areas may be used at certain times to tranship goods from a boat to a delivery vehicle, then resume normal use, as a promenade for example, for the rest of the day.

Main stakeholders involved:
The City of Paris, real estate developers, land owners, transport companies and/or retailers.

Impacts:
- Redeveloping train activities for inbound supply, such as the Monoprix in Bercy (see next page);
- Increased modal share of railway and inland waterway transportation;
- Less trucks needed;
- Decrease of CO₂ emissions and local pollution;
- Less congestion;
- Maintain or re-introduce industrial jobs, for people with low qualifications.
Monoprix Rail Project (Paris, France)

Brief description:

Monoprix is a French retail group with more than 300 urban supermarkets in France. Monoprix partly supplies its Paris stores with trains using the passenger trains’ tracks during off-peak hours.

How it works:

Phase 1: First the goods are delivered by lorries (not trains) to the warehouses in Combs-la-Ville and Lieusaint (30 kilometre South-East of Paris). Then, all the stores’ non-alcoholic beverages and general goods are loaded with pallets onto a train. Loading operations must be finished by 6:00pm;

Phase 2: The train leaves Combs-la-Ville at 7:40 pm and arrives at Paris Bercy at 8:20 pm, covering 30 km using a regional passenger train’s tracks (RER D train);

Phase 3: Pallets are grouped together in line for each supermarket, ready for loading onto trucks. The train leaves Bercy at 5:00am and comes back to Combs-la-Ville in order to be loaded for the evening;

Phase 4: The goods are delivered to the shops using 19 tonne lorries powered by natural gas (CNG). The first trucks leave Bercy at 7:00am, loaded with pallets for one or two supermarkets.

Main stakeholders involved:
Monoprix, the City of Paris, the Direction Régionale de l’Equipement, SNCF (rail operator), local residents.

Impacts:

- Reduction of 700,000 truck-km in the suburban network, replacing 10,000 truck routes per year;
- Increase of the costs per pallet between 26% and 32%;
- Less pollution: decrease of 36% of particulates, 56% of nitrogen oxides and 47% of CO₂;
- More noise emissions;
- New jobs.
Low Emission Zone, Utrecht, the Netherlands

Brief description:
In July 2007 Utrecht introduced an environmental zone in the inner-city of Utrecht. The objective of the environmental zone is to ban out lorries that cause heavy pollution in the city centre, and to encourage the substitution of a cleaner generation of lorries or the installation of soot filters.

How it works:
The Low Emission Zone (LEZ) is operational in the area around the train station, Jaarbeurs and some roads in the neighborhood. Currently only Euro 4 and 5 trucks are allowed in the environmental zone and Euro 3 trucks are only allowed under special conditions (with soot filters and if not more than 8 years old).

Main stakeholders involved:
The Municipality of Utrecht and the logistics companies.

Impacts:
- More costs for the logistics companies: approximately €10,000 per vehicle;
- More costs for the Municipality: cameras (€0.5 - €0.8 million in 5 years), traffic signs (55-60 locations), communication costs (approximately €10,000) and capacity costs for the requests of single access permits (1,000-5,000 single access permits per year);
- Less traffic incidents and higher quality of life for citizens and the city;
- Less pollution.

![Euro Emission Standard of trucks and lorries in environmental zone Utrecht](image)
City Distribution Centres (Utrecht, the Netherlands)

Brief description:
City Distribution Centres (CDC) are distribution centres situated at the edge of the city to support easy delivery to entrepreneurs and/or households. Utrecht has four CDC that are run by well-known logistics companies such as GLS Netherlands, Stadsvracht BV by DHL, TNT and Hoek Transport.

How it works:
Carriers and suppliers unload their cargo that is destined for the city at a CDC. As soon as goods are received at the CDC, they are coded in the logistics system of the CDC. Next, the goods are loaded onto freight vehicles with the right sizes and requirements to enter the inner city of Utrecht. If the goods are supplied at the CDC before 12:00pm, the companies will deliver the goods the same day.

To become a CDC, the company has to meet several requirements. For example, the company has to have at least 100 delivery addresses in the inner-city on an average working day. The CDC must also be situated within 5 km of the highway and within 10 km from the inner-city of Utrecht. The companies must also use environmentally friendly vehicles, given the characteristics and restrictions of the city. The CDCs in Utrecht are not subsidised. Benefits for the drivers of the CDC are the use of the bus lanes and no limitations concerning time windows in the pedestrian area.

Main stakeholders involved:
The Municipality of Utrecht, logistics companies, carriers, suppliers and shopkeepers.

Impacts:
- Less vehicles needed: more consolidation of goods;
- Reduction of transport costs for the logistics companies;
- Suppliers paying for/using the CDC save the costs of daily dispensation, fuel and supply time. Especially for small deliveries or a single roll container or pallet;
- Increase of productivity;
- City becomes more attractive;
- Less pollution.
The Beer Boat (Utrecht, the Netherlands)

Brief description:

Utrecht is quite unique with its canals passing through the city and wharves near shops and restaurants. Since 1996 the Municipality of Utrecht has been leasing out the Beer Boat mainly to supply drinks and food to more than 70 catering companies located along the canals of Utrecht.

How it works:

The Beer Boat is owned by the Municipality. The Municipality leases the boat to companies that provide the actual distribution services. The Beer Boat has a transport capacity of 50 tonnes or 30 roll containers and is, unlike trucks, not hampered by axis load restrictions in the inner city. In 2010 the Beer Boat that operated on diesel was replaced by an electric, zero emission, Beer Boat. The new electric Beer Boat uses green energy and can be used 8-9 hours on one charge.

Main stakeholders involved:

The Beer Boat is an initiative of the Municipal Department of Public Works, that includes the Port Authority and which is responsible for waste collection. Other stakeholders involved are the carriers, the catering companies and the companies leasing the boat: 4 different brewers and 1 catering industry wholesaler.

Impacts:

- Monumental bridges and roads surrounding the canals in Utrecht are preserved, due to less heavy vehicles on the road;
- Less congestion in the inner city;
- Better working conditions: the labour laws prohibit people from carrying barrels and crates up and down small staircases;
- Broad acceptance from the stakeholders involved, as the Beer Boat has no road restrictions;
- Less pollution: reduction of almost 17 tonnes of carbon dioxide every year.
The Cargohopper (Utrecht, the Netherlands)

Brief description:
A private transport company in Utrecht called Hoek Transport decided to introduce a transport mode that would fit with the characteristics and restrictions of the city: the Cargohopper. The Cargohopper is a multi trailer, 16-metre long, yet narrow, solar powered road train, riding on pneumatic tyres.

