UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Master Degree Project in International Business and Trade

# A Case Study of Knowledge Transfer

Pedalling for progress with the cargo cycle

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Master Degree Project No. 2015:14
Graduate School

# Abstract

City logistics is integral to the sustainable development of cities, nevertheless, it is an aspect which has been largely ignored in policy debate. Although policy-makers are increasingly tending to this issue, there has not been sufficient research addressing the link between last-mile logistics and sustainable urban development. Given the paucity of research examining transferability of best practice between highly heterogeneous contexts, as well as the scant scholarly attention paid to cycle logistics, this thesis contributes to a new body of research by investigating how best practice within the field of urban mobility is transferred from Europe to Colombia, with specific reference to commercial freight cycling and how it can be successfully implemented in the city of Bogotá. The aim of this study is to acquire a basic understanding of inter-city exchange of best practice, as well as to investigate the challenges that pertain to effectively introducing cargo cycles for last-mile distribution in the target setting. The research is based on field-study, involving qualitative observations and 15 formal semi-structured expert interviews with respondents who hold key insights into the researched phenomenon. Given the relative youth of the field, this research follows an open approach by applying abductive reasoning. The main contributions are three-fold: (1) First, by devising a conceptual model, it opens the door to a new line of research concerned with the transferability of knowledge between institutionally distant contexts. (2) Second, it yields an understanding of the challenges related to the implementation of freight cycles for last-mile distribution in Bogotá. (3) Lastly, it concludes with policy recommendations aimed at stimulating cargo cycle uptake. The main conclusion of this study is that without a proper understanding of how knowledge is actually transferred, successful implementation is difficult. Furthermore, the transfer of novel ideas between institutionally diverse contexts is a complex and indirect affair that involves a wide range of informal interactions. It also identifies that perception issues and a lack of awareness constitute important barriers to the successful implementation cargo cycles in Bogotá. Although it is argued that transport companies play a pivotal role in pushing for a modal shift, the importance of local authorities in that process must also be stressed. The findings of this paper are of interest not only to policy-makers, but also to urban logistics operators, research institutions, as well as other urban stakeholders striving towards a more sustainable future.


**Keywords:** Knowledge transfer, knowledge dissemination, best practice, sustainable last-mile logistics, urban development, urban freight transport, urban mobility, cargo cycles, cargo bikes, cycle logistics, Colombia

# Resúmen

La logística urbana es crucial para el desarrollo sostenible de las ciudades, sin embargo, es un aspecto que ha sido ampliamente ignorado en el debate público. Aunque los hacedores de políticas tienen un interés creciente en este asunto, no ha habido suficiente investigación que se refiera al vínculo entre la logística de última milla y el desarrollo urbano sostenible. Dada la escasez de investigación que examine la posibilidad de transferencia de mejores prácticas entre contextos altamente disímiles, y a la limitada atención académica dedicada a la logística de las bicicletas, esta tesis contribuye a un nuevo cuerpo de estudio mediante el estudio de cómo la mejor práctica en el campo de la movilidad urbana es transferida de Europa a Colombia, con referencia específica a cómo las bicicletas de carga podrían ser exitosamente implementadas con éxito en Bogotá. El objetivo de este estudio es adquirir un entendimiento básico de la transferencia de mejores prácticas entre ciudades, como también investigar los retos con respecto a la introducción efectiva de la bicicleta de carga para la distribución en la última milla. Esta investigación está basada en estudios de campo, observaciones, y también en entrevistas a 15 expertos con información clave sobre el fenómeno estudiado. Dada la relativa corta edad del campo de estudio, esta investigación sigue una aproximación abierta con la aplicación de razonamiento abductivo. Las principales conclusiones extraídas de este trabajo se dividen en tres partes. Primero, agrega a un nuevo campo de estudio conocimiento sobre la transferencia entre contextos institucionalmente apartados a través del desarrollo de un modelo conceptual. Segundo, permite un entendimiento de los retos relacionados con la implementación de un ciclo de transporte de mercancías de la última milla para Bogotá. Por último, concluye con recomendaciones de política enfocadas a estimular el uso del ciclo de transporte de mercancías. El principal desenlace de este estudio es que la transferencia de nuevas ideas entre contextos institucionalmente diferentes es un asunto bastante complejo e indirecto que involucra un amplio rango de interacciones informales. También identifica que los asuntos de percepción y la falta de información constituyen una barrera importante para la implementación exitosa del ciclo de transporte de mercancías en Bogotá. Aunque se argumenta que las compañías de transporte desempeñan un rol fundamental en el cambio de modalidad, la importancia de las autoridades locales en el proceso también tiene que enfatizarse. Los resultados de este estudio son de interés no sólo para los hacedores de políticas, sino también para los operadores de logística urbana, centros de investigación, y para los interesados en trabajar por un futuro más sostenible.

**Palabras claves**: Transferencia de conocimiento, mejores prácticas, logística urbana, desarollo urbano, transporte urbano de carga, movilidad urbana, bicicleta de carga, Colombia.

# Acknowledgements

First and foremost, we extend our sincere gratitude to our supervisors Dr. Richard Nakamura at the University Gothenburg, and Dr. Gordon Wilmsmeier at the United Nations (UNECLAC) for their unwavering support and critical eye throughout the whole research process. We owe our appreciation to Dr. Edder Alexander Velandia Durán at La Salle University in Bogotá, for his extensive assistance, support and guidance, and for providing us with indispensable contacts in the Colombian setting. Without their support this thesis certainly would not have materialised the way it has.

We also extend our appreciation to all the respondents included in this research, especially so to Mr. José Cordoba and Mr. Andrés Jara for providing us with important contacts and insights, as well as Mr. Jaime Ortiz for his engagement and contribution to our research.

We are also grateful to the ÅForsk Foundation for placing confidence in our research by granting us financial support.

Last but not least, we would also like to thank our families for their unconditional love and support.

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**David Jallow**

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**Lisette Johansson**

Gothenburg, June 3rd, 2015

# Abbreviations

| | |
|---|---|
| BESTUFS BEST | Urban Freight Solutions (EC project) |
| BRT | Bus Rapid Transit, a bus based mass-transit system. |
| CIVITAS | CIty-VITality-Sustainability (EC initiative for cleaner and better transport in cities) |
| CO2 | Carbon dioxide |
| DC | Distribution Centre |
| DG-Move | The Directorate-General for Mobility and Transport of the European Commission |
| ECLF | European Cycle Logistics Federation |
| EU | European Union |
| IMF | International Monetary Fund |
| IMPACTS | Information Management Policies Assessment for City Transportation Systems |
| ITS | Intelligent Transport Systems |
| IULA | International Union of Local Authorities |
| MNC | Multi-National Corporation |
| NGO | Non-Governmental Organisation |
| NICHES | New and Innovative Concepts for Helping European transport Sustainability towards implementation |
| PPP | Public-Private Partnership |
| TURBLOG | Transferability of Urban Logistics concepts and practices from a world-wide perspective (EC project) |
| UCC | Urban Consolidation Centre |
| UNHABITAT | United Nations Human Settlements Programme |
| UNDP | United Nations Development Programme |
| VKT | Vehicle Kilometre Travelled (i.e. Traffic volume) = Number of Vehicles × Distance Travelled |
| WHO | World Health Organization |

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# 1. Introduction

*This chapter outlines the background to this study and as such, it provides the fundament for the subsequent problem discussion. The chosen area of investigation is presented, as well as the identified research gap which this work intends to fill. Next, the research question which guides this study and the aim of the research is articulated. Chapter one ends by presenting the delimitations and the disposition of the paper.*

## 1.1 Background

This paper takes its starting point in theoretical perspectives of international knowledge transfer within the field of sustainable mobility. In particular, it focuses on the dissemination of so-called "best practice" in the urban last-mile logistics chain between two institutionally distant contexts. It follows from the notion that urban areas are crucial to address when moving towards a more sustainable future, both socially and economically, and the public sector has a pivotal role in this development. Although the transfer of best practices is now the most prominent method of city-to-city knowledge dissemination, only a paucity of research has been devoted to the study of knowledge-sharing within the area of sustainable urban development (Birch et al., 2012). For a long time, the field of urban logistics was mainly concerned with issues pertaining to public transport; however, just now, other topics are increasingly starting to draw the attention from policy-makers, especially in Europe and the United States (Taniguchi, 2015; Cherrett, 2012)

In a world of rapidly paced urbanisation and high population growth there is a continuous pressure on the urban landscape where complex demand patterns in metropolitan areas drive increased urban freight movements (UN, 2014; UNHABITAT, 2013). As a result, the urban environment is confronted with numerous negative externalities, foremost those associated with congestion, local air pollution and noise, which consequently calls for the development of alternative methods that deal with these issues. In particular, an efficient urban freight system is an essential prerequisite for an urban region to grow economically and to remain competitive (UNHABITAT, 2013). It is estimated that motorised vehicles account for close to one-quarter of all greenhouse gas emission produced by the transport sector, and due to the circulation activities in the urban environment, urban mobility accounts for about 40 per cent of the overall $CO_2$ emissions and approximately 70 per cent of other pollutants derived from transport (Ibid). In Europe, motorised traffic is the main source of pollution in most cities and recent estimates suggest that 10 to 18 per cent of all city road traffic, and as much as 40 per cent of air and noise pollutants, are directly linked to commercial freight movement in urban areas (UNHABITAT, 2013; Dablanc, 2008). In developing city contexts, it is estimated that more than 50 per cent of all city road traffic could be attributed to commercial freight movement (Herzog, 2010). Although

this in the past has chiefly been an issue of concern for developed economies, the large share of fast-growing metropolitan areas in the less-developed world pose additional challenges, many of which relate to fast urban growth, poor infrastructure development and absence of comprehensive policy frameworks (Jirón, 2013; UNHABITAT, 2012; Meyer & Meyer, 2013). Recent increases in urban cargo movement come partly as a result of rapid economic growth which has further exacerbated traffic congestion and is thus an immense threat to human welfare and the sustainable urban development (UNHABITAT, 2012; Jirón, 2013). Given that urban freight flows principally are characterised by small and frequent deliveries, there is even a greater need for a well-articulated and efficient urban logistics system. On a global scale, a large part of the urban freight fleet is made up of rather old vehicles and a too large part of its truck capacity remains underutilised. What is more, the use of motorised vehicles in urban freight transportation is neither efficient nor sustainable, and apart from emissions and congestion, they also generate high levels of nuisance (UNHABITAT, 2013; Savy, 2012; Dablanc, 2008).

Only a few decades ago, the lion's share of urban conglomerates were located in the more economically developed regions, but today, the most explosive growth occurs in cities found in the developing world. In light of this, it is imperative to acknowledge the threats that accompany this rapid growth which, unless properly addressed, may compromise the sustainable development of the human habitat (UN, 2014; UNHABITAT, 2012). According to the United Nations Human Settlements Programme (UN-Habitat), Latin America[1] is today the most urbanised region in the world with more than 80 per cent of its people residing in urban settings, and it is estimated that by 2030, nine out of every ten people in Latin America will live in an urban areas (UNHABITAT, 2012). As a result of this vast uncontrolled growth in urban areas, Latin America faces numerous constraints in regard to urban logistics, where sustained growth, unaccompanied by adequate infrastructure development and city planning has halted efforts towards sustainable urban development, which has added to the pressure on urban planners to develop a more sustainable and efficient logistics system (Jirón, 2013; UNHABITAT, 2013).

Although it is a strategy that has been around for decades, international co-operation in the form of city-to-city exchanges is growing in popularity. This recent surge in attention can mainly be ascribed to that the majority of the world's population now resides in urban and peri-urban areas (Keiner & Kim, 2007). Successful cases of knowledge transfers are well-documented in the literature (Hewitt, 1999), and one often-cited example is the adoption of Bus Rapid Transit

[1] Refers to Latin America and the Caribbean as whole.

(BRT) systems in metropolitan areas such as Bogotá, Curitiba and Lagos (Birch et al., 2012). However, while the lion's share of cities are still confronting similar issues, it is the failure in replicating and scaling tested and proven practices that has now reached the urban development agenda. Since Europe, with specific reference to the Northern countries[2], is in the forefront of sustainable urban freight development (UNHABITAT, 2013; Meyer & Meyer, 2013) fast-growing cities in Latin America have much to learn from the practices implemented in these metropolitan areas.

### 1.1.2 Rationale behind choosing Bogotá, Colombia

Despite its troublesome past, Colombia is now a regional hotspot in economic development and is with over 50 million inhabitants, it is one of the most populated countries in the region (Samad et al., 2012; UNHABITAT, 2012). It is a highly urbanized economy where over three quarters of the population reside in urban conglomerates, most prominently in the cities of Bogotá, Medellín and Barranquilla (Ibid). The strong urbanisation rate have put immense pressures on the urban environment, where high population inflow and increased economic activity put pressure on the fragile urban infrastructure (UNHABITAT, 2012). The capital of Bogotá is a vastly dense and socially segregated city with roughly 20,000 inhabitants per square kilometre (Ibid). Fast and complex migratory flows into the capital have resulted in fast population growth and the city is now home to approximately eight million people (2014), but it is estimated that close to 11 million people will reside in the city by 2040 (Verma et al., 2015; Bocarejo & Tafur, 2013). During the 1990s Bogotá faced severe problems related to congestion, noise and pollution which threatened the sustainability of the urban landscape. In the following period, Colombia and Bogotá embarked upon a period of policy reforms, many in co-operation with prominent international actors, such as the World Bank and Inter-American Development Bank, and subsequently, in some aspects, became a world model of urban planning in less than a decade (Samad et al., 2012; Berney, 2008). Policy-makers have during the last 15 years put the city in the forefront of tackling issues related to urban development, targeting, inter alia, environmental and mobility issues (Berney, 2008). Against this backdrop, Bogotá is currently an interesting context when studying the transfer of best practices in the last-mile logistics system. It is not only a city largely in need of new and innovative logistical solutions, it also provides a relatively favourable institutional environment that could be expected to hold the absorptive capacity to take in city-to-city transfer of best practices.

[2] In this context referred to as: Scandinavia, the UK, northern Germany, northern France and Holland.