How it works:
The Hoek City Distribution Centre (CDC) lies about 11 km outside the inner city limits. An extra transfer point was created because of the limited range (maximum 60 km per day) and low speed (maximum 20 km per hour) of the Cargohopper. First, the goods are loaded into boxes at the CDC of Hoek Transport. The boxes are then transported to the transfer point using a regular truck. The boxes are then put on the Cargohopper, which delivers them from there to the shops. The goods are thus not stored here, but immediately cross-docked. Loading the Cargohopper is done in less than 15 minutes. It also collects empty packaging from shops for recycling and has complete access to the entire city at any time. The operations of the Cargohopper are not subsidised by the government.

Main stakeholders involved:
Hoek Transport, Municipality of Utrecht and the shopkeepers.

Impacts:
- Less delivery van kilometers: around 122,000 from the inner-city streets per year;
- Less fuel needed: up to 24,000 liters of diesel fuel per year;
- Less pollution: up to 34 tonnes CO₂ per year;
- Less difficult and time-consuming trips to the inner city;
- More attractive city centre;
- Increased traffic safety.
Requirements of Loading and Unloading Spaces and Docks inside Companies with Large Traffic Movements (Belo Horizonte, Brazil)

**Brief description:**
Large traffic generators must create areas, places and docks on their landsite for loading and unloading operations. These companies must have an area to manoeuvre and access the docks.

**How it works:**
The Municipality defines large traffic generators as a company or group of companies using non-residential land with an area of over 6,000 m². These companies must follow the next steps:

**Step 1: Preliminary Licensing or LP** - Logistic requirement criteria. It is necessary to acquire an LP with general characteristics of the project, including the construction of loading and unloading places and docks inside the company area or building, from the Environmental Municipal Council (COMAM). The COMAM also requires an Environmental Impact Study and an Environmental Impact Report. If it is a project with traffic impacts it is necessary to acquire also a Traffic Impact Report (RIC), with an assessment, quantification and definition of the scope of the impacts for the road system, measures to mitigate the negative impacts, and where necessary, compensatory measures.

**Step 2: Implementation Licensing or LI** - Procedures and Impact Reports to authorise construction. The company must show the architectural blueprints for all construction work, regularisation and expansion of enterprises in order for it to be approved by the City Hall. These projects must have the correct scaling, distribution of loading and unloading areas and their manoeuvring and docking areas.

**Step 3: Operation Licensing** - Compliance with the requirements. The company must demonstrate that the project is built according to the requirements in order to obtain an operating license and start to work.

**Main stakeholders involved:**
Private and trader entrepreneurs, super and hypermarket companies, shopping mall shop owners, suppliers, carriers, COMAM and its counsellors - who represent the governmental institutional sector.

**Impacts:**
- More costs (in time and money) for companies with large traffic movements;
- Reduction of loading and unloading operations on the streets and sidewalks;
- Less congestion caused by double parked trucks and less manoeuvring on the road;
- More efficiency: decrease of the time needed to deliver the goods;
- Reduction of polluting emissions and noise pollution;
- More safety on the streets and sidewalks.
Internet/Telephone Sale and Delivery of Organic Food Products through Planned Routes (Belo Horizonte, Brazil)

Brief description:
Sale and delivery of organic food products direct from the producer to the final customer in Belo Horizonte. Two examples of companies carrying this out are: Fito and Dahorta.

How it works:

Fito: The company has two shops and permanent supply contracts with supermarkets that resell the organic products to restaurants. It also makes residential deliveries directly to the customers. Fito has a farm where all the products it sells are produced. The company has its own fleet and transports its products from the countryside to the city. The deliveries are made using small vehicles and motorcycles, with scheduled routes, and to places that are at a maximum distance of 8 km from the company head office.

Dahorta: is a smaller company and grows its products on its farm 120 km from Belo Horizonte. The business operations follow a weekly cycle: (1) the company sends a list of the seasonal products available for consumption by email; (2) the customer who wants to place an order, replies to the email filling out a form with the order; (3) on Monday, the harvesting of the ordered products is done and the baskets are filled; (4) the deliveries are made on Tuesday morning, and a delivery fee is charged according to the region.

Main stakeholders involved:
Food product producers, customers, carriers, supermarkets and restaurants.

Impacts:
- Less congestion: less number of trips required and vehicles moving through the city;
- Decrease of transport costs;
- Less time needed for the deliveries;
- Reduction of fuel consumption, polluting emissions and noise pollution and safety improvement;
- Positive image for the company;
- Higher customer satisfaction.
Zero Emissions Corridor in the Central Axis (Mexico City Metropolitan Area, Mexico)

Brief description:
Restriction for freight transport vehicles and micro-buses to circulate on the Central Axis.

How it works:
The “Lázaro Cárdenas” Central Axis was frequently used by urban freight transport vehicles. On certain times of the day, more than 70% of the road was occupied by freight transport vehicles. This Central Axis used to operate as part of the South-North Road Axis 1, from North to South (see green line on following figure):

In order to tackle the pollution problems in the city, the Government of the Federal District decided to turn the “Lázaro Cárdenas” Central Axis into a one-way avenue from South to North, with 6 lanes, into a “Zero Emissions” Corridor.
The objective of the Zero Emissions Corridor in the Central Axis is to provide, exclusively, through high reliability electric trolleybuses, the transportation service to passengers on restricted lanes.

Freight transport vehicles and micro-buses are not allowed to circulate on this corridor. The Zero Emissions Corridor (see green line on the figure in previous page) generated the need to define and re-engineer an alternate corridor for Freight Transport, away from the most relevant access to the Historic Centre (see red line on the figure in previous page). It was the first time that road reengineering was performed based on parameters of urban freight transport:

i) The geometry of roads was modified through the re-modelling of turning radiiuses at intersections, and increasing the width of lanes to facilitate fast and safe circulation of freight vehicles;

ii) The traffic light cycle parameters were changed, incorporating an all-red phase to facilitate safe clearance at the intersection, and the highest reaction times of drivers were taken into account.

Main stakeholders involved:
The main stakeholder involved is the Government of the Federal District. Other stakeholders involved are the Electric Transport Service of the Federal District called STE, the carriers and the public transport users.