### 1.1.3 Sustainability and City Logistics

Due to greater environmental awareness, the concept of green logistics is gaining more ground (Srivastava, 2007). According to Morana (2013), urban logistics can refer to either the "first" or the "last mile", i.e. the first and last part of the traditional supply chain in an urban area, however, for the purpose of this thesis, the term urban logistics is only referred to as the last mile of the traditional supply chain. The last mile is the most costly and complex part of the supply chain, and it is estimated that up to one-third of all transportation costs in the supply chain is attributed to this critical last part (Cherrett et al., 2012; UNHABITAT, 2013; Macharis & Melo, 2011). Due to growing concerns regarding economic activity and negative environmental impacts, traffic congestion etc., combined with the demographic conditions faced in urban areas today, the concept of sustainable urban logistics has recently started to be considered by policy-makers, although only partially (Taniguchi & Thompson, 2015; Cherrett et al., 2012). Traditionally, the last mile has been managed by operating companies, however, during the last two decades it has captured the attention of urban policy-makers whom, as a result, have increased their commitment and willingness to engage with urban-related transportation issues (Gonzalez-Feliu et al., 2013). Nevertheless, sustainable urban freight transport is still in its maturity stage and no consensus exists about the required policy measures, however, it is argued that well-managed city logistics can contribute to creating a more efficient and environmental-friendly urban freight system and thus play a crucial role for balancing the economic growth of cities with social and environmental externalities (Taniguchi & Thompson, 2015). Since urban freight transport is not only essential for economic growth but also for improving the local environment in metropolitan areas, there is an immense pressure to develop a more sustainable urban logistics system (Taniguchi & Thompson, 2015; Russo & Comi, 2012).

### 1.1.4 Cargo cycles

Taking into consideration the need for developing novel methods of reducing motorised transportation in the urban environment, with particular reference to inner-city areas, a concept termed "cycle freight" has emerged as a promising and a potentially viable alternative to the use of motorised vehicles (Lenz & Riehle, 2013). The low load-carrying capacity of standard bicycles (< 25 kg) renders a very limited scope of applicability, something which has ignited a new interest in more refined freight cycles or "cargo bikes", constructed and designed for the specific purpose of transporting loads larger than that of the regular bike (50-500 kg). With the additional handling capacity, a significantly broader avenue of tasks and possibilities opens up for freight cycles. In this regard, cargo bikes could cater to the increasing demand of sustainable urban point-to-point freight delivery. From this, there are legitimate hopes that freight cycles could provide policy-

makers and businesses alike with a green, cost-effective, and competitive alternative to the current over-reliance on motorised vehicles (Ibid.). In this thesis, the terms cargo bike, cargo cycles, freight cycles, and cycle logistics are used interchangeably when referring to the above mentioned concept.

## 1.2 Problem Discussion

Although the last decades have brought about various structural and technological improvements to aspects of e.g. infrastructure and sustainability in many cities, it is evident that the benefits thereof have been unevenly experienced throughout the world. In a rapidly urbanising world it has become urgent to accommodate the requirements of the urban freight systems while at the same time enhancing the local environment; consequently, cities are challenged to address the structural issues related to its urban logistic chains. Last-mile logistics is not only the last, but also perhaps the most important part of the transportation supply chain. Since urban freight is the interface of the public and private sector it is of significance for the sustainable development of city logistics, and consequently, not only co-operation between, but also comprehensive innovations by the various stakeholders are largely demanded (UNHABITAT, 2013). Policy-makers, both domestically and internationally, are increasingly tending to this issue, however, to date, there has not been sufficient research examining the connection between inner-city logistics and sustainable urban environmental development (Ibid). This paucity is especially evident in the context of emerging economies, such as Colombia (Cipoletta Tomassian et al. 2010; Jirón, 2013). What is more, last-mile logistics in general, and sustainable urban last-mile logistics in particular, has predominantly been neglected by both policymakers and researchers and very little effort has been devoted to the needs of both the industry and the local urban communities affected (Savy, 2012). Policy-actors have almost exclusively dedicated efforts to improve urban mobility to passenger traffic and forgotten the importance of urban freight movement (Savy, 2012; UNHABITAT, 2013), and commonly, they have been, and are, inclined to view urban freight movement as a distinct rather than an essential component of the urban development and thus neglecting the integral role it holds in sustainable urban development (UNHABITAT, 2013; Savy, 2012). Moreover, up until recently, the majority of the research carried out in this field has focused on logistical distribution in urban areas rather than the actual vehicle fleet composition (Pelletier et al., 2014), and only a paucity of research has examined the extent to which freight cycles are used, particularly in connection to inner-city commercial transportation, the basic premises of their use, as well as the various stakeholders' perceptions (see Schliwa et al. (2015) & Lenz & Riehle (2013) for two studies on this matter). What is more, in this context, the literature

of knowledge dissemination has been characterised by geographical concentration to the US and Europe, which "*inhibits the opportunity for genuine global dialogue*" since the primarily Western literature ignores to account for lesson-drawing including developing countries (Nedley, 2000, p. 1).

Therefore, due to the scarcity of research covering the transfer of proven practices between two institutionally distant contexts in general, and between Europe and Latin America in particular, it is of importance to add to the knowledge base and understanding of this complex phenomenon. Since urban freight movement is a crucial part of the sustainability of any city, it is paramount to shed light upon this aspect. What is more, given the lacking research in this field, it would be interesting to provide an important piece to the complicated puzzle of urban sustainability, especially given the acute and rapidly accelerating situation facing many large metropolitan areas today. Since Europe not only lies in the forefront of sustainable urban freight solutions, but also has developed various successful pilot projects using freight cycles (Meyer & Meyer, 2013), this research could develop some interesting outcomes. First and foremost, this research will facilitate for future research in this particular field by not only providing a valuable point of reference, but also aim to present a framework that partly is applicable to similar contexts. Furthermore, given the severe difficulties faced in urban areas today, it is crucial to highlight the importance sustainable urban freight transport in policy considerations. Since the concept of cargo cycles have been almost neglected in academia (see Schliwa et al. (2015) and Riehle (2012) for two exceptions), it is crucial to create an awareness of the concept and its ability to contribute to sustainable urban development. Given the emergence of innovative solutions to urban last-mile transportation in Europe (see e.g. DG-Move (2012) and Meyer & Meyer (2013)), a focus on the applicability of such solutions in the Colombian context deserves more attention.

## 1.3 Purpose and Research Question

With reference to the previous problem discussion, this thesis will above all, apart from outlining the present use of cycle freight, its challenges and opportunities, also attempt to appreciate the prospects of introducing cargo cycles for last-mile distribution in Bogotá, Colombia. Given the paucity of research in this specific field, this thesis will contribute to the presently scarce literature on city-to-city knowledge transfer of best practice, as well as provide an understanding of the under-researched field of the use of cargo cycle transports in urban areas. It builds on how such practices can be transferred to, and implemented in, an urban setting that is largely heterogeneous to that of the originator context. The focus of this thesis is to provide a concrete understanding of the prospects for disseminating knowledge between two largely dissimilar

contexts, and provide a fundament for the replication of best practices in last-mile logistics. The overarching aim is to provide a general framework explaining inter-city transfer of best practice from Europe to Colombia, and also to impart an understanding of the challenges related to the implementation of cargo cycles for the purpose of last-mile freight distribution in Bogotá.
It further consists of four sub-purposes, namely;

1. To develop a theoretical framework that allows for a conceptualisation of city-to-city transfer of urban mobility best practices between institutional heterogeneous contexts.
2. To identify the various stakeholders' perceptions in regard to the use of cargo cycles in Bogotá as well as to identify the challenges and opportunities, respectively, in that particular context.
3. Evaluate the prospects for future implementation of cargo cycles in commercial last-mile freight transportation in Bogotá, and conclude with policy recommendations.

On the basis of this, the aim of this thesis is articulated by the following research question:

*"How can a best practice from Europe within the sustainable urban mobility field be successfully transferred to Colombia?".*

It further consists of four sub-questions:

1. *How is best practice knowledge transferred between two institutionally heterogeneous contexts?*
2. *What are the various stakeholders' perception on the use of cargo cycles in Bogotá and what are the challenges and opportunities in this particular context?*
3. *What are the prospects for future implementation of a cargo cycle concept as a last-mile solution in Bogotá?*

## 1.4 Delimitations of the Study

Since the focus of this study is on cross-border transfer of best practice between institutionally heterogeneous settings, noteworthy is that the idiosyncratic characteristics of other contexts may influence the replicability of the outcomes of this study. Nevertheless, the analytical level of this thesis is chosen accordingly, thus, increasing the likelihood that the outcomes of this study could be useful in a context similar to that of the target setting, hence, the institutional and organisational level of analysis. Secondly, this study is done through the case of cargo cycles as a last-mile solution, however, excluding electrically driven cycles (i.e. E-bikes); this since the inclusion of the latter would necessitate a different analytical approach given that it is subject to different regulatory frameworks, costs and regulations. Thirdly, after an initial conjecture, the geographical scope was narrowed down to Bogotá (Colombia) due to the urgent need of sustainable urban freight solutions, however, without neglecting the potential replicability to

similar contexts. Lastly, this thesis does not aim to provide a complete and holistic solution on how sustainable urban freight concepts can be implemented, but solely it sets out to provide an understanding on how the cargo cycle concept could be successfully transferred from Europe for formal commercial use in urban Bogotá.

## 1.5 Research Outline

### Theoretical Framework

This chapter outlines a broad theoretical frame for understanding the process of knowledge transfer, and serves as a basis for the empirical chapters that follow. It reviewers contemporary scholarly and professional thinking on knowledge dissemination and practice diffusion, as well as provides a brief account of urban freight and the various stakeholders of knowledge exchange. It concludes by presenting a conceptual framework accompanied by four propositions related to the transfer process.

### Methodology

This chapter outlines in detail the research methodology of this study. It explains the research approach taken, the conduction of empirical gathering, as well as how quality, credibility and validity is assured throughout the study. The chapter concludes with an overview of the analytical process of the study.

### Empirical Data

This chapter is divided in two parts. Part one provides a background to knowledge dissemination and cargo cycle use in Europe, as well as presents the selected primary data obtained in the this context. The second part presents the Bogotá case, providing a background to understand the case, followed by the empirical findings from Bogotá. Using the European examples as a point of departure. This section concludes with a comprehensive table summarising the main findings.

### Analysis

This chapter returns to the conceptual model developed in section chapter two and uses the outlined propositions as an analytical point of departure to be able to answer the research question adequately. It is divided into two parts: first the fundaments for knowledge transfer are analysed through these propositions, and thereafter, this understanding is applied to the Bogotá settings through the means of cargo cycles.

### Conclusions

This chapter sets out to provide an answer to the research question. Based on the sub-purposes of this thesis, this chapter concludes the three main findings of this thesis: first, it provides a new perspective for the study of knowledge transfer between dissimilar contexts, secondly, it yields an

understanding about the challenges related to the implementation of cargo cycles in Bogotá, and lastly, it presents a revised conceptual model and contributes with policy-recommendations aimed at stimulating cargo cycle uptake. The chapter concludes by offering suggestions for further research.

# 2. Theoretical frame of reference

*This chapter sets out to provide a broad theoretical frame for understanding the process of knowledge transfer, serving as a basis for the empirical chapters that follow. It starts by reviewing contemporary scholarly and professional thinking on knowledge dissemination and practice diffusion. Thereafter, a brief account of urban freight and the various stakeholders of knowledge exchange is given. Lastly, chapter two concludes by presenting a conceptual framework accompanied by four propositions related to the transfer process which are further scrutinised in subsequent sections.*

## 2.1 Transferability and transfer of knowledge

In its broadest sense, "transferability" can be described as the quality of being transferable or exchangeable (Heger et al., 2011). When considering urban mobility issues, this translates to the possibility of introducing a practice in a certain context which has previously been proven elsewhere. Thus, the underlying assumption of transferability is what has proven to be successful in one setting can potentially be effective again in a different setting; however, reapplying the concept may in reality prove to be difficult (Ibid.). Transferability is often erroneously believed to deal with the selection of measures that could plausibly fit a certain context, although it in practice refers to a process in which the viability of implementing measures from an originator context to a receptor context (e.g. city, province, or nation) is evaluated (Macário & Marques, 2004). Put differently, the misconceived notion of transferability is simply a recommendation of replicable proven practices, whereas it in fact concerns the selection of measures to be transplanted, as well as an assessment of the prerequisites for a successful implementation of the measures. A critical aspect of transferability relates to having sufficient knowledge of the given contexts, which is also a necessary condition for the identification of barriers as well as opportunities of transfer (Ibid.). The factors which have a bearing on the sending and receiving contexts, respectively, can roughly be grouped into three distinct categories: (1) The institutional sphere, which refers to the entirety of regulatory, legal, and benchmarking instruments that empowers the implementation of a particular measure and which may vary considerably from one context to another. (2) The availability of finance, which refers to the amount of resources (e.g. personnel and technical competence) necessary to introduce and enforce a certain measure.

(3) The society, which refers to the cultural status that makes people within a community aware of the urgency of introducing a particular measure, as well as make them willing to embrace it. These three factors may influence one another on both the local and national level, and they can cut across different disciplines (Macário & Marques, 2008).

Moreover, there are three key-concepts to transferability that ought to be addressed when engaging in a transfer process (Macário & Marques, 2004, 2008). (1) Compatibility; relates to the importance of evaluating how well suited a given practice is to the target setting, thus, successful replication will to some extent depend on how alike the contexts are in terms of institutional and regional aspects. (2) Scope; relates to the level of transferability and can be classified into "horizontal" and "vertical" transferability (see Figure 1 and 2 below). The former refers to the transfer of a practice at an identical scale of generation and application across regions, whereas the latter, refers to an up-scaling or a down-scaling of a given practice. Thus, in horizontal transfer a measure is replicated from one context to another, without altering the scale of application. Examples of horizontal transfer can therefore include the introduction of a measure from one city to another within the same sub-national level, between cities in the same provincial area, or from one city in one sub-national context to another city in another sub-national context. Conversely, vertical transfer could therefore occur through nation-wide application of a measure previously used at the local level and could include transfer of a practice from sub-national to national level, from one city to another provincial level or from the provincial to the national level, or from one city to sub-national level (Macário & Marques, 2004, 2008).