Impacts:
- Improved road network for passenger public transportation and private automobiles;
- Better air quality control and reduced noise and environmental pollution;
- Better service and reduced commuting time with public transportation;
- Increased safety for road users;
- Faster circulation of freight vehicles on the alternative corridors;
- Better quality of life for the residents in the surroundings.
Freight Transport Regulation Programme for Perimeter “A” of the Historic Centre of Mexico City (Mexico City, Mexico)

Brief description:
This programme limits the movement of freight vehicles greater than 3.5 tonnes, between 7:00 to 22:00 hours in the Perimeter “A” of the Historical Centre.

How it works:
The Freight Transport Regulation Programme limits the movement of freight vehicles in the following area:

Vehicles exempted from this restriction are vehicles that weight 3.5 tonnes or less, vehicles up to 7.5 metres and emergency vehicles (such as fire trucks), service vehicles (such as garbage trucks), transport vehicles of fresh and perishable products and other vehicles under that are authorized, upon request, by the Ministry of Transport and Highways for specific manoeuvres.

Main stakeholders involved:
The Federal District Government, the Secretariat of Transport and Roadways (SETRAVI), several entities from the private sector. Also 109 leading companies in Mexico agreed to comply with the Program.

Impacts:
- Reduction of traffic congestion: 700 to 800 trucks were removed;
- Better air quality control and reduction of emissions, which affects mainly the southern part of MCMA;
- The Historic Centre becomes more attractive for residents (better quality of life) and visitors;
- Better preservation of historic buildings, due to the reduction of vibrations caused by heavy vehicles;
- Better security through surveillance video camera system of the Secretaría de Seguridad Pública (Secretariat of Public Security), with visibility not hampered by large trucks.
Vehicle Verification Programme (Mexico City Metropolitan Area, Mexico)

Brief description:
The Vehicle Verification Programme controls the emissions of pollutant and greenhouse effect gases for all type of vehicles (including freight vehicles) by requiring vehicle inspections every six months.

How it works:
The Vehicle Verification Programme ensures that vehicles with high emission levels are correctly repaired. The program currently requires vehicle inspections twice a year. This program has been introduced for all types of registered vehicles. Motorcycles, hybrid vehicles and certain service vehicles are exempted. If the vehicle fails to pass the verification test and is not correctly repaired, the vehicle will not be allowed to circulate.

The Vehicle Verification Programme is highly related with the ‘No Driving Day program’: based on the result of the emission test, vehicles are assigned into different classes and stickers of different colours are pasted in the rear windshield:

- Vehicles exempted will get a “00” (double cero) sticker, meaning they can circulate daily. Vehicles from 2007 fall in this category being obliged to verify the vehicle at the acquisition and are then exempted for 2 years;
- Sticker “0” (cero) is given to vehicles no more than 8 years old and which pass the verification, being obliged to it every six months and been permitted to circulate 7 days a week;
- Sticker “2” (two) is designed for vehicles with more than 8 years old and which pass the verification, being obliged to verify every six months and permitted to circulate on 4 working days.

The color of the stickers is related to the last number of plates and the day the vehicle cannot circulate:

<table>
<thead>
<tr>
<th>Working days on which vehicle cannot circulate</th>
<th>Last number of the plate</th>
<th>Sticker color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>5 or 6</td>
<td>Yellow</td>
</tr>
<tr>
<td>Tuesday</td>
<td>7 or 8</td>
<td>Pink</td>
</tr>
<tr>
<td>Wednesday</td>
<td>3 or 4</td>
<td>Red</td>
</tr>
<tr>
<td>Thursday</td>
<td>1 or 2</td>
<td>Green</td>
</tr>
<tr>
<td>Friday</td>
<td>9 or 0</td>
<td>Blue</td>
</tr>
</tbody>
</table>

The No Driving Day Program has been modified since 2008, with the inclusion of Saturdays as a non circulation day once a month for vehicles with sticker “2”. This program is active between 05:00 to 22:00 hours.
Main stakeholders involved:

Main stakeholders involved are the Federal District Government, the State of Mexico Government, and Governments from metropolitan municipalities of the State of Mexico and from other states, especially from Mexico Central Region (Morelos, Puebla, Hidalgo and Tlaxcala), Queretaro, Guanajuato, and Michoacan.

Other information:

Initially the inspections were conducted in test-only centres operated by the city government. These were then replaced by test and repair garages which were convenient for vehicle owners. However, the quality of service provided by test and repair centres deteriorated. In order to avoid fraud by these centres, the inspection program was restructured to create test-only centres for all gasoline vehicles. Precautions were introduced to prevent false passes including blind tests where the tester cannot see the results. Central computer and video monitoring systems were installed and government inspectors began to perform technical audits. As a result, rejections rates increased substantially.

Impacts:

- Better air quality control and reduction of emissions;
- Supply of new and innovative vehicles;
- More use of hybrid/electric vehicles;
- Renewal of the urban freight vehicle fleet;
- Accelerated depreciation of assets in means of transport;
- A return of investment that assures renewal of vehicles in a shorter term;
- Less fraud by test and repair centres.
Abertis Logistics Park (Santiago, Chile)

Brief description:
The Abertis Logistics Park is the most comprehensive and modern logistics park in Santiago, with similar quality standards that the European and North-American parks have, in that they are considerably more demanding than those in place nationally, but adapted to comply with Chilean construction codes. The park is situated within the Metropolitan Region (near the International Airport) and has direct access to main highways of the city and routes to two major ports in the country.

How it works:
The Abertis Logistics Park is essentially a storage project, where the principal service is the rental of warehouses. However, the logistic centre will, in the future, also be equipped with multiple services such as a restaurant, high-ceilinged offices inside the warehouses, rest areas and restrooms for drivers and a modern automated security system which registers who enters and leaves and the time spent on the premises. The logistics centre will also offer the service of “keys in hand”, which consists of designing storage centres tailored to the client particular needs, with the same construction standards. Due to the features of this service the client must commit to a minimum rental period. Another service is the renting of offices. The Abertis Logistics Park encompasses a total area of 632,810 m², and will house 327,798 m² of warehouse space for rent and 13,056 m² for services.

Main stakeholders involved:
Logistics operators, logistics providers, government, clients (retailers, manufacturers).
Other information:

Generally in urban zones, like Santiago, the space available for storage is reduced and most warehouses are small. In addition, they tend to be operated by a single company, giving small opportunities for cargo consolidation, which in many cases implies the use of small scale cargo vehicles. Having consolidation centres located in strategic areas within the boundaries of urban areas, it is possible to improve occupancy rates, through dispatching larger cargo vehicles with less frequency. In Santiago, due to cargo movement restrictions, large scale cargo vehicles are prohibited inside the city, thus a logistics park outside the boundaries creates the possibility of transferring between larger to smaller consolidated vehicles.