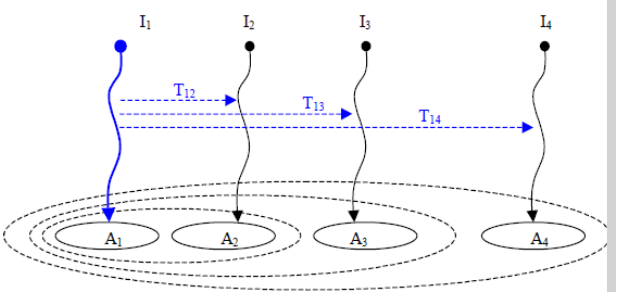


*Figure 1: Horizontal transferability on different levels. I – Practice or Measure; T – Translations; A – Area*
*Source: Macário and Marques, 2004, p.11*

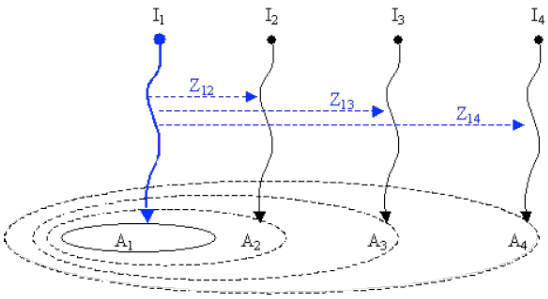


*Figure 2: Vertical transferability on different levels. I Practice or Measure; Z – Zoom; A – Area*
*Source: Macário and Marques, 2004, p.13*

As cities continue to discover and implement new solutions for addressing urban development issues, the stronger the incentives for engaging in knowledge exchange will be. For this reason, transferability and transfer of knowledge has become an increasingly relevant topic within the urban transport field. Thus far, however, the literature that is concerned with knowledge transfer within the urban transport discipline has been scant. Instead, the bulk of research undertaken on

transferability has mainly focused on the transfer of policies and procedures in other fields, most notably in organisational learning and management, political science, and public administration (Birch et al., 2012). Along these lines, Marsden & Stead (2011, p. 1) note that "*although there is only a limited amount of literature on policy transfer in this field, the findings suggest that transport has much in common with other areas of public policy in terms of the main aspects and influences on policy transfer*". Nevertheless, importing practices which have witnessed success (i.e. effectiveness) in other urban settings are increasingly being turned to as inexpensive means of avoiding reinventing processes (i.e. efficiency) (Marsden & Stead, 2011). Lindholm (2012) notes that the ongoing trend is reflected in the burgeoning number of conferences and workshops around the World, most notably in Europe, where urban freight transport has featured highly on the agenda. (Ibid.).

The most widely used definition of transferability is suggested by Dolowitz & Marsh (2000, p. 5) who defines it as: *"a process in which knowledge about policies, administrative arrangements, institutions and ideas in one…setting (past or present) is used in the development of policies, administrative arrangements, institutions and ideas in another…setting"*. Moreover, in their research paper, Franzén et al. (2011) propose that the underlying assumption of transferability is that solutions which have been successfully proven in one context may turn out to be effective again, in another context. The authors further express the reservation that integrating knowledge into practice is a complicated process. In addition, Franzén et al. (2011) also highlight a common misconception between transferability (which refers to a process where the feasibility of a solution is assessed) and selection of measures with potential viability within a certain context. In this regard, transferability can be viewed as a recommendation of how to transfer good or best practices, whereas the selection of potentially viable measures is concerned with choice, as well as an assessment of what is needed (in terms of both effort and resources) for successfully implementing that solution. Therefore, transferability mandates sufficient knowledge of the origin as well as receptor setting, including an overview of institutional aspects, resource availability, and various societal factors. Accordingly, transferability can therefore involve a number of different disciplines ranging from urban planning to psychology, agriculture to public administration (Ibid.)

### 2.1.1 The Institutional domain

#### *2.1.1.1 Policy transfer*

The extant literature on knowledge dissemination and policy transfer has largely been geographically concentrated to Europe and the US, with limited analytical attention devoted to lesson-drawing involving developing countries (Stone, 2001; Nedley, 2000). Researchers who specialise in transport policy transfer typically rest their assessment of transferability on an

analytical framework devised by Dolowitz & Marsh (2000) which is centred on a series of questions, including: Why do actors engage in policy transfer? Which are the key actors involved in the process? What is transferred and from where? What are the different degrees of transfer? What restricts or facilitates the policy transfer process? Additionally, a number of articles (e.g. Bray et al. (2011) Marsden & Stead (2011) and Timms (2011)) have made alternative interpretations of, and references to, this framework. According to Lindholm (2012), even though none of these articles are concerned with issues of freight transport, per se, (but rather transport policy in a general sense), the framework remains of considerable value also when evaluating freight transport. Bearing this in mind, it is also important to remember that, as Dolowitz and Marsh (2000, p. 21) stress, "…*it is not inevitable that transfer will be successful. As such, while transfer may shape policy change, it may also lead to implementation failure*". Furthermore, Macário and Marques (2008) propose a useful framework for the transferability process which consists of ten steps, based on the assumption that transferability is expressed through the applicability, packaging and dimensioning, and societal acceptance of the suggested practice (see Figure 3 below). The process departs from the premise that the measures subject to analysis are those that best fit the recipient city context, given that they have already proved to be successful in the origin context. Thus, a diagnosis of the circumstances in the recipient city is necessary, followed by a pre-selection of potential solutions to tackle the recognised problems. Thereafter, the transferability process can be initiated in order to acquire deeper insights of the steps involved, also making it possible for the hypothesis and viability of the process to become operational. Marcário and Marques' framework underlines the sequence and the relations among the many intricate issues that should be considered when evaluating the likelihood of achieving successful knowledge transfer.

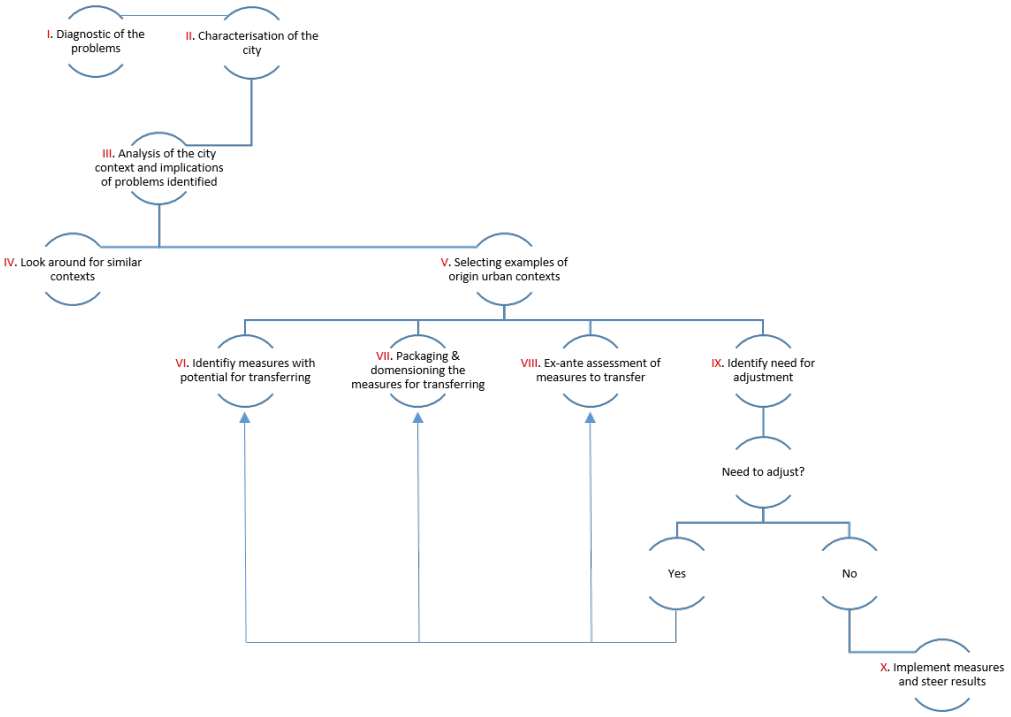


*Figure 3: The transferability algorithm. Source: Compiled by the authors based on Macário & Marques (2008, p. 151)*

### 2.1.2 The Organisational domain

#### *2.1.2.1 Inter-organisational knowledge transfer*

Although knowledge is a crucial asset to any organisation, it is nevertheless a concept which is difficult to define, making it subject to various interpretations (Chen et al., 2006). Moreover, knowledge can be either explicit or tacit, where the former refers to codified knowledge that is found in programmes, databases etc., whereas the latter relates to more intuitive knowledge and so-called know-how (Collins, 2010). In addition, knowledge is not only acquired and used, but also exchanged within and across organisations in order to enhance performance.

Wijk et al. (2008) refer to inter-organisational transfer of knowledge as a process through which actors within an organisation (e.g. teams, units, or organisations) share, use, and are affected by the knowledge and lessons of other such actors. In effective transfers of knowledge, the recipient organisation internalises the knowledge and experience from the donor organisation, and it can thereafter be applied freely by the former organisation. Knowledge exchange across different organisational contexts has become an increasingly popular method of generating value or developing competitive advantages, particularly in the era of globalisation (Ibid.). Gupta & Govindarajan (2000) argue that companies which aspire to successfully compete on the global market have to be in possession of knowledge-based intangible assets. Somewhat connected to this, Spender (1996) underline that transferability constitutes a strategic dimension which is not only crucial to the firm itself, but also to its established relationships with external companies.

Moreover, as multi-national corporations (MNCs) have the possibility of exploiting knowledge developed in parts of their globally distributed organisation and applying it in others, their competitive advantage can be viewed as a function of their ability to streamline and co-ordinate transfer (Birkinshaw & Hood, 1998; Rugman and Verbeke, 2001; Szulanski, 1996). In line with this, Frost (2001) posits that, by accessing knowledge reserves embedded in the wider corporation, MNCs can draw from, or combine that knowledge to discover new business and/or market opportunities. In other words, this makes the transfer process a key issue in managing MNCs.

The growing relevance of knowledge transfer has consequently prompted a series of studies examining the antecedents and outcomes of knowledge transfer between organisations (e.g. Easterby-Smith et al., 2008; Inkpen, 2008; Wijk et al., 2008; Pérez-Nordtvedt et al., 2008). The strength of the relationship (Inkpen, 2008), past experience (Zander & Kogut, 1995), as well as psychic and geographical distance (Bell & Zaheer, 2007) are key in achieving effective transfer of knowledge between organisations. Furthermore, knowledge is viewed as an abstract, intangible asset; as such, it has a value, is distinct, path dependent, causally ambiguous (which is said to occur if the source from which a firm's competitive advantage stems is unknown), as well as difficult to substitute or replicate. These attributes confer potential barriers but also advantages of knowledge transfer, the latter being the principal purpose of engaging in horizontal learning (see section 2.1 and Figure 2). In an inter-organisational setting, the challenges posed to successful knowledge exchange highlights the delicate balancing act between competitive and co-operative motives, something which can be studied as a social dilemma (Maciejovsky & Budescu, 2013). Nevertheless, in "co-opetitive" contexts, the organisations will be reluctant to share knowledge if they believe that they will lose their competitive edge over it. Likewise, because the knowledge will no longer be confined to the source organisation alone, the donors will not be motivated to take part in the expensive delivery of knowledge if the perceived threat of free-riding is high, as the outcome would be a relationship characterised by sub-optimal levels of knowledge sharing between the organisations. Hence, the issue at large in the inter-organisational setting is to determine what, to what extent, and under what conditions, knowledge should be shared (Ibid.)

## 2.2 Best practice

The term "best practice" is often loosely used in common parlance denoting the process of developing and adhering to a standard procedure of conduct that multiple entities can use. To date, however, there is no widely agreed definition of the term (Birch et al., 2012). In order to respond to the need for clarity, the ensuing section presents a brief synopsis of the background as

well as the various definitions of the best practice concept that have hitherto been put forth, and is thereafter complemented by a review of the scholarly critique directed towards the concept.

### 2.2.1 History

The documentation and dissemination of so-called "best practices" has a long-standing history in many disciplines and it has in recent years become increasingly prevalent within the field of urban planning and sustainable development (Birch et al., 2012). Although humans have long held ideas about the best way of doing things, it was not until the early twentieth century that people started to systematically capture and articulate what is widely considered best practice. In the United States, the genealogy of the concept can be traced to F.W. Taylor, a management consultant who sought an "optimal" way of enhancing productivity in a range of industrial environments. Much of what he practised is today, more than a century later, still pertinent within industry (Taylor, 1911; Osburn et al., 2011).

Moreover, the establishment of the International Union of Local authorities (IULA) in 1913 marked a key milestone in the formal collection of best practice as the first body devoted exclusively to further democratic self-governance throughout cities around the globe. From this, the development continued with the founding of a number of seminal institutions, including the International Monetary Fund (IMF), the World Bank Group, and the World Health Organization (WHO), as well as a wide array of United Nations agencies. Following this formation, the twentieth century witnessed the emergence of global norms and standards in a range urban-related fields. While these early bodies were dependent on national-level agreements, a static publication system, as well as the provision of funding and other resources to endorse innovative ideas, prosecute programmes, spread best practices, and set global standards, they nevertheless form the foundation for the proliferation of more agile and adaptable international actors such as NGOs, knowledge networks and think-tanks that have come into existence in the twenty-first century. (Birch et al., 2012). A timeline depicting this development is illustrated in Figure 4.

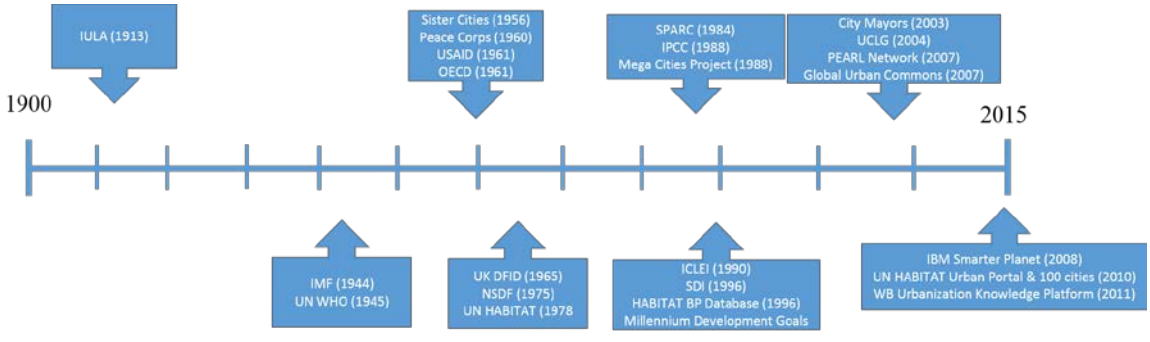


*Figure 4: The emergence of global knowledge networks, 1900-2015.Source: Compiled by the authors based on Birch et al. (2012)*

Furthermore, even though the literature shows that the best practice concept was applied as early on as the turn of the nineteenth century, the term "best practice" is, however, relatively young[3] in comparison (Osburn et al., 2011). Lately, and congruent to this, the notion of best practice has become adopted into the standard lexicon of transport policy. Developing, implementing, and evaluating transport interventions through the employment of best (or "good") practice models has become an increasingly popular course of action at all levels of policy-making, and continues to gain support from a broad range of actors along the political spectrum (Macmillen & Stead, 2014). The critical discourse on the topic has so far been centred on the spatial limits to policy transfer, and has emphasised the importance of institutional heterogeneity as an impediment to successful policy implementation (Macmillen, 2010). Within the field of transport policy, a wide array of policy-actors have internalised the best practice concept in various ways. For instance, scholars have prescribed the use of best practices for urban mobility planning (Miller & Hoel, 2002); NGOs have formulated best practice recommendations on cycling policy and policies addressing issues of transport-related fuel use and emissions (CLECAT, 2010; Russel, 2001); governments have endorsed best practice guidelines for attaining sustainable freight distribution and to facilitate its integration in urban mobility fields (BMUB, 2012; Welsh, 2008); and supranational institutions have published an extensive range of documents on international best practice in greenhouse gas monitoring and reporting for transport as well as in road safety management (OECD/IEA, 2001; EC, 2010).

### 2.2.2 Appeal and reasoning

Despite having its roots steeped in management consulting, much of the term's legitimacy in the public sector has come as a result of its almost indiscernible relationship to the concept of policy transfer. The identification and spread of best practices is commonly believed to be an effective way of encouraging knowledge transfer and practice absorption (Macmillen, 2010; Bulkeley, 2006). Moreover, research suggests that the benefits which best practices provide to urban planners and policy-actors are manifold. Generally speaking, the gains derived from best practices can be organised into two distinct categories: (a) knowledge sharing that translates into more informed decision-making, and (b) knowledge sharing that enhances organisational and fiscal efficiency. The supporting logic is intuitive: information concerning successful initiatives may be conducive to the furtherance of objectives of those who engage in a similar projects; therefore, advising policy-actors of how they should proceed (or not proceed) in a certain situation should, in theory, provide better odds at achieving success. Additionally, depending on the nature of this

[3] The first documented reference to the term dates to the 1960s and is found in financial management and business literature; nevertheless, today it is in common usage across a vast scope of disciplines (Osburn et al., 2011).

information, it could also offer indispensable experiential insights into relevant practical and contextual issues, something which preconceived analyses fail to account for. In short, by drawing from best practice, adopters can tackle issues that have already been confronted elsewhere, without having to "reinvent the wheel" (Macmillen and Stead, 2014; Wolman and Page, 2000).

In terms of knowledge sharing and decision-making, practitioners have often praised best practices for their positive, normative nature (Bretschneider et al., 2005). By emphasising possibilities over constraints, and by refining experiences gained into actionable, attainable, and measurable objectives, the concept is largely characterised by pragmatism, innovative experimentation and simplicity (Overman and Boyd, 1994). In addition, it is also considered particularly effective in bridging gaps between the different disciplines involved in intricate planning issues (e.g. when balancing political and technical issues). By tapping into an already existing knowledge base and by learning from the lessons and experiences of others, urban developers can streamline their initiatives and avoid unnecessary pitfalls throughout the process. In addition, it gives decision-makers access to more thorough information, making it easier for them to evaluate the plausible outcomes of forthcoming policy decisions and their probability of occurrence, thus enabling them to proactively manage issues before they become critical (Birch et al., 2012).

### 2.2.3 Definition

As is evident from the foregoing section, various authors have often attached different meanings to the term "best practice". Despite the present terminological overlap in the literature, there seems to be a unanimous agreement among scholars that the concept holds considerable logical appeal (Bretschneider et al., 2005; Scott, 2003). Against this background, and for the purpose of this thesis, efforts to delineate and communicate a consistent and unambiguous meaning of the best practice concept within the urban development field are clearly desirable. To that end, this thesis draws its description of the concept from a research paper authored by Birch et al. (2012, p. 16) who define "best practices" as "*methods, techniques, or processes gathered from analysed, comparable, successful cases with defined criteria that has proven to be transferable and/or scalable*".

## 2.3 Critique towards transfer of practices

The critical response in the urban planning, transport, and public administration literature to knowledge transfer, has chiefly been focused on institutional constraints to policy transfer (e.g. De Jong, 2008, De Jong & Geerlings, 2005, Gudmundsson et al., 2005, Güller, 1996, Stead et al., 2008). In connection to this, the feasibility of particular transport systems, processes or conventions that have attained best practice status, rely strongly on a multitude of economic,

socio-cultural and political factors. To give an account of this critique, De Jong (2008) gives an exhaustive record of how institutional arrangements impact on the viability of cross-national transfer and learning of transport measure. In terms of specific policy matters, he accentuates the profound differences that exist across diverse country contexts and the capacity of governments to coordinate, finance, regulate and implement transport interventions. In other words, De Jong largely ascribes instances of unsuccessful policy transplantation to a lack of compatibility between formal and informal institutional structures. Informal institutions, which lay down sets of rules that exist outside and in parallel to the formal structures of state, are considered to be the decisive factor in explaining transfer outcomes (Ibid.). This resonates well with what was inferred from research conducted by Gudmundssons et al. (2005), whose main findings shed light on the hampering effects that different policy-making approaches have. The governance structures in place proved to vary significantly among the studied countries, where some countries in one end of the spectrum seemed to be more "reactive" than those in the opposite end that assumed a more "proactive" stance. Some forms of governance manifested adversarial behaviour, whereas others acted in a more consensual manner. Constraints like these led the researchers to advice against trying to benchmark sustainable mobility policies across different institutional contexts.

Related to this criticism, a recent scholarly debate has shifted the discussion to focus more on the ways in which best practices are developed and implemented by policy-actors (Bulkeley, 2006; Vettoretto, 2009). Although a ubiquitous phenomenon today, there exists comparatively little knowledge about how best practices are in fact understood, established, and applied in policy-making processes, transport, or such (Blundel, 2007; Wolman & Page, 2002; Bulkeley, 2006). One of the risks of engaging in unquestioned adoption of best practice is that it can translate into information overload for scholars and policy-makers who are trying to identify examples of effective policies in operation somewhere else (Stead, 2012). Adding to the critique of exporting pre-formulated concepts to novel contexts, Minken et al. (2003) present four barriers to the implementation of sustainable urban freight measures: legal and institutional, political and cultural, financial, and practical and technological barriers. In addition to this, May & Crass (2007) also identify political and acceptability barriers, information and skill barriers, as well as legislative and regulatory barriers. Moreover, Macário & Marques (2008) provide another set of guiding principles, which among others includes: (1) transferability depends on the compatibility of the institutional context; (2) transferability might be indirect through so-called osmosis; and (3) the acceptability in the local context is crucial (Ibid).

## 2.4 Urban Freight Transport

Urban freight movement is part of a much larger system and refers to the carriage of goods within the confines of the urban environment (Taniguchi, 2001). As early as three decades ago, Hicks (1977) set out to define urban freight transport, however, this definition lacked some of the so-called "hidden" logistics, e.g. services, which serve other purposes than solely pick-up and delivery. Eventually, a more suitable definition emerged which describes urban freight transport as *"…being concerned with the movement of goods (as distinct from people) to, from, within, and through urban areas"* (Ogden, 1992, p. 14). In the years following the concept's emergence, it became applied in an increasingly detailed manner by scholars, all depending on the research approach taken by the author interpreting it. It is in this context that Taniguchi, who is credited with the original coining of the term *"city logistics",* defined the concept as *"the process for totally optimizing the logistics and transport activities by private companies with support of advanced information systems in urban areas considering the traffic environment, the traffic congestion, the traffic safety and the energy savings within the framework of a market economy"* (Taniguchi, 2001). However, due to the specificity of this definition, more generic definitions should be considered. One such definition is proposed by Dablanc (2008, p. 248) who defines urban freight as *"the transport of goods carried out by professionals in an urban environment"*. As a result of the ambiguity around the definition of the concept, and since this thesis focuses on how best practices can be transferred from one context to another, the latter definition by Dablanc (2008) is the most appropriate due to its wider scope of applicability.

In order to understand the concept of urban freight transport, and in turn last-mile logistics, it is imperative to have an understanding of how the typical logistics chain is structured. As illustrated in the figure below (Figure 5), a simple logistics chain may have the following construct: (1) First raw materials are supplied for the processing industry, from which (2) finished products (most likely through a number of intermediaries) are shipped to storage facilities such as warehouses or distribution centres belonging to the logistics provider. Thereafter, the goods either transit via traditional distribution directly to outlets, such as supermarkets or other larger sales outlets, or as direct sales to consumers. The term "last mile" thus refers to a narrow sequence of the supply chain which involves the last leg of delivery (Macharis & Melo, 2011).


*Figure 5: A typical logistics chain. Source: Compiled by the authors based on De Smedt and Gevaers (2009)*

Although urban freight transport refers to all freight transport (including both first and last mile) that takes place within the urban confines, the term is often used synonymously to the term "last mile" (of the supply chain) (Macharis & Melo, 2011; Taniguchi & Thompson, 2015). The term last mile or "last-mile logistics" is often used in related areas such as urban freight delivery, e-commerce, and the delivery part of the supply chain. Hitherto, last-mile logistics has attracted relatively little attention from scholars, especially so when bearing in mind its crucial role in the supply chain (Macharis & Melo, 2011). Nevertheless, Macharis et al. (2011, p. 57) state that last-mile logistics refers to *"the final leg of a business to consumer delivery service whereby the consignment is delivered to the recipient, either at the recipient's home or at a collection point"*. However, for the purpose of this thesis the term "end-consumer" could in a broader sense refer to not only private individuals, but also to businesses as recipients of a delivery; this since the final recipient of goods in the urban setting is not limited to private individuals, but also extends to private businesses.

In order to further illustrate the conceptualisation of last-mile logistics, Figure 6 serves as a good frame of reference. Without getting too concerned with the details, it is still important to point out that there exist plenty of delivery methods that do cater to the last mile of the urban logistics chain. These methods range from home delivery to distribution centre or retailer delivery, or delivery to a clustering (e.g. a collection point such as a book store or petrol stations (Macharis & Melo, 2011).

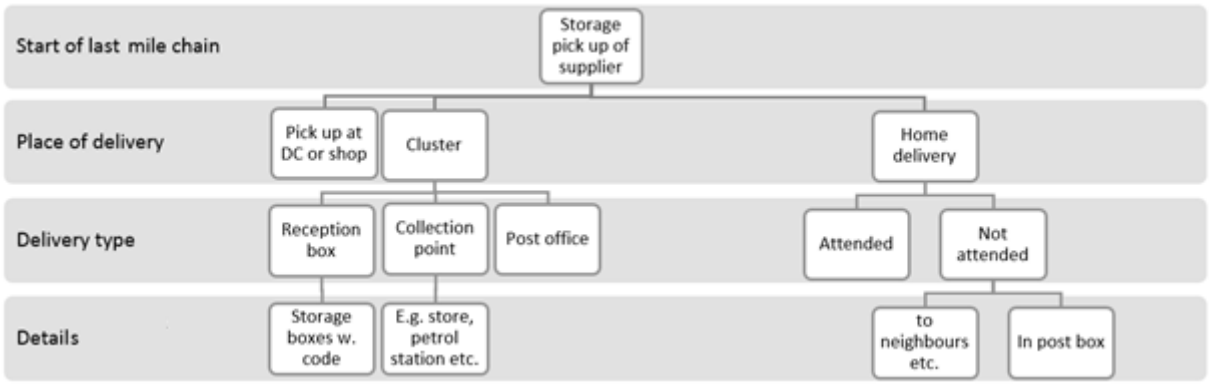


*Figure 6: A conceptualisation of last-mile logistics. Source: Compiled by the authors based on Macharis & Melo (2011)*

* DC = Distribution centre.

### 2.4.1 Sustainable urban freight movement

Viewing logistics through a historical lens, it has almost exclusively been discussed in relation to issues of minimising cost and maximising efficiency, a perspective in which aspects of sustainability are difficult to fit in (Taniguchi & Thompson, 2015). Lately however, increased awareness of the importance of urban freight movement in spatial planning, as well as the negative externalities faced in urban areas today, has increasingly brought the concept of sustainable urban freight movement to light. Following the UK Round Table on Sustainable

Development (1996), the aim of sustainable transport was outlined as *"to answer, as far as possible, how society intends to provide the means of opportunity to meet economic, environmental and social needs efficiently and equitably, while minimizing avoidable or unnecessary adverse impacts and their associated costs, over relevant space and time scales"*. Commonly, the three dimensions society, economy, and environment, are to be regarded as crucial in order to reach the sustainability goal (UNHABITAT, 2013; Richardson & Haywood, 1996; Richardson, 2005). On that note, Allen & Brown (2012, p. 294) address some key areas that are crucial to consider in the context of sustainable urban transport. These areas include working towards mitigating the social and environmental impacts of delivery vehicles, promoting public-private partnerships (PPP) and co-operation, the exercise of influence or control over the movement of freight vehicles from urban planners (local authorities), as well as optimisation of operational efficiency by transport companies in order to minimise traffic congestion and environmental impact. Thus, urban freight plays a central role in meeting the growing needs of the urban inhabitants, but at the same time it adds to the already significant adverse impacts on the environment, economy and society. In connection to that, the pillars of sustainability, mobility, and liveability, proposed by (Taniguchi & Thompson, 2015) serve as guiding principles of freight transport in urban areas. Notwithstanding, up until today, urban freight transport, and more importantly sustainable urban freight transport (SUFT), has mainly been a phenomenon exclusive to the private sector, and public authorities are only slowly starting to address these issues. Consequently, the state of sustainable urban freight transport in urban areas is not well understood (Lindholm et al., 2012a; Taniguchi & Thompson, 2015), which in much explains the many disjointed and ambiguous definitions of the term. On that note, it is appropriate to consider the words of Harding (2006, p. 230); *" … at this time, it is urgently best to address the unsustainable nature of natural resource use, rather than putting this on hold while we argue endlessly about exactly what sustainability means!"*.