Impacts:

- The daily estimated flow (one way) is expected to increase from 16 vehicles in 2008 (first stage of the project) to 695 in 2019 when the logistical park is expected to be completely finished;
- More efficiency, due to the consolidation of goods and optimisation of the routes;
- Less number of trips required;
- Expected reduction of transport and operating costs in the long-term. The Abertis Logistics Park is considered to be the best in terms of quality, but is more expensive than other warehouses. It is currently a trade-off between quality and pricing;
- More jobs for the region: The Abertis Logistics Company has signed an alliance with the Corporation for Sustainable Development of Pudahuel, to appoint all the new work positions which are generated both by the construction sector and logistics centre operations to the residents of Pudahuel. It is estimated that this logistics park will be able to generate more than 5,000 direct and 10,000 indirect jobs, once it is at its final stage;
- Positive impact on the attractiveness of the zone, in terms of appearance and investment opportunities;
- Less pollution: the Abertis logistics centre has developed a series of measures to ensure that its activity is compatible with major environmental concerns, such as landscape integration, collection of waste, the use of renewable energy and the minimisation of noise pollution;
- Improvement in the quality of life for logistics centre workers, for example by having pleasant, safe and environmentally friendly surroundings and satisfactory working conditions, such as the installation of restrooms for the disabled, an aspect that is not frequently taken into account for projects of this size in Chile;
- Improvement of the working conditions for drivers, for instance, the inclusion of high quality service areas that provide places to rest, eat or use the bathroom.
Shinjuku joint delivery system (Tokyo, Japan)

Brief description:

The Shinjuku joint delivery system is characterised by the unique form of delivery that combines truck deliveries to buildings and delivery by hand to each office in the building.

How it works:

Distribution to department stores in the Shinjuku Area was carried out by different carriers, causing inefficient deliveries (for example delivering just one package) and traffic congestion, especially near the carry-in entrance of department stores. In order to address this issue, the carrier association called “Shinjuku Land Transport Business Association” developed a joint delivery system called the Shinjuku Mantenro Staff. The Shinjuku Mantenro Staff has a distribution centre of 330 m² about 10 minutes away from the buildings to be delivered to and it owns four 2 tonne trucks (all CNG powered), one 4 tonne truck and a light vehicle.

The different carriers and retailers bring the goods in the morning (around 8am). The goods are then unloaded, while information is collected with a scanner. The unloaded goods are sorted according to the area to be delivered to. After a final check, the goods are loaded onto a truck. The trucks leave at around 9:30am. After arriving at the unloading area of the first building, the goods are unloaded, empty box pallets are retrieved and the truck leaves immediately to the next building. However, the delivery staff stays behind to deliver the goods to the different offices in the building. After finishing this, the delivery staff walks to the next building, where the truck has already dropped the goods. This process repeats itself, until the goods for the last building have been delivered. The following figure shows how the process works:
Main stakeholders involved:

Shinjuku Matenro Staff’s stakeholders include local carriers, major logistics companies and delivery companies specialised in office supplies. All of the stakeholders mentioned are private enterprises. Other stakeholders are the retailers and offices in the buildings.

Other information:

The delivery quota of the Shinjuku Matenro Staff has been steadily increasing and the quota was 500,000 packages in 2009. In 2009, Shinjuku ward granted an environmental award called “Eco-one Grand Prix” to the association for its effort in reducing emissions and congestion.

Impacts:

- Less vehicles needed: an estimated total of 16 vehicles (four trucks times four times a day) covers the deliveries of one day, which would otherwise need somewhere between 60 and 70 vehicles;
- Improved loading ratio (actual loaded cargo divided by the loading capacity of the vehicle);
- Reduced congestion: limited with regard to the traffic volume in Shinjuku area, however the entrances for the freight vehicles at the buildings remained clear;
- Delivery efficiency improved: from a daily trip of about 181 km (before) to 130 km (after), which is a reduction of 28%. This is approximately 12,240 km saved per year;
- Less delivery errors;
- Goods tracking became difficult and caused increased delivery tickets and sorting work: sorting work is complicated, because each carrier uses a different format. Because delivery and sorting staff requires a high level of knowledge of goods and know-how of streamlining work flow, training is essential;
- The business of the Shinjuku Matenro Staff has gained admiration from its customers;
- Less pollution (monthly figures):

<table>
<thead>
<tr>
<th>Vehicle (JD: Joint Delivery)</th>
<th>Travelled distance (in km)</th>
<th>Air pollutants (g/month)</th>
<th>Greenhouse gasses (g/month)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NOx</td>
<td>CO</td>
</tr>
<tr>
<td>Diesel truck (before JD)</td>
<td>1,045</td>
<td>2.63</td>
<td>1.37</td>
</tr>
<tr>
<td>Diesel truck (after JD)</td>
<td>752</td>
<td>1.90</td>
<td>0.99</td>
</tr>
<tr>
<td>CNG truck (after JD)</td>
<td>752</td>
<td>0.77</td>
<td>0.3</td>
</tr>
</tbody>
</table>
Beijing Tobacco Logistics Centre (Beijing, China)

Brief description:
Tobacco logistics centres scattered over 18 districts were centralised into one Logistics Centre, to perform uniform storage, centralised sorting and graded distribution of tobacco for the whole city.

How it works:
The Beijing Municipal Tobacco Monopoly Bureau (BMTMB) had warehouses in 18 districts for their own distribution in order to ensure the timely distribution of tobacco products. These decentralised distribution centres caused very high warehouse, investment and labour costs. Also, the work was not performed efficiently, causing an increase in urban traffic. Therefore, in July 2004, the BMTMB decided to merge the original 18 warehouses into one uniform logistics centre for the city.

The BMTMB also established a logistics distribution and dispatch system integrating GIS, GPS and GPRS in order to optimise the routes. The process is as follows:

- the Call Centre of BMTMB confirms the actual orders each day;
- the system optimises, in 5 minutes, the distribution routes according to actual orders and reasonably distributes all the vehicles and routes by applying the 3G system (GIS, GPS and GSM/GPRS); and
- the goods are then loaded at the logistics centre and transported according to the information calculated by system.