### 2.4.2 Cargo cycles within a sustainable city framework

Sustainable development revolves around economic, environmental, and social sustainability. Generally speaking, taking the perspective of urban transport, it could be said that economic and social sustainability can be determined by efficiency and safety, whereas environmental sustainability by air pollution (Russo & Comi, 2012). As a result of this, two conflicting interests surface, namely the ones of public authorities and of private companies. The former mostly focus on environmental and social sustainability (targeting congestion, pollution, accidents etc.), whereas the latter mainly focuses on economic sustainability through the lowering of costs, increased quality and shortened lead-times in order to meet the customers' expectations on a highly competitive market (Ibid.). Russo & Comi (2012) further developed a framework for

sustainable logistics through which synergies and supportive actions can be identified. Sustainable city logistics takes a holistic approach to city logistics, which not only include environmental- but also social and economic aspects. Russo & Comi (2012, pp. 64-67) also single out four sets of factors that could be useful in order to understand how sustainable urban logistics fits into the urban landscape: (1) material infrastructure; (2) immaterial infrastructure; (3) equipment; and (4) governance. The first measure, material infrastructure, refers to both linear (links in the urban landscape) and surface (and/or nodal) if they relate to areas that could be ascribed to freight transportation (such as urban consolidation centres (UCCs)). The second measure refers to immaterial infrastructure, which could involve various types of Intelligent Transport Systems (ITS), or training. The third measure, equipment, relates to loading and handling regulations, as well as transport by new more sustainable vehicles, and so on. This measure could revolve around aspects of transport units, such as reduction in emissions, the use of electric vehicles etc. The last set of measures, governance, refers to how traffic networks are governed. Traffic regulations, e.g. access times, road pricing, maximum parking time, maximum occupied surface, etc., all fit into this measure. Russo & Comi (2012) further conclude that the aim of these four measures is to bolster the development of economic, social, and environmental goals.

According to Schliwa et al. (2015), these four parameters relate to freight cycles in the following way, namely: for cycle logistics to become economically sustainable the material infrastructure and geography of a city are paramount. The narrow thoroughfares of historical centres favour cargo bikes as their characteristics allow them to operate efficiently even in these areas which are otherwise inaccessible to most conventional vehicles. Moreover, the authors found that complementary infrastructure, such as UCCs, is crucial to the implementation of cargo cycles as they reduce the frequency of delivery as well as shorten the routes. As to the non-material infrastructure, the authors found some efficiency barriers, especially related to the fact that sub-contractors of cargo cycle deliveries cannot consolidate parcels from other larger delivery companies. The equipment parameter was found to be a key determining factor for the viability and potential success of the cargo-bike business, especially if the business intends to offer a serious alternative to the contemporary widespread use of motorised vehicles. In some countries there are regulations on cargo load and volume, which directly affect the feasibility of running a freight cycle business. Furthermore, the various governance measures at hand to policy-makers could provide incentives to support a modal shift to cargo bikes, especially when considering low-emission logistics, but also when striving for a more holistic and sustainable urban logistics system. Thus, Schiwla et al. (2015) conclude that all these aspects combined, if directed in favour of the cargo bike concept, provide realistic prospects for bolstering the

development of economic, social and environmental goals. The authors further provide some examples of how well-executed local policies indeed benefit the development of sustainable urban logistics, in which cargo cycles hold a vital part. Nevertheless, in order to comprehensively deal with issues of congestion, delivery times, accidents, and the cost of infrastructure, the authors conclude that greater intervention from policy-makers is needed in areas that are not naturally restricted from vans.

## 2.5 Stakeholders of international knowledge transfer

Throughout the last two decades much attention has been devoted to the study of transferability. The majority of this research is centred on the role of officials (e.g. bureaucrats, policy-makers, governmental units) and the state in the transfer process. This assertion is congruent to Scholte's (1996) findings, who observed a trend within the literature in which researchers tend to focus on the dynamics within the nation-state. However, by doing so, important aspects to lesson-drawing and knowledge transfer is neglected as transfer may also be mediated by external actors. According to Stone (2001), a plausible explanation for this state-centrism relates to a common misunderstanding in the terminology of "policy transfer" which directs analytical attention to the government, when it in fact could be that insights, ideas, and information is transferred without state involvement. Nevertheless, in parts of the literature, the strong influence which non-governmental organisations and various social interest groups can have in disseminating practices is well documented (McAdam & Rucht, 1993; Stone, 2004). Dolowitz & Marsh (1996, p. 345) describe non-state actors as "transfer entrepreneurs" and state that they facilitate the transfer process by providing the "intellectual matter" (e.g. rhetoric, scholarly discourse, legitimacy) which serves as a basis for policy formulation. In some instances, the so-called knowledge entrepreneurs act proactively by engaging in exchange processes as independent promoters, whereas they in other cases work in liaison with government agencies and international organisations. In these knowledge communities, it is clear that a wide variety of non-state organisations contribute to creating the intellectual infrastructure for international knowledge exchange as well as helping justify the need for lesson-drawing (Dolowitz & Marsh, 2000). The agents involved in knowledge transfer make up a considerably larger group of individual actors, networks, and organisational entities than what is reflected in most published research (Stone, 2001, 2004). Put differently, government actors, and non-state organisations embedded in markets and networks are equally important in the transmission of knowledge and the process is just as probable to be facilitated by the former as the latter (Stone, 2001). Thus, it is imperative to recognise the role which, for instance, business play in disseminating and promoting ideas. In this regard, Haufler (2000) noted that transnational enterprises increasingly engage in self-regulation, either on a voluntary or a

mandatory basis, citing increased capital mobility as a key stimulus for the homogenisation and diffusion of global norms and standards. Moreover, by acknowledging non-governmental actors and transnational networks, an important analysis gap is filled which allows for a proper examination of the complex positions, roles and functions held by agents in the exchange process. Apart from the hitherto-mentioned agents, other notable examples include those that operate in the "third sector", namely voluntary associations (e.g. NGOs) and non-profit organisations. Typically these organisations have a perceived high level of credibility in the local and/or global setting which is conducive to the transmission process as a whole. Nedley (2000) argues that third sector-organisations are likely to have more aptitude and greater willingness to engage in applied experimentation and piloting of novel ideas than do the state. Furthermore, another important role in knowledge diffusion is held by universities (Ibid.). Sinclair (1999) describes different dimensions of academia's involvement in transfer, including direct involvement (e.g. eminent scholars may influence policy-making by advising on policies and procedures) and indirect involvement (e.g. through funding of programmes that examines best practice and transfer, and programmes that aim to "bridge" scholarship and policy). By engaging in academic research, universities may also enhance the general understanding of transfer mechanisms and, for instance, they can map out which circumstances favour transfer, as well as assisting policy-actors in exchange processes. In contrast, although recognising the potentially significant role of universities, Stone (2001) claims that academic studies on policy issues in many cases have shown to have a limited influence on subsequent policy-making. This is also congruent with Sjöstedt (1994), who illustrated that academia only has an indirect impact on urban planning, which further accentuates the importance of communicative and co-operative efforts to holistically ensure that all stakeholders' interests are given fair representation (Lindholm, 2012a). Altogether, engaging diverse stakeholders and their viewpoints is imperative in achieving an effective uptake of sustainable practices, particularly in a context characterised by limited know-how and institutional capacity (Hawkins & Wang, 2012).

### 2.5.1 Raison d'être of agents

Within the research community, the need for organisations that engage in consensus-building and the dissemination of ideas and practices is argued to derive from a set of constraints of institutional actors, including lack of resources (e.g. time, money, competence) and access to the right dissemination channels. In other words, agents have recognised the need to complement state governance in areas where it lacks competence or the political will to operate. Altogether, there is a strong appeal among decision-makers to draw from the complementary expertise which agents provide. The non-state actors constantly operate in the periphery, networking around

officials and international organisations. Some agents, with specific reference to private actors, interact with state representatives in order to draw from their authority or expert knowledge to benchmark and legitimise certain measures, solutions or standards as "best practice" (Stone, 2001).

The non-state position of agents, whether they represent academia, think tanks, research institutes, and so on, can be viewed as a crucial constraint to their role as knowledge brokers. However, Evan & Davies (1999) argue that agents are likely to be superior to state actors in a type of transfer which they refer to as "soft" (i.e. by manipulating public opinion and political agendas). Conversely, state actors are better at the "hard" types of transfer (i.e. requiring formal decision-making). Moreover, agents encourage the diffusion of lessons, engage in consensus-building, and entrench new concepts by means of advocacy, lobbying, education, as well as through collaborative partnerships with state actors (Ibid.)

### 2.5.2 Methodological "nationalism"

As was briefly alluded to earlier, the main concern of most transferability literature has been bilateral country-to-country policy transfer. However, by overlooking other possibilities of lesson drawing, the research community has largely neglected that knowledge can in fact be drawn from a multitude of sources. Hence, positive as well as negative experiences may, respectively, be collected from different places, at different times (Stone, 2004). This "hybridisation" allows for the transfer of knowledge to be customised to optimally suit the local context. In addition, another issue related to the excessive methodological state-centrism is that the term "policy transfer" infers a bi-directional transfer process between originator and receptor states. Nevertheless, exchange agents without ties to neither source nor destination country may mediate the process. These agents, which essentially operate as transfer brokers, include, inter alia, international organisations, think tanks, consultancies, law firms and banks (Stone, 2001, 2004). In an age of diminished state autonomy, the exchange of insights, dissemination of norms, and supra-national partnerships are facilitating the shift towards a new global governance. The importance of knowledge in the globalised information-society, coupled with new governance gaining momentum, indicates that the mobilisation of knowledge expresses itself in new forms via networks. This presents novel opportunities for transfer and it may induce a transition from inter-state horizontal learning to an increased prevalence of vertical learning where transfer takes place between countries, international non-state actors and organisations (Stone, 2001, 2004) (see Figure 1 and 2 in section 2.1).

## 2.6 Transferability of best practice: A conceptual model

There are several actors which have the potential to serve as conductors of knowledge between two national contexts. For the purpose of this thesis, the model outlined below (Figure 7) is only concerned with the successful replication of practices within urban freight distribution. The involved actors have therefore, upon the authors' discretion, been classified into an institutional domain (i.e. the entirety of the regulatory and legal landscape which authorise the implementation of a given measure), an organisational domain (i.e. the totality of commercial organisations which are directly dependent on the provision of means of mobility for the effective running of their operations) and agents (i.e. all stakeholders of international knowledge transfer, excluding those that pertain to the formerly-mentioned domains, and which lack implementing capability but may influence the process through indirect means), respectively.

(1) Looking at the institutional sphere, practices or measures obtained from a foreign context may come directly through superimposition from one institutional context (or city) to another, but plausibly also directly but with necessary adjustments. (2) Likewise, sharing of knowledge in the organisational domain may occur via intra- or inter-organisational channels in a similar fashion. (3) The transfer may also be indirect through a mediating actor which role can best be described as an agency, without any implementing capability. The indirect transfer may be, however not necessarily so, initiated by institutional or organisational actors. (4) Regardless of how the best practice knowledge enter the receptor context, the presence of a certain degree of coordination between the institutional and organisational domain can be expected to exist in order for the successful uptake of an imported practice, solution or measure. This coordination or information exchange can occur through direct consultation between actors from the institutional and organisational side. (5) Indirect means of coordination include, inter alia, discussion forums or platforms where representatives from the three actor groups (however, all may not be represented) meet and exchange their ideas. Additionally, transferability can take place indirectly through what Macário & Marques (2008) describes as "osmosis", referring to that when a practice or policy is transferred to a new context, it is subject to various influences through a number of informal channels and sources of indirect or direct contact (e.g. site visits, data collection via the Internet, telephone, or certain diffusion programmes). This osmosis effect stands in contrast to superimposition from an originator to a receptor context, and it allows cities to draw from each other's experiences and their knowledge to be filtered either through a city in the local context, or through a city in a foreign context. As the adoption of the practice becomes established, it is expected to be more widely accepted, and gradually it becomes part of the norm.

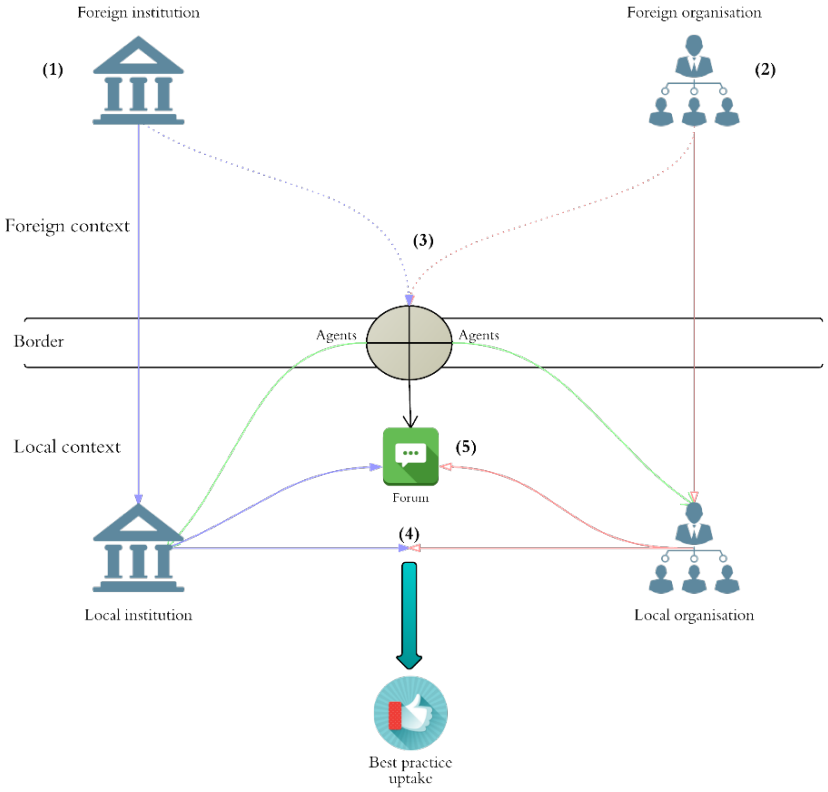


*Figure 7: Knowledge transfer between dissimilar contexts. Source: Compiled by the authors.*

### 2.6.1 Conceptualising knowledge transfer

In order to conceptualise and provide a structured approach to this research, a set of propositions has been developed based on the conceptual model presented above. The propositions cannot be viewed in isolation as instruments to address the research question, but must be considered in relation to the actual context of investigation. These propositions are set out with the intention of guiding the analytical discourse and subsequently also the conclusions extracted thereof.