Tobacco logistics distribution 3G system is a technology application system making use of GIS, GPS and GSM/GPRS technology, for retailers labelling, route planning, distribution optimisation and in-transit monitoring.
Main stakeholders involved:

The Beijing Municipal Tobacco Monopoly Bureau, cigarette factories, tobacco retailers, the employees of the warehouses and distribution centres in 18 districts.

Other information:

At present, the Beijing Tobacco Logistics Centre is responsible for the storage, sorting and distribution of 38 billion cigarettes for almost 36 thousand retailers in 18 districts and counties of the city. Within the Beijing city area, goods can be delivered to customers from the Logistics Centre directly, while in the suburbs, goods can be delivered from Logistics Centre to districts and counties first and then to customers by car. In 2008, the Beijing Tobacco Logistics Centre was praised as the first “National Logistics Demonstration Base” of China.

Impacts:

- Decrease of costs: warehouse rent decreased by 7 million Yuan per year, distribution costs by 12.25 million Yuan per year, labour costs by 6.3 million Yuan per year and operational costs (due to reduction of vehicles) by 34,626 million Yuan;
- Average inventory decreased from 43,300 boxes to 35,300 boxes, reducing around 100 million Yuan of occupied capital;
- Less storage space and land resources needed: the storage area was reduced to 2,800 m², which saved the floor area by 90% and the store quantity per unit area of the storehouse increased by 9 times;
- Delivery efficiency increased;
- Less distribution vehicles needed, through the consolidation of goods: from 111 to 82;
- Less time needed of arranging vehicles;
- Less loading and distribution errors;
- Less congestion;
- More accurate distribution time;
- Less jobs: decrease of the number of needed logistics personnel (from 810 to 600);
- More focus on marketing and customer service;
- A 99.8% customer satisfaction reached;
- Inventory turnover improved significantly and inventory turnover days decreased from 25 to 18;
- Less environmental pollution.
Off-hour Delivery Programme (New York, United States)

Brief description:

Pilot programme using a financial incentive, in the form of a tax break, to receivers of goods in Manhattan to request deliveries during off-peak hours.

How it works:

The pilot study consisted of eight carriers/vendors and twenty-five receivers participated. Of the participating receivers, seventeen were in the Food Industry with the remaining eight being in the Retail Industry. Each group switched their delivery operations to the off-peak hours for the period of one month.

The financial incentive used in the research (for the research assessments) was a tax break of $10,000 per year for the participating receivers. In the pilot test, the receivers were actually provided with $2,000 for the one month period. This amount is relatively higher than that proposed in the research for a long term commitment to off-peak hour deliveries in order to compensate the establishments for the inconvenience of switching their operations at the beginning and end of the pilot test. The carriers were provided with $3,000 for their participation due to the extensive work performed by high level executives in coordinating the pilot test. Another group of carriers were provided $300 per participating route to compensate them for setup costs associated with switching operations. The carriers could be provided with lower incentives as their operations stood to financially benefit from off-peak hour deliveries.

Main stakeholders involved:

The local government, the businesses participating in the programme, various transportation agencies in the region, residents living near the participating establishments, various worker unions, trade organisations and business improvement districts (BID) and transport agencies.

Other information:

The use of unassisted delivery methods, for example drop boxes, use of the keys and double doors among other things, may reduce or eliminate the need for a financial incentive. The pilot test of the programme showed that receivers utilising unassisted deliveries during the off-peak hours experienced significant benefits that resulted in them requesting unassisted off-peak hour deliveries even without a financial incentive being present.

A survey was also conducted among the drivers. The vast majority of the drivers responded positively. The only question where this is not the case is the question regarding safety where nearly half of the responses were “Neutral”. This shows one of the primary concerns of the managers of the carriers: safety of their drivers.
Impacts:

- Reduced congestion for all network users during regular hours, namely an increase in travel speeds, due to less freight vehicles utilising the road network and curb side parking during the day. It was estimated that, for the proposed incentive level, an average of 48 minutes of travel time per delivery route would be saved by moving to the off-peak hours. Travel time savings of approximately five minutes per trip for all road users were estimated;
- Less time required at each stop during the off-peak hours: the mean service time during the late morning was 1.8 hours compared to mean service times as low as 0.5 hours during off-peak hours (even though the deliveries tended to be larger during the off-peak hours);
- Reduced delivery costs: improved efficiency of the deliveries in non-congested conditions;
- Receivers benefitted from the financial incentive obtained for the effort of changing their operations;
- Receivers also benefited from the productivity increases: the economic benefits were greater for those receivers utilising unassisted delivery methods, there was no additional staff needed during delivery process;
- More reliability of the delivery times and reduced number or order errors;
- Broad acceptance by the involved stakeholders, especially receivers using unassisted delivery methods;
- Increased competitive position of the region;
- Less environmental pollution;
- No noise complaints from the residents in the area;
- The overall economic impacts to Manhattan were estimated, including the environmental impacts; see the figure below. The overall economic benefits are maximised at a financial incentive level of $10,000.
The Mumbai Dabbawalas (Mumbai, India)

Brief description:
A Dabbawala is a person in Mumbai, whose job is to carry and deliver freshly made food packed in lunch boxes from home (between 7:00am to 9:00am) or canteens to the office of these workers during lunch time. Each Dabbawala visits his group of customers (up to 30) in order to collect the tiffin boxes on a fixed route. The public transportation system (suburban railways) is used to deliver these tiffin boxes. In the evening the lunch boxes are moved in the reverse direction. Around 200,000 lunch boxes, resulting in 400,000 transactions, are carried out per day.

How it works:

1) Dabbawala carries the boxes, either walking or by bicycle, from the houses or canteens to the nearest railway stations.

2) At the Mumbai suburban railway station a team of designated Dabbawalas sorts the lunch boxes according to their destinations, through a detailed codification system, and loads these on special compartments of the train. Also during the journey, the Dabbawalas regroup according to the number of Tiffin’s to be delivered in a particular area.

3) At the destination railway station, the dabbas are re-sorted again.

4) The dabbawalas then deliver the dabbas in handcarts from the destination railway station to end customer by lunch time.
Main stakeholders involved:
Working population and their family members, canteens/catering services, employees of the Dabbawala system, railway services, product manufacturers, service providers, retailers, etc.

Other information:
There are around 5,000 Dabbawalas in the system. The Mumbai Dabbawala operation system is an indigenous model, conceived, developed and perfected by a group of individuals in the informal sector who have very little or no formal education in the area of logistics. However, the mistake rate is just 1 in 16 million deliveries, that is 99.99% accuracy. Instead of technological advance solutions, the Dabbawalas use a unique coding system:

Impacts:
- Congestion: reduction of traffic congestion on the roads, due to the use of public transportation. However, also congestion especially near railway stations, due to the needed road space for handcarts;
- Reduction of operational costs, due to the employment of cheap public transportation and non-motorised modes of transport, walking and cycling;
- More efficient and timely delivery system, given the manoeuvrability and ease of parking the handcarts. On the other hand, the system relies heavily on the punctuality of the public transportation;
- Less delivery space required for the handcarts compared to motorised vehicles;
- Positive image for the city;
- More jobs and job security, since the members are never laid off unless they retire or have an accident;
- Many companies use the Mumbai Dabbawala operation system as a marketing tool;
- Less pollution due to the use of environmentally friendly vehicles;
- The road space is preferred by the Dabbawalas to footpaths, which has increased the risk of accidents.
3.3 CROSS-COMPARISON OF THE MAIN IMPACTS

The previous sections presented, among other things, the main quantitative and qualitative impacts that the selected measures have on the city, the citizens and the companies. This paragraph summarises these impacts and makes a qualitative cross-comparison of the selected practices around the world. These impacts can be positive, negative or limited and can also be interrelated. For example, congestion in a city affects the delivery costs, the pollution levels and the quality of life. This in turn also affects the city attractiveness. Consequently, higher delivery costs also increases the product costs.

Table 3 presents a matrix of the main economic, transport, environmental and social impacts. If a measure has a positive impact, this will be shown in the matrix with a + or (+). A negative impact will show a - or (-). Limited or almost no impacts are shown with ~ or (~). A sign between brackets means that no quantitative and/or qualitative data was available in the case studies and that an assumption has been made regarding the impact. The purpose of this comparison is not to state that a specific measure is more effective than another one, but to give a broad overview of the expected main impacts of the different measures.

It can be concluded that all the measures contribute toward making the city more attractive and the environment more sustainable.

The majority of the measures are related to the consolidation of deliveries. Examples are: Chronopost Concorde (Paris), La Petite Reine (Paris), Monoprix (Paris), CDC (Utrecht), Beer Boat (Utrecht), Cargohopper (Utrecht), Abertis Logistics Park (Santiago), Shinjuku (Tokyo), the Beijing Tobacco logistics centre and the Mumbai Dabbawalas. Most of these cases demonstrate an increase in productivity and less trucks needed. By using fewer polluting vehicles and decreasing the amount of unnecessary trips, the pollution levels also decrease, which also makes the city more attractive.

The regulations investigated, such as the environmental zone in Utrecht, the requirements of loading and unloading places in Belo Horizonte and the Freight Transport Regulation Programme and Vehicle Verification Programme in the MCMA, may increase the costs, however they improve the environment, the quality of life, the city attractiveness and they improve safety.

49 A quantitative cross-comparison is not possible, as there is limited impact information available. Comparing measures based only on quantitative impact data can also be deceiving, as the impacts depend on different factors, such as the geographical/demographical characteristics of the area, the willingness of the stakeholders to participate and other policies introduced.
The use of low-emission transport modes, such as Chronopost Concorde (Paris), La Petite Reine (Paris), Beer Boat (Utrecht), Cargohopper (Utrecht) and Mumbai Dabbawalas, decreases the quantity of travelled km with polluting vehicles and replaces these with low-emission transport modes. This reduces emission and noise pollution and improves the quality of life. In some of these cases, for example the Beer Boat, high investments are needed, whereas in other cases, such as the Mumbai Dabbawalas, the investments are relatively low and/or the existing transport infrastructure is used.
### Table 3: Cross-Comparison of the Main Impacts of the Selected measures

<table>
<thead>
<tr>
<th>Impact</th>
<th>Economic impacts</th>
<th>Transport impacts</th>
<th>Environmental impacts</th>
<th>Social impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>City attractiveness</td>
<td>Transport costs reductions</td>
<td>Reduction of congestion</td>
<td>Efficiency/ productivity</td>
</tr>
<tr>
<td>Chronopost Concorde (Paris)</td>
<td>(+)</td>
<td>-</td>
<td>(+)</td>
<td>+</td>
</tr>
<tr>
<td>La Petite Reine (Paris)</td>
<td>(+)</td>
<td>-</td>
<td>(+)</td>
<td>+</td>
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<tr>
<td>Freight Oriented Master plan (Paris)</td>
<td>(+)</td>
<td>(-)</td>
<td>+</td>
<td>(-)</td>
</tr>
<tr>
<td>Monoprix (Paris)</td>
<td>(+)</td>
<td>-</td>
<td>(+)</td>
<td>(-)</td>
</tr>
<tr>
<td>LEZ (Utrecht)</td>
<td>(+)</td>
<td>-</td>
<td>(+)</td>
<td>(-)</td>
</tr>
<tr>
<td>CDC (Utrecht)</td>
<td>+</td>
<td>+</td>
<td>(+)</td>
<td>+</td>
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<tr>
<td>Beer Boat (Utrecht)</td>
<td>+</td>
<td>(-)</td>
<td>+</td>
<td>(+)</td>
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<tr>
<td>Cargohopper (Utrecht)</td>
<td>+</td>
<td>(-)</td>
<td>(+)</td>
<td>+</td>
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<tr>
<td>Requirements of loading and unloading places (Belo Horizonte)</td>
<td>(+)</td>
<td>-</td>
<td>+</td>
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<tr>
<td>Sale and delivery from producer to customer (Belo Horizonte)</td>
<td>+</td>
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## Impact

**Negative:** - or (-)  
**Limited:** - or (~)  
**Positive:** + or (+)

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<thead>
<tr>
<th>Impact</th>
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<tr>
<td></td>
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<td>Transport costs reductions</td>
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<td>Efficiency/productivity</td>
</tr>
<tr>
<td>Zero Emissions Corridor in the Central Axis (MCMA)</td>
<td>(+)</td>
<td>(-)</td>
<td>(+)</td>
<td>+</td>
</tr>
<tr>
<td>Freight Transport Regulation Programme (Mexico City)</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>(-)</td>
</tr>
<tr>
<td>Vehicle Verification Programme (MCMA)</td>
<td>(+)</td>
<td>-</td>
<td>(+)</td>
<td>(-)</td>
</tr>
<tr>
<td>Abertis Logistics Park (Santiago)</td>
<td>+</td>
<td>(-)</td>
<td>(+)</td>
<td>+</td>
</tr>
<tr>
<td>Shinjuku joint delivery system (Tokyo)</td>
<td>(+)</td>
<td>(-)</td>
<td>+</td>
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<tr>
<td>Beijing Tobacco logistics centre</td>
<td>(+)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Off-hour delivery (New York)</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Mumbai Dabbawalas</td>
<td>+</td>
<td>+</td>
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</table>
3.4 IMPLEMENTATION ISSUES AND TRANSFERABILITY