#### *2.6.1.1 Propositions*

A main strand in the transferability literature has tended to emphasise the role of state actors in the exchange process; hence, researchers have had a strong inclination towards focusing on the underlying mechanisms within and between the nation-states that are engaging in such processes (Stone, 2001, 2004). Accordingly, "policy transfer" has largely been viewed as a two-state-affair, implying a direct transfer process between originator and receptor states. Most scholars seem to be unanimous in the opinion that the viability of transport best practice relies on a great number of economic, socio-cultural and political factors (De Jong, 2008; Gudmundsson et al., 2005; Minken et al., 2003; Macário & Marques, 2008). In this regard, the institutional arrangements of

origin and target context, respectively, are particularly accentuated when assessing the feasibility of cross-national lesson-drawing. A lack of compatibility between the transfer-parties is thought to depend on differing capacities of authorities to coordinate, finance, regulate and implement interventions, where instances of unsuccessful transfer in many cases can be attributed a lack of fit between formal and institutional structures of the originator and receptor (De Jong, 2008; Gudmundsson et al., 2005). In a partial response to this issue, Macário & Marques (2008) developed a normative framework for the transferability process which underlines many of the delicate issues that should be accounted for when assessing the potential of transferring a given practice or measure. In the framework, the researchers stress the decisiveness of adjusting, packaging, and dimensioning the measure so as to fit the target context. From the above discussion, the following propositions can be formulated:

***Proposition 1a.*** *Knowledge of best practices is transferred between institutions from a foreign context to the local context directly by superimposition.*

***Proposition 1b.*** *Successful transfer largely depends on the fit between formal and institutional structures of the originator and receptor contexts.*

Intra- and inter-organisational knowledge transfer is an increasingly used means by which MNCs seek to attain competitive advantages vis-à-vis their international competitors. Scholars have regarded transferability as a key strategic dimension paramount for both the individual corporation and its relationships with external companies. Knowledge that has been accumulated in one place can be found useful in other parts of the same corporate umbrella, and the competitive advantage derived from transfer is considered to depend upon the firm's ability to facilitate the exchange process (Wijk et al., 2008; Spender, 1996; Birkinshaw and Hood; 1998; Rugman and Verbeke, 2001). Out of this discourse, the following proposition can be developed:

***Proposition 2.*** *Organisational knowledge chiefly enters the receptor context through formal means of dissemination.*

In connection to Proposition 1, as put forth by, inter alia Scholte (1996), the constant emphasis on the dynamics within the nation-state has largely overlooked the fact that knowledge can be disseminated without state involvement. Congruent with Stone (2001), so-called "exchange agents" operate as knowledge brokers without ties to neither receptor nor originator context. These agents consequently appear to serve as mediators in a complex web of knowledge dissemination, and although bringing in new knowledge, the authority to implement it is restricted to the public sphere. Nevertheless, according to Stone (2001), agents have identified the need to complement the institutional domain in areas where it lacks expertise. What is more,

given the importance of public-private interaction, such interaction is crucial for agents when aiming to achieve effective implementation. From this, the following propositions can be derived:

***Proposition 3a.*** *Agents serve as conductors of knowledge, bringing in novel ideas and concepts to the local context, merely supporting the transfer process.*

***Proposition 3b.*** *It lies in the interest of the agent to encourage and mediate interaction between the institutional and the organisational domains.*

In regard to sustainable urban freight solutions, and given the generally weak public-private interaction (UNHABITAT, 2013), not much indicates that the domains engage in exchange regularly during the dissemination process. In the literature there is a strong state-centrism that pertains to knowledge dissemination (see e.g. Scholte (1996) and Stone (2001)) which underlines the segmentation of knowledge transfer channels. To refer to what was briefly mentioned earlier, as emphasised by Allen & Brown (2012), the promotion of PPP is crucial when aiming to create sustainable urban transport, and when introducing novel ideas from a foreign context, such interaction could be argued to be even of greater importance; this especially given the challenges related to the transferability of urban sustainable measures between heterogeneous institutional domains. Against this background, the following proposition has been developed:

***Proposition 4.*** *After having entered the local context, the knowledge needs to be exchanged among actors from the different domains, in order for the imported practice to be successfully adopted.*

# 3. Methodology

*This chapter outlines in detail the research methodology of this study. It explains the research approach taken, how the empirical data was collected, as well as how quality, credibility and validity is assured throughout the study. The chapter concludes with an overview of the analytical process of this investigation.*

## 3.1 Research approach

Since only a paucity of research has been centred on the actual use of cargo cycles in last-mile logistics, this thesis sets out to gain a deeper understanding of the phenomenon. Due to the lack of in-depth knowledge in this particular, context-dependent field, this thesis fits well within the frame of an exploratory case study, where the objective is to gain insights into how a specific best practice can be transferred between two largely dissimilar contexts. According to (Yin, 2003), "how"-questions are more exploratory in nature and more likely to fit the case study profile. The approach is applicable since this type of research mostly deals with causal links that must be observed over time, rather than purely looking at incidents or frequencies (Ibid).The outcome of the type of study this thesis is concerned with is not pre-defined in the initial stage of the research, but gradually becomes clearer during the process of data collection and analysis; as a result, it is possible to gain a solid knowledge-base which can be applied to future research (Sreejesh et al., 2014). When exploring a relatively young research field where only limited insights of the investigated phenomenon exist, a qualitative approach is preferred (Ghauri & Grønhaug, 2005). The purpose of qualitative research is to describe an observed reality and, based on a contextual angle, provide findings and results (Merriam, 2014). Furthermore, for the purposes of this thesis, a case study approach is appropriate since it focuses on a "*phenomenon of some sort occurring in a bounded context*" (Miles & Huberman, 1994, p. 25), and it is an empirical inquiry that investigates a phenomenon within a real-life context (Ibid.). Merriam (2014) draws from Miles and Huberman's (1994) argument and claims that the presence of boundaries is paramount for research to qualify as case study. As this paper sets its focus on issues of transferability of best practice between two institutionally distant contexts, based on empirical findings from a limited number of people in a closed context, it falls within the scope of a case study. A case study is also applicable to research that aims to answer questions such as "how" and "why" (Merriam, 2014); thus, it is in line with the questions posed in this thesis.

Contrary to most qualitative research which tends to be inductive, meaning that the researcher collects data in order to build concepts or theories (Merriam, 2014; Bryman & Bell, 2011), this thesis takes a more open approach to the research question, involving both inductive and deductive reasoning. Because the applied conceptual model developed in section 2.6 did not exhaustively account for the empirical findings, questions were adapted accordingly resulting in a

revisited framework that is presented in the final part of the conclusion (see section 6.2). By repeatedly returning to the theoretical frame throughout the research process, this research uses an abductive approach which is illustrated in the figure below:

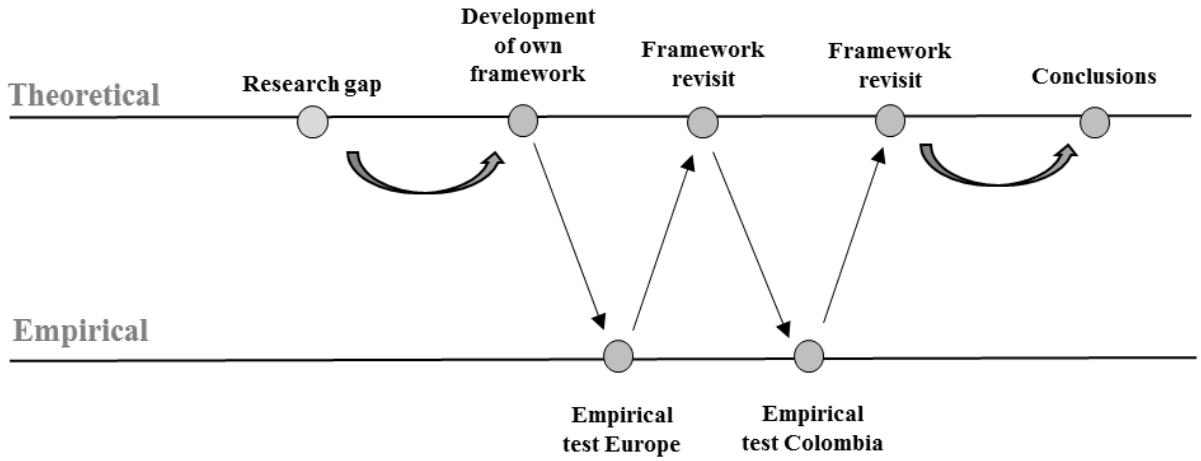


*Figure 8: The abductive approach. Source: compiled by the authors.*

The abductive stance is closely aligned with hermeneutical reasoning, which is crucial in ensuring the quality of a case study. Hermeneutics, and perhaps also double-hermeneutics, is central when studying a real-life context. Hermeneutics emphasises interpretation as a starting-point in order to understand the deeper, possibly causal explanations for a phenomenon (Marschan-Piekkari & Welch, 2011; Blundel, 2007). As illustrated in the figure 8, not only is it stressed that theoretical considerations should be applied to the empirical findings, but the researchers should also continuously revisit and scrutinise the initial theoretical underpinnings after having gained new insights during the research process. Hence, the theory was "matched" against the observed reality on a continuous basis throughout the entire process. Consequently, the final part of this thesis culminates in a revised and recalibrated model in an attempt to account for the inadequacies of the initial model (see section 6.2).

## 3.2 Research design

According to Bryman & Bell (2011), a research design provides a necessary framework for collecting and analysing data and is therefore a crucial aspect to consider. In this case, the research design is of particular importance given the immature state of the field. According to Merriam (2014), prior to collecting data, it is imperative to make thorough preparations, especially so when applying abductive reasoning. Thus, based on the theoretical frame of reference set out in section 2, an a priori model was conceived in order to conceptualise and obtain a pre-understanding of the specific theme. This conceptualisation has repeatedly been returned to throughout the research process.

### 3.2.1 Sampling

Given the gaps of best practice transfer and sustainable last-mile solutions in the extant literature, this thesis is an effort to delineate the transfer process of one such practice from the European to the Latin American context, or more specifically to Bogotá. The underlying reasoning for isolating the case to these two contexts is that it facilitates the answering of the study's research question. In accordance with Welch & Piekkari (2006), isolating the research to a single case study is the most effective way under resource and time constraints. What is more, although the overarching aim is to examine how knowledge between two heterogeneous contexts can be transferred effectively, the scope of this research is further limited to the study of only one best practice solution, namely the use of commercial freight cycles for last-mile delivery.

Furthermore, in order to build a case and to add value to the empirical findings it was essential to acquire a thorough understanding of the European context. To study the European context, in particular, was necessary since Europe lies in the forefront of commercial freight cycling (Meyer & Meyer, 2013). Shortly after this research was initiated, it could not only be concluded that the transferability of sustainable last-mile solutions is a highly under-explored research area, but the concept of commercial cargo cycling has been almost completely neglected by academia as a potentially viable "green" solution (see Schliwa et al. (2015) and Lenz & Riehle (2013) for two exceptions). Consequently, in order to build a case for, and to gain an understanding about the cargo cycle concept, important stakeholders of the practice in Europe were identified and approached. Although there are various initiatives present in Europe, the European Cycle Logistics Federation (ECLF) and DHL Express were singled out as key actors to include in the research as both are considered to be pioneers within the field, and they could further provide two important perspectives highly valued to this research. Moreover, with assistance from Dr. Edder Velandia Durán from La Salle University in Bogotá, who has a wealth of knowledge and expertise within the field of urban sustainable mobility on the local level, crucial actors in the Colombian context could be identified and contacted. Upon arrival in Bogotá, an interview schedule was prepared. Academic actors who were believed to hold valuable insights to the specific area, alongside key representatives from the public sector who work with these issues on a daily basis, were identified. Additionally, several private actors were singled out, especially consulting firms which work with the cross-border dissemination of sustainable mobility solutions. What is more, given that a number of interesting sustainability initiatives have featured the political agenda in Bogotá in recent years, influential policy-makers were contacted in hopes that they would be able to shed light on the complex situation in the city. Early on in the research process, representatives from the NGO-side were approached to get another

perspective on the various actors' roles in urban development, not least that of non-state organisations which contribute to bridging the gap between the private and public sector (Stone, 2001; Nedley, 2000). The rationale behind including a wide spectrum of diverse actors was that these could provide contrasting views and experiences of the same phenomenon.

### 3.2.2 Data collection methods

The empirical data was collected through several primary and secondary sources. To a large extent the empirical findings are based on, but not exclusively limited to, a field study undertaken in Colombia. However, in order to gain a general understanding of freight cycling and how its use could potentially be extended to the target context, two interviews were conducted in Europe with key actors representing both the private and the public sphere. The empirical data was further gathered through various formal interviews in the target context. Early on in the data collection process, notable personalities from academia were interviewed, as well as experienced representatives from the NGO-side. Subsequently, key experts from the policy-side (e.g. Ministry of Transport, the Secretary of Mobility and high-profile politicians) were interviewed. Additionally, various informal interviews and conversations (both with previous interviewees and new respondents) were simultaneously held in Bogotá so as to better make sense of the local environment (see Appendix 6 for a full interview list). Although the analytical framework of this particular study takes an institutional–organisational perspective, it was imperative to gain a deeper level of insight of the local setting in order to adequately contextualise the studied phenomenon.

Given that the chosen area of investigation is at an infant stage, and that no research as of yet has been conducted in this field, this thesis explored uncharted waters. Since it in advance was difficult to determine precisely what actors would be most relevant to include in the study, as well as to determine the prospects of accessing these, *"snowball sampling*" was viewed as the most practical and convenient method for expanding the participation of key informants. Because many of these actors are not easily accessible to the general public, our newly-found contacts in Bogotá assisted the research by opening their wide contact network to us. In short, to make use of analogy, our approach rested on the following reasoning: *"by asking a number of people who else to talk with, the snowball gets bigger and bigger as you accumulate new information-rich cases*" (Patton, 2014, p. 298). Thus, after getting acquainted with various actors and respondents throughout the research process, it came natural to make use of their often extensive social networks to access new contacts, who perhaps could offer greater insights into the researched phenomenon and who also could point us in new directions. This was an important part of the investigation since many actors (politicians in particular) were high-profile and thus difficult to access. In total, 17

interviews (15 formal and two informal) were held with 17 respondents, two in Europe (VoIP-call), 15 in Bogotá, Colombia (face-to-face), as well as one conducted via e-mail correspondence. Two of the interviews in Colombia were of informal character, and can be considered as consultations (Business Sweden in Bogotá). Nine interviews were conducted in English and eight in Spanish. Two interviews were held through Skype (VoIP-call), since the respondents were based in Amsterdam and London. The average length of the interviews was 60 minutes, ranging from 30 to 100 minutes. Table 1 below summarises the interviews conducted. For a more comprehensive interview-list refer to Appendix 6, where information regarding the exact date, time, location and language-use etc. is stated.

| Respondent | Organisation | Location | Respondent | Organisation | Location |
|---|---|---|---|---|---|
| **C. López** | The Colombian Senate | N/A | **C.F Urazán Bonells** | University of La Salle | Bogotá |
| **G. Armstrong** | ECLF/Outspoken Delivery | Gothenburg/ Cambridge | **E.A Velandia Dúran** | University of La Salle | Bogotá |
| **A. Melse** | DHL Express | Gothenburg/ Amsterdam | **A. Jara** | CRITERIA | Bogotá |
| **J. Cordoba** | La Ciudad Verde (NGO) | Bogotá | **R. Sandoval** | Urban Transport Advisor: House of Representatives (Congress) | Bogotá |
| **G. Prieto** | University of the Andes, Chamber of Commerce (Colombia) | Bogotá | **J.C Agudelo Moscoso** | Ministry of Transport | Bogotá |
| **A. Vergara** | Secretary of Mobility | Bogotá | **A.F. Archila** | LOGYCA | Bogotá |
| **D.P. Rodríguez** | Secretary of Mobility | Bogotá | **G. Sotta** | Business Sweden | Bogotá |
| **E.M. Cruz Márquez** | Secretary District of Mobility | Bogotá | **A.M. Rodríguez** | Business Sweden | Bogotá |
| **J. Ortiz** | Co-founder Ciclovía | Bogotá | | | |

*Table 1: List of respondents (in summarised format).*

### 3.2.3 Interview protocol and interview process

In order to get a clearer view of this under-explored phenomenon, a decision was taken to include strategically important actors, both in the European and the Colombian context, who possessed experience and knowledge regarding the concept. The interviews conducted within the confines of Europe were conducted in English, whereas the ones carried out in the Colombian context were mostly held in Spanish. No translator was needed since one of the researchers is fluent in Spanish. With the interviewees' permission, all sessions were recorded onto digital audio and thereafter transcribed verbatim, immediately or shortly after each interview so as to decrease the risk of losing important data.

All conducted interviews were of semi-constructed, open-ended nature, supported by an interview guide. This constellation allows for more flexibility and also enables a more open and insightful discussion regarding the topic at hand (Merriam, 2014). The underlying reasoning for using this approach was that it made it possible to stay on track and keep the interview clear and organised, but at the same time give the respondent the freedom to elaborate more fully and

provide important information that otherwise would have been hard to pin-point. Due to the generally low proficiency-level in English in Colombia, the use of local tongue was necessary for successfully conducting this research. Being in command of the local language entailed various advantages for the researchers as it could help "open doors" and "establish trust" (Andrews, 1995). Given the applied use of snowball sampling, speaking the local tongue was also beneficial for networking and accessing new respondents and, according to (Welch & Piekkari, 2006), it also provides more authentic answers. The interviews in Spanish were directly transcribed and translated by one of the authors.

In order to align the posed questions with the theoretical framework, interview guides were designed in advance, before carrying out the interviews (see Appendices 7 to 11 for the interview guides). The interview scripts for the Colombian context are presented both in Spanish and in English. Since respondents from various contexts were consulted, the interview guides were customised so as they would fit to the respective setting. This was important in order to draw from their expertise in their particular field of practice, i.e. the academic, policy, and the business perspective. Although a snowball sampling method was used, before undertaking the field study, key respondents that could add value to the study were identified (see section 3.2.1); however, this list was modified throughout the data collection process since new contacts were acquired that were not available at the outset.

### 3.2.4 Empirical gathering and validity

One important aspect of qualitative studies is that they are limited by the fact that the researchers are the ones gathering the data and performing the actual analysis; consequently, this gives rise to concerns about subjectivity (Bryman & Bell, 2011). Furthermore, being a study of qualitative character, it is imperative to consider aspects of validity throughout the whole process. The term "internal validity" relates to the extent in which the research findings match reality. According to Andersen & Skaates (2004), there are several tools to increase validity of a study, e.g. the use of various sources of data, as well as conducting multiple interviews and observations. Bearing this in mind, the authors of this thesis have taken a number of actions with the intention to enhance the overall validity of the research, where triangulation served as such a means. As put forth by Merriam (2014), the term triangulation implies the use of different sources of data in order to cross-check the information through interviews, observations and documents. What is more, various people were interviewed on the same topics so as to verify the information obtained and increase the validity. On that note, the case study allows the researchers to extract different types of data from diverse sources and opinions, which not only contributes to achieving a holistic understanding of the phenomenon, but also results in enhanced validity of the research (Ibid.).

Apart from this, the researchers conducted several informal interviews and made observations in local context in order to increase the contextual understanding (see Appendix 6 and section 3.2.2). Last but not least, the research steps, e.g. interview guides, transcripts and recordings are documented and stored in order to be easily available for further scrutiny. If necessary, this facilitates the reconstruction of the research process (Bryman & Bell, 2011).

Furthermore, since the researchers could communicate with the respondents using the local language, it is likely that the negative effects of the cultural barriers decreased. Despite this, as put forth by (Welch & Piekkari, 2006), cultural barriers sometimes serve as barriers in communication. This is something that was taken into consideration in the preparation of this field research and was kept in mind while conducting the interviews. Nevertheless, the fact that the respondents could express themselves in their native language added value to the study since one could come across information otherwise not available.

## 3.3 The analytical process

By drawing from the validity gained using an abductive approach, the research question can be answered in a more comprehensive manner (Ghauri, 2004). A central part of this investigation relates to the constant and inevitable interaction between the theoretical framework, empirical findings and analysis. First and foremost, based on the theoretical frame of reference, a model was developed by the researchers to capture the initial conceptualisation of this under-studied phenomenon (see section 2.6). Thereafter, in order to bolster the abductive process, facilitate the transition between the various chapters of this thesis, as well as to pilot the reader through the process, a set of propositions were developed based on the conceptual model. Since abduction can be defined as: "*a path of critical reasoning in which conjectures follow surprises*" (Van Maanen et al., 2007, p. 1149), it was crucial to continuously revise the "reality"; hence, these propositions served as an important basis on which the subsequent empirical and analytical parts could be structured upon. In accordance with Bryman & Bell (2011), essential conclusions were drawn that facilitated the discussion and the answering of the research question. By repeatedly encountering differences and similarities between the preconceived conceptual model and the observed reality, a more complete understanding of how knowledge can be transferred between two ostensibly dissimilar contexts gradually emerged. What is more, the used approach allowed the researchers to build a case in support of the introduction as well as the implementation of a sustainable mobility best practice originating in one of the two contexts. Congruent with Ghauri (2004), by constantly reviewing and making the necessary adjustments to the initial conceptual model (through the use of propositions), the validity of this study was enhanced.

The analysis chapter of this thesis is constructed in two parts: (1) the first part discusses the on beforehand constructed propositions; whereas (2) the second part looks into the viability of introducing and developing cargo cycles as a sustainable means of transport in Bogotá. Moreover, against this structure and by conducting a case study on the topic, a premise for knowledge transfer between the two contexts is established, which further lays the foundation for the revisited conceptual model presented in section 6.2. Based on the findings that follow from having discussed the propositions through the lens of freight cycling in Bogotá, a more valid and accurate understanding of knowledge transfer of best practices between these two institutionally heterogeneous contexts can be obtained. From these results, the final conclusion of this thesis will answer the main research question by addressing the sub-questions, drawing from the discussion chapter, and subsequently present a revisited conceptual model as well as ending with policy recommendations. Accordingly, (1) sub-question one follows: *"how is best practice knowledge transferred between two institutionally heterogeneous contexts?",* and addresses the theoretical aspects of this research, whereas (2) sub-question two asks: *"what are the various stakeholders' perception on the use of cargo cycles in Bogotá and what are the challenges and opportunities in this particular context?"*, and attempts to answer the specific challenges and opportunities found in the receptor context, and (3) sub-question three follows: *"what are the prospects for future implementation of a cargo cycle concept as a last-mile solution in Bogotá?"*, aimed at understanding, not only the prospects for, but also how best practice knowledge can be transmitted and implemented in the context of Bogotá. This structure facilitates the answering of the main research question in a relevant and resonant way.

# 4. Empirical Data

*This chapter is divided into two parts. Part one presents a background to knowledge dissemination and cargo cycle use in Europe, as well as the selected primary data obtained in this context. The second part starts out by introducing Bogotá, providing a useful basis for understanding the case, and is followed by the encountered empirical findings. By using the European experience as a point of departure, this chapter aims to give a comprehensive account of the transfer of best practice, illustrated through the case of freight cycling in Bogotá. The section concludes with a useful table that succinctly summarises the main findings.*

## 4.1 State-of-the-art of cargo cycling in Europe

### 4.1.1 Urban development and knowledge dissemination in Europe

In contemporary Europe, road transport is responsible for roughly 40 per cent of carbon dioxide emissions (CIVITAS, 2013), and although European policy-makers in recent years have sought to address these challenges in support of "greener" means of transport, the concept of sustainable urban logistics has largely been neglected (CIVITAS, 2013; Taniguchi & Thompson, 2014). In

many parts of the developed world, vehicle kilometre of travel (VKT)[4] has either stagnated or turned negative (Taniguchi & Thompson, 2015), and the motorised vehicle markets are also saturated in many parts of the developed world (Millard-Ball & Schipper, 2011). Consequently, in light of increased environmental and social externalities triggered by decades of heavy motorisation, many cities in Europe are to a large extent moving towards alternative methods with lower negative impact on the local environment. This has led to a burgeoning number of European Commission (EC) and EU-funded initiatives (e.g. BESTUFS, CIVITAS[5], IMPACTS[6] and TURBLOG) that not only deal with the environmental issues related to freight transport throughout European cities, but also engage in the accumulation and dissemination of knowledge and best practices derived thereof. Some of these projects also accumulate and disseminate best practice in the field of sustainable urban freight solutions on the inter-continental level. Several of these EU-funded initiatives provide guidelines for how to best identify, leverage and share best practice, and in this context, the BESTUFS-project has taken a leading role. Founded in 2000, BESTUFS was a pioneering initiative in the European context that sought to build a platform for the dissemination of sustainable urban freight solutions, and subsequently, more than 100 demonstration projects have been identified through BESTUFS today (BESTUFS, 2013). Other notable examples of importance include the CIVITAS-initiative (CIVITAS, 2013), IMPACTS, (IMPACTS, 2015), Smartset (Smartset, 2015), the European Cycle Logistics Federation (ECLF) (ECLF, 2015a), and the TURBLOG-project. Moreover, the IMPACTS and the TURBLOG-initiative stand out due to their global focus aimed at extending the research and knowledge dissemination, not only within Europe, but also from Europe to Latin America (IMPACTS, 2015; TURBLOG, 2015).

### 4.1.2 Selected European projects

In order to evaluate the viability of cycle freight, a number of private initiatives (although in many cases publicly funded) have emerged in recent years. A comprehensive account of such experimental projects is given by Hülsbusch (2012). In addition, Lenz & Riehle (2012) fill in an otherwise-missing empirical gap and determines the prevalence of cycles for cargo transport as well as the resulting user-experience.

#### *4.1.2.2 Pilot projects conducted by private enterprises*

Based on publicly available information, pilot studies on cycle freight have been conducted by a handful of private companies. Some examples of pilots include for instance United Parcel Service

[4] A measure of traffic volume. VKT = Number of Vehicles × Distance Travelled

[5] CIty-VITAlity-Sustainability, an EC-initiative for cleaner and better transport in cities.

[6] IMPACTS is an international network of European, North American and Latin American cities established as a forum for exchanging information about urban mobility and transportation policies" (IMPACTS, 2015).

(UPS) and Dynamic Parcel Distribution (DPD). Both companies have conducted successful pilots with cargo cycles in Germany where their respective aim was to evaluate the potential of using freight cycles as a complement to the existing vehicle fleet, this especially in areas otherwise inaccessible to larger conventional vehicles. The two pilots proved to be rather successful, both concluding that efficiency gains were made from bypassing the need for parking, and through improved utilisation-rates, as well as due to shortened and better optimised delivery routes (Lenz & Riehle, 2013; Riehle, 2012) (see Appendix 1 for a list of privately conducted projects).

#### *4.1.2.3 Publicly funded pilot projects and studies*

Until today, there has barely been any publicly-backed initiatives on the use of cargo cycles at the national level. However, at present, individual projects are appearing, mainly in the field of electrical mobility[7]. In contrast, more ambitious and coordinated action has come at the supranational level, and perhaps the most interesting initiative as of yet was the "CycleLogistics"-project of the European Cycle Logistics Federation (ECLF), financially supported by the European Commission. This initial baseline study was conducted between 2011 and 2014 and sought to promote the viability of the cargo cycle as a contemporary and future transport solution for delivery and freight services. What was conceivably one of the most important outcomes of the initial study was that it identified that as much as one-fourth of commercial goods (small items, parcels, consignments and similar), currently transported by motorised lorries and vans, could be shifted onto cargo cycles (ECF, 2014). After finishing the initial study, the ECLF launched a follow-up project under the name "Cyclelogistics Ahead" which runs from 2014 through 2017. Apart from supporting existing initiatives, as well as raising awareness within the private sphere, the objective of this project is to stimulate municipalities to create favourable framework conditions that facilitate the continued development of emission free cargo cycles in Europe (ECLF, 2015a) (see Appendix 2 for a list of publicly funded projects).

### 4.1.3 Selected examples from Europe

#### *4.1.3.1 Outspoken Delivery*

Established in 2005, the Cambridge-based logistics operator Outspoken Delivery is one of the largest cycle-based delivery company in the UK. The company has witnessed much success due to the rather limited accessibility to the city centre and the need to find novel and innovative solutions for delivering freight in the urban area. Mr. Armstrong, who works for Outspoken Delivery, and is also one of the founders of the ECLF, states that the cargo bike concept has

[7] One such example was the "I substitute a car"-project (German: "Ich ersetze ein Auto") which commenced in April 2012 and ran until June 2014, funded by the German Federal Ministry for the Environment.

potential to be introduced in many places, with particular reference to mega-cities[8], e.g. London, Berlin or Paris. Thus, based on his experience, the places where cargo bikes have the best implementation prospects are in highly congested, dense urban areas with limited accessibility for larger and more cumbersome vehicles (G Armstrong 2015, pers.comm., 4 March).

#### *4.1.3.2 The European Cycle Logistics Federation*

The ECLF which was founded in 2012 in support of the European Commission, works to facilitate global networking and to encourage international exchange of knowledge regarding the cargo cycle. As of now, the ECLF has about 160 members and it works as an organised non-profit lobby group, serving as a collective voice for the stakeholders of cycle logistics (ECLF, 2015a). Mr. Armstrong from Outspoken Delivery is also credited as a co-founder of the European Cycle Logistics Federation. When the first Cycle Logistics project[9] commenced, Outspoken Delivery was one of the only commercial organisations involved, whereas the rest of the actors in the project were government departments and consultancies that aimed to promote cycling in general. What happened was that during the first project, representatives from Outspoken Delivery got acquainted with many other similar operators, and they soon realised that some type of organisation was needed in order to promote the use of cargo cycles which, in turn, resulted in the foundation of the ECLF. The freight cycle industry is right now at an infant stage, and the awareness of the concept is relatively low, something which makes the ECLF an appealing platform for diffusing the concept (G Armstrong 2015, pers.comm., 4 March).

#### *4.1.3.3 The DHL Express Experience*

DHL Express is one of three divisions of the Deutsche Post DHL Group. Mr. Arne Melse, Operations Field Support Specialist at the division has been among the strongest supporters of the use of cargo cycles in the company. Given the opportunity to set up a research programme to examine the freight cycle's potential for DHL Express, he set out to model how and why bike couriers could have an advantage in Amsterdam, as well as how the concept could be replicated to other cities. Prior to Amsterdam, DHL Express had not used cargo cycles at a corresponding scale. Initially, the concept was only rolled out in the Netherlands, however, after witnessing its success, the concept was further replicated throughout Europe (A Melse 2015, pers.comm., 25 March).

[8] In this context a mega-city is simply referred to as a large urban conglomerate with more than 2 million inhabitants (approx.), although the definition on mega-cities vary (from over 5 million to over 20 million inhabitants) (UN-HABITAT, 2012).

[9] Refer to section 4.1.2.2 and Appendix 2 for more details on the ECLF and their projects.

### 4.1.4 Lessons learned: Analysis of transferability

The respondents put forth the importance of networking and knowledge sharing when promoting and enhancing the cargo cycle concept. Outspoken Delivery regularly appears in media, newspapers, conventions and conferences, where they publish articles and speak about their experiences and their work. What is more, one outcome of the baseline study "*Cycle Logistics*", was the development of a programme called "Setting up and running a cycle-based delivery business", a workshop that is held throughout Europe where people who would like to get involved with cargo cycles, or perhaps set up their own enterprise, get the chance to learn about freight cycling (G Armstrong 2015, pers.comm., 4 March). As to the ECLF, it views establishing lines of communication with municipalities and local authorities as one of its main responsibilities. The ECLF also organises the annual Cargo Bike Festival which is a forum for various actors (including DHL Express) to meet and exchange their ideas and experiences. At this stage, such forums are of much importance given that the cargo bike concept is a relatively new phenomenon as a last-mile solution for commercial firms (G Armstrong 2015, pers.comm., 4 March). As to the replication of the concept outside the EU, Mr. Melse states that as far as he knows, they (DHL Express) have never (for the purposes of cargo cycling) been in contact with the Latin American branch of the organisation; nevertheless, they have been in contact with representatives in the United States, the Middle East and China, but only briefly. He also stresses the importance of what he refers to as "bike enthusiasts", in the receptor contexts, in order for the concept to gain ground A Melse 2015, pers.comm., 25 March).

#### *4.1.4.1 The Role of the Local Authorities*

When DHL launched the concept in Europe it proved to be an overall success. However, in some cities in Greece, for instance, the process turned out to be really slow. Mr. Melse referred to this as the *"acceptance bit",* referring to that not all municipal governments are as receptive as in, inter alia, the Netherlands: "*the conditions are already here, there are bike lanes, infrastructure etc. It is already in place. However, in a lot of other European countries this is different"*. Mr. Armstrong adds to this by concluding that the response from the policy-makers have almost been negligible, likely due to the fact that these actors prioritise other issues, such as public transportation (G Armstrong 2015, pers.comm., 4 March). Mr. Melse believes that policy-makers could do more to support the logistics providers, and he lifts forward examples of consolidation centres that, still, are located on the outskirts of the cities. Moreover, the policy-side could further assist the private sector by setting restrictions on city access or by introducing e.g. pollution charges (A Melse 2015, pers.comm., 25 March). Moreover, Mr. Melse explains that they are presently having a dialogue with local authorities in the Netherlands to help them phase out motorised vehicles from the city

centres. Nevertheless, worth mentioning is that DHL did not replicate the cycle project in the Netherlands because the policy-side had created notable incentives, but rather because it proved to be more efficient than the available alternatives, thus leading to cost-savings (Ibid).

#### *4.1.4.2 Challenges and Opportunities*

##### 4.1.4.2.1 Complex logistical chains

Currently, the logistical processes are centred on the vans. Since cargo cycles do not commence their distribution routes at the same place as the vans, there has to be an extra link in the chain which has its implications. For one, it renders a more complex distribution chain and thus opens up for potential errors (A Melse 2015, pers.comm., 25 March). Therefore, Mr. Melse acknowledges the need for installing new consolidation centres, something which DHL Express now has introduced in all the cities where freight cycles are operating. Furthermore, in order to satisfy the economic criteria, for every introduced cycle a van has to be brought out of the fleet, otherwise there will be no cost-savings. Therefore, the cargo volume previously carried by the replaced van has to shift onto the freight cycle. DHL Express' approach to this has been to let their different means of transport act in concert, where the vans distribute the larger consignments and the cycles deliver the smaller (A Melse 2015, pers.comm., 25 March).

##### 4.1.4.2.2 Perceptions and Attitudes

Both Mr. Melse and Mr. Armstrong put fort perception as a crucial aspect to the cargo bike concept. Drawing from DHL's experience outside the Netherlands, one critical factor in the roll-out phase has been to *"convince the conservatives"*. People may exhibit scepticism towards the concept, partly because they are not familiar with it, and partly because they do not think that the cargo cycle is a viable option. These are some of the reasons why the roll-out of the concept in the rest of Europe has been relatively slow. Despite this, the green image of the company which the freight cycles provide is an advantage (A Melse 2015, pers.comm., 25 March). When getting in contact with companies, the main response is that *"you are on a two-wheeled pedal bike with a bag over your shoulders, running red lights… as a typical messenger"*. Against this background, Mr. Armstrong further highlighted that there is often an educational process with potential users, yet still, user perception plays an integral role in the proliferation of the concept. However, if the general acceptance of the cycle is high, it will facilitate a shift to freight cycles, something which is reflected in the Cambridge experience (G Armstrong 2015, pers.comm., 4 March).

##### 4.1.4.2.3 The Economic argument

According to the respondents, the cycle is faster than the van, in part due to congestion and in part because a cycle can park just outside the delivery location. The handling of freight is also easier and more efficient (A Melse 2015, pers.comm., 25 March). Moreover, according to Mr. Armstrong, the costs involved in setting up a cargo bike business are relatively minor in

comparison to a business using conventional motorised vehicles, and in regard to operational efficiency, much is gained when bypassing issues related to parking, for instance (see Appendix 3 for a cost-benefit comparison between the cargo bike and the regular van). He further shared his perception that the green credentials of the company seem only to be a concern for the larger companies or for the local authorities. So, in other words, at the end of the day Mr. Armstrong views his company as just another delivery company competing with other delivery companies. Given the use of cycle paths and off-road capabilities, they are not only quicker in congested areas, they also typically work with operational costs close to half of that of the average van-based courier (G Armstrong 2015, pers.comm., 4 March).

## 4.2 State-of-the-art of cargo cycling in Bogotá

Being embraced by a mountain range and given its elevated situation of 2,600 meters above sea-level, the city is and has been rather isolated. Bogotá has during the last 15 years experienced what is often regarded as the greatest urban and cultural transformation of the last decades. Being a city of disaster with lacking infrastructure, security and safety problems, and with the worst qualities of life not only in Colombia, but in the whole of Latin America, Bogotá embarked on a journey of becoming a sustainable global role model (Bocarejo & Tafur, 2013; Verma et al., 2015). Led by visionary policy-makers, and facilitated by the decentralised power structure of the country, Bogotá has attracted attention from policy-makers, multi-lateral organisations and researchers from all of over the world, and is now both an avid best practice adopter and a knowledge disseminator (Verma et al., 2015).

### 4.2.1 Policies covering urban logistics movement

Laws are set on the national level, however, in regard to, for instance, cargo traffic, these laws provide rights rather than obligations to take certain actions. To illustrate, one law provides the possibility for municipalities to establish fees for motorized vehicles to enter the city (Ley No. 105 Art 28, 1993) whereas another allows for larger municipalities to establish fees for high congestion areas (Ley No. 1450 Art 90, 2011). Thus it is up to the local municipalities to actually implement such measures. Cargo transport in Colombia is included in the National Productivity and Competitiveness Policy (NPC) (*Política Nacional de Productividad y Competitividad*), however, what is related to cargo transport is just a branch out of a much bigger picture containing other aspects such as education, investments etc. Currently, non-motorized transport in Bogotá is included in the Mobility Master Plan (*Plan Maestro de Movilidad (PMM)*) implemented in 2006, which is a part of the NPC. It consists of the National Logistics Plan, which in turn, on the Bogotá level, consists of, inter alia, the component Logistics Master Plan. The latter deals more in

detail with urban cargo movement where the aim is to decentralize the cargo flows in the city through specialized infrastructure (e.g. UCCs) (SMB, 2014).

### 4.2.2 Road safety in numbers

Road safety is generally considered to be one of the most, or perhaps the most important factor to take into account when formulating and designing cycling policy, as well as in the development of cycling infrastructure. At present in Bogotá, one cyclist casualty occurs per every 656,000 km travelled; in contrast, in Copenhagen the same figure corresponds to 4.2 million km travelled (IMPACTS, 2015). Coming to terms with road safety issues is imperative in ensuring greater uptake of the use of cycles among *"Bogotanos"*[10], since accidents involving cyclists has shown to negatively influence the public's perception of road safety. Interestingly, however, between 2007 and 2013 automotive increased to close to 1.4 million and motorcycles to approximately 380 thousand, or with 66 and 340 percent, respectively. At the same time, bicycle use increased rapidly, from 280 thousand trips per day in 2005, to over 550 thousand trips per day in 2015. Thus, despite the fact that bicycle use in Bogotá has steadily increased over the last decade, the sheer number of accidents leading to injury or death, decreased alongside the rapid motorisation (see Appendix 4 and 5) (Verma et al., 2015).

### 4.2.3 Bicycle infrastructure

Investing in the construction of cycle paths and looking after its upkeep is crucial to the efficient operation of the infrastructure (Verma et al., 2015). In 2012, it was reported that the current bicycle network in Bogotá extends over 350 km (Durán, 2014). According to a recent study conducted in 2013, 62 per cent of cycle paths were located on sidewalks, some of which were curb side on wide sidewalks. They continue across intersections and are marked with dashed lines; however, these paths are not dedicated bike lanes which essentially means that cyclists share the space with pedestrians, a configuration that is a widely accepted standard in the Latin American region. Although the system recognises the bike, it does, however, introduce a potential "point of conflict" for pedestrian and bike riders, as well as cementing a hierarchy where motorised vehicles are given priority over other forms of transport. Furthermore, 25 per cent of bike lanes were located on boulevards or alongside canals, i.e. car-free zones where motorised vehicles are prohibited; 11 per cent were situated in the median of wider roads; and 2 per cent were "in-road" cycle paths (*ciclocarriles*). In addition, 83 per cent of the network was found to be in good condition (Verma et al., 2015; Durán, 2014).

[10] Spanish: Bogotá residents.

## 4.3 Empirical findings in Bogotá

Colombia in general, and Bogotá in particular, holds a long-standing tradition using the bike and the cargo bike as a means of transportation. Walking down the streets of Bogotá one will in almost all cases be the witness of freight being transported using various types of freight cycles.

### 4.3.1 Urban cargo movement in Bogotá

Each day, around 17,000 freight trucks enter the city of Bogotá, a city where the freight movement landscape differs vastly from that of Europe. In Bogotá, there might be as many as 140,000 micro-stores and over 100,000 distribution locations which could favour the use of cargo cycles (A.F Archila 2015, pers.comm., 24 April). Despite this, motorised vehicles are still responsible for a large share of the urban distribution, however, they operate with poor utilisation rates, often only running half-full, rendering high logistics and operational costs for transporters, as well as competing for public space. As much of urban logistics in Bogotá is characterised by informality and *"single owner, single store-issues"* many of the regulations promulgated by the Secretary of Mobility have failed, according to Mr. Archila, especially the ones promoting night-deliveries.

Although there are policy-plans targeting logistics in general, and cargo movement in particular, no effort has been devoted to urban cargo movement on the local level (E.M Márquez 2015, pers.comm., 13 April; authors' translation), and as stated by Mr. Archila, the regulations regarding restrictions on freight transport is quite shallow. Until recently, urban logistics has almost exclusively been a concern of private enterprises, and according to Mr. Márquez, nor does a broad-based consensus exist on the business level, and it is only the large companies that have created groups that buy zones to use as logistics platforms. Thus, although some large firms might have a distribution plan, that cargo movement in Bogotá is a very complex case. According to Mr. Márquez, much of the freight activity in Bogotá is not carried out using non-conventional cargo vehicles (e.g. freight trucks), but rather motorcycles, cargo-motorcycles, cars, taxis, and cargo bikes. As of today, in the informal sector, only two large firms distribute their products using freight cycles, this mostly in areas where accessibility of motorised vehicles is an issue.

Today in Bogotá there are various levels of urban consolidation centres (UCCs), however, they are not serving in the public interest since they are all established and operated by private firms. These firms locate the UCCs where it best suits them and subsequently also take charge of the administration (E.M Márquez 2015, pers.comm., 13 April; authors' translation; D Pérez 2015, pers.comm., 13 April; authors' translation). Although a policy is formulated which addresses the development of UCCs that serve the public interest, the implementation of this policy is yet to happen, and until then the private firms will continue to operate along the same lines, using

distribution vehicles of their preferred choice. The rationale behind this development is that no clear articulation or interaction exists between the public and private sector (E.M Márquez 2015, pers.comm., 13 April; authors' translation). Important is, however, that the city of Bogotá is currently conducting a study with the overarching objective to investigate the cargo movement in each of the 10 to 15 zones in Bogotá, thus looking at demand and how companies are engaging in these activities