Comparing the different practices, there are a few lessons that can be learned when implementing a measure in another city:

1) The need of strong political commitment and cooperation between the private and the public sector. This is demonstrated with measures such as Chronopost Concorde, La Petite Reine, the Land Use and Master Plan in Paris, the CDC, Beer Boat and Cargohopper in Utrecht, the off-peak hour delivery programme in New York and the Freight Transport Regulation Programme in Mexico City. The case study of New York demonstrates how policy-makers worked with the stakeholders to develop the policy. In Utrecht, the business sector has been involved in the policy development from the very beginning. In the MCMA, a long negotiation and agreement process was required between public authorities and companies, which resulted in the acceptance and signing of an agreement in which leading enterprises participated, guaranteeing its successful implementation.

2) Well-located logistics areas. In Santiago, the logistics park is situated within the Metropolitan Region (near the International Airport) and has direct access to the main highways of the city and routes to two major ports in the country. In Tokyo, the Shinjuku Mantenro Staff has a distribution centre at a convenient location, about 10 minutes away from the buildings to be delivered to. The CDC in Utrecht must also be situated within 5 km of the highway and within 10 km from the inner-city of Utrecht. In the case of the Land Use and Master Plan, the locations were reserved and dedicated to logistics activities by train and waterways. In the case of Chronopost Concorde and La Petite Reine the areas where provided by the city of Paris, where minimum size, safety standards and willingness to set a low level of rent was needed. However, these locations are not always easy to find, especially without the support from municipalities. The choice of Paris to develop some facilities in underground car parks is not always an optimal solution, because of technical constraints, such as limitation of height and steep access slope, and the maximum capacity. To be able to continue growing, the company needs more logistics spaces in relevant locations within Paris.

3) Stability. The cases of the Abertis Logistics Park in Santiago, the Land Use and Master Plan in Paris, the Beijing Tobacco logistics centre and the off-peak hour delivery programme in New York demonstrate how important economic, political and jurisdictional stability is. As a logistics park such the one in Santiago is a long-term investment, stability is important for companies. It is essential to know whether, for
example any truck movement restrictions will be introduced in the area in the future. The case of the Land Use and Master Plan in Paris demonstrates how the city reserved and dedicated specific locations for the long-term logistics activities by train and waterways. In the case of the Beijing Tobacco logistics centre, the land for construction of the one-storehouse logistics centre had to be guaranteed. In New York, the establishments indicated that they would need a commitment from the governmental agency administering the off-peak hour delivery programme regarding a minimum time period for the programme. Concerns were expressed regarding an establishment going through considerable effort to change their operations only to have the programme discontinued.

4) **Existence of some restrictions** to truck movements inside the city. The use of restricting measures can encourage the private sector to invest in other alternatives for urban distribution. This is demonstrated by the case of the Abertis Logistics Park in Santiago, the Vehicle Verification Programme in the MCMA and the Beer Boat and the Cargohopper in Utrecht. Due to the restrictions, the business sector encountered difficulties delivering the goods. This encouraged the private sector to look for alternatives, such as the use of environmental friendly transport modes. In the case of the Beer Boat and the Cargohopper, the business sector encountered some difficulties and worked together with the Municipality to come up with a solution. For the Beer Boat, the Municipality was the initiator and facilitator, but the business sector was the operator. For the Cargohopper, the Municipality acted only as a facilitator. The case of the Cargohopper shows that sustainable transport can be done in a profitable way, without financial support from the municipality.

5) It is difficult, but possible to **use the urban public transport system to deliver goods**. The use of the urban public transport system for freight transport can be difficult in countries where the provision of freight rail services is poor, or rail slots for freight trains are difficult to accommodate within a busy passenger rail network. An experiment such as the Monoprix freight train demonstrates the challenges, barriers but also opportunities to other cities willing to promote the use of freight rail transport in urban areas. It requires that large logistics facilities be made available with a connection to the railway network, one or several retailing companies that have a minimum volume of goods to be delivered daily to the city and a competitive railway industry in the country, with companies capable of responding to a bid for tender with reasonable prices and good quality of service. Another case that demonstrates the possibility of using the urban public transport system to deliver goods is the one of the Mumbai Dabbawalas. The use
of the urban public transport system for freight movements is possible, if they have a good network and the services are cheap, reliable and regular.

6) **Customer focus and continuous adjustments and innovation.** The case of the Mumbai Dabbawalas shows that to keep the urban logistics services attractive, customer focus and continuous innovation are important. Although the core business of the Mumbai Dabbawalas has been active for a long time, the Dabbawalas adapted their business practices to the changing market conditions by continuously innovating, offering new services while riding on their core competence of on-time and reliable delivery services. Some of the innovations have been as follows:

- Introduction of express delivery service with a pick up at 11am;
- A linkage with a group of housewives to cook and supply lunch boxes for customers who prefer home-cooked food;
- Working with marketing agents like the brand management teams to distribute product samples along with lunch boxes to the offices;
- Standard lunch boxes have given way to more elaborate and colourful packaging according to customer requirements;
- Advertising by putting stickers on the lunch boxes.

The case of home deliveries in Belo Horizonte shows how business operations have been adapted to the customers’ needs and how technological innovation has helped its operations.

The case of La Petite Reine also demonstrates how the core business of delivering packages has been adapted to the market needs and situations. Given the economic crisis, the strong competition between the express delivery companies and the permanent need for cost cuts, La Petite Reine was not able to follow the decreasing transport prices proposed by other small independent truck companies acting as subcontractors for the major Express transport companies. La Petite Reine then decided successfully to turn to other business markets, such as delivering fresh products. They also offer advertising on the side and rear panels of the cargo cycle.

When using innovative vehicles, attention must be paid to the availability of adequate vehicles for final deliveries or pick-ups. In Paris, the available freight tricycles or cargo bikes still need to be improved; the electric, hybrids and CNG vans and light trucks are still very expensive to buy, can be difficult to maintain, and do not provide adequate loading capacity.
The joint delivery system in Japan also demonstrates how important it is to adapt the system for the area of the city and to meet the customers’ demand, being the carriers, in order to be profitable. If there is a lack of interest from carriers, there would be insufficient goods to keep the business running. It is therefore important to find out the needs of the sector very carefully to be sure that the business will be sustainable.

A critical issue when transferring a measure is to keep in mind the characteristics of the area. An example of this is the Beer Boat in Utrecht. This type of measure is restricted to cities with characteristics similar to Utrecht, such as canals, problems with crate sizes and other restrictions.

It is essential to also keep in mind that the impacts that are obtained in a city can be completely different in another surrounding. The results of a measure are not only heavily influenced by the geographical and institutional characteristics of the area, but also by the quality of implementation, the acceptance by the stakeholders and by other measures and polices implemented.

In order to be able to transfer a specific measure within or to another city, one has to examine the basic elements of the measure and adapt these to the legal, geographical, economic and social characteristics of the area. An example of this is seen in the case study of Chile. The Abertis Logistics Park in Santiago has similar basic elements and quality standards as the logistics parks in Spain and Portugal, where the Abertis Company also operate. The Abertis Company designed a project that is governed by regulations that will very likely be in operation in Santiago in the future. However, the logistics park has been adapted to comply with the Chilean regulations and construction codes.
4 CONCLUDING REMARKS

This deliverable has provided information on urban freight transport practices implemented in nine different cities around the world, from Paris to Mumbai.

One aspect that all of the selected cities have in common are the main urban transport problems: (1) congestion and (2) environmental pollution. All the selected cities seem to experience a similar set of problems, some more intensely than others. However, the different policies and instruments they use are different for each city. There are a number of reasons for this.

A clear difference can be seen in the stage at which the logistics sectors of the selected cities currently are. In spite of the relatively rapid development of emerging economies, such as China, India, Mexico, Chile and Brazil, the logistics sector still seems to be at an early stage of development as a whole, compared to more developed countries, such as France, the Netherlands and Japan. This can also been seen from the measures used in the selected cities. The more developed countries show a broader range of measures, varying from restrictions to incentives and often including market-oriented initiatives by companies. In contrast, other cities in Latin America, India and China seem to focus more on restrictions and/or measures influencing freight transportation in general.

However, the economic development of a country is not the only factor. The United States is considered to be a developed country, but there is no overall urban transport policy or broad range of measures in place in New York. One of the main the reason for this is the fragmented institutional structure of the city. A fragmented structure, where the tasks are scattered over various institutions, each with its own particular agendas for the transportation system, makes it more difficult to maximise the efficiency of the system as a whole and to incorporate an overall urban transport policy for the area. There is a need for a dedicated administrative authority for urban freight transport policy. The cities with a dedicated administrative authority, or person responsible for urban freight transport policies, are Utrecht and Paris. This has been important in putting urban freight distribution on the agenda and consolidating the various stakeholders and/or initiatives under one aggregated long-term policy package.

It is essential to note that there is no single best solution for urban logistics issues. A combination of initiatives needs to be developed, serving the interests of the stakeholders in the city as much as possible. For the development of effective and efficient urban freight transport policies it is also important to collect data at an urban level and even more important: in a continuous way or at least regularly. The urban freight data collected in most
of the selected cities was collected mainly for studies to solve a specific problem at a certain time, and not a continuous collection of data.

Comparing the different practices around the world, one of the most important lessons learned is the need of strong political commitment and cooperation between the private and the public sectors. Cities that involve the businesses sector in policy development from the very beginning, achieve greater acceptability by the stakeholders that are involved and are more likely to succeed in the long-term.

An essential concluding remark, when transferring a measure is to keep in mind the characteristics of the area. In order to be able to transfer a specific measure within or to another city, one has to examine the basic elements of the measure and adapt these to the legal, geographical, economic and social characteristics of the area and needs of the stakeholders involved. In other words: not copy-paste, but copy-adapt.
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BESTUFS II, 2008. Quantification of Urban Freight Transport Effects II.


TURBLOG_WW

What is TURBLOG_WW?

TURBLOG_WW is an EU supported project under the FP7 Programme designed from a complementary perspective for the work that is being promoted at the EU level by the BESTUFS network. TURBLG addresses urban logistics from a wider (geographical) perspective, focusing upon a worldwide level (in general) and on Brazil and Peru (in particular).

The main goal of the project is to extend, expand and transfer the existing knowledge to other countries and thus effectively contribute to the overall objective of extending the research and knowledge dissemination between EU and Latin America.

A better knowledge on urban logistics concepts and practices and its overall integration into the urban mobility planning is one of those common interest issues. The overall success of which will positively impact on social inclusion and regional integration as desired by all participants. To achieve this, the project will act as a coordination platform, gathering the experience to identify, generate and assess best practice solutions on urban freight initiatives, by conducting of a set of case studies and the promotion of workshops and site visits, based on which facilitating the exchange of information, raising awareness, disseminating and assessing the potential to transfer and promote research results at the national, European and intercontinental levels it is aimed at.

Specific objectives

The main objectives of the TURBLOG_WW project are:

- To provide an international network of experts and a platform for the exchange of ideas, information and policies on the urban logistics field. To promote cooperation among relevant international networks on urban logistics.

- To select 9 case studies as the basis for potential transferability (2 in Europe, 3 in Latin America and 1 in another region, China, Japan, India and North America).

- To compare different business concepts and models based on the selected case studies.

- To organise 4 thematic workshops coupled with site visits (2 in Europe and 2 in Latin-America).

- To develop transferability guidelines targeting each type of stakeholder to facilitate transferring international case studies to the national context.
TURBLOG_WW Team

The TURBLOG_WW consortium is composed of a variety of experts in Europe and Latin-America in the field of urban transport, ensuring:

- **the expertise of consultants:**
  - TIS.PT Consulting in Transport, Innovation and Systems SA, Portugal
  - NEA Transport research and training, the Netherlands
  - TIS.BR, Brazil
  - INOVA+, Portugal

- **the knowledge of the academic sector:**
  - Institute for Transport Studies (ITS) of the University of Leeds, UK
  - Platform on Transport, Logistic and Mobility of the National Engineering University in Lima, Peru

- **the experience of representatives of cities:**
  - Belo Horizonte Traffic and Transportation Company (BHTRANS), Brazil

For more information on the project visit the project websites: [www.turblog.eu](http://www.turblog.eu)

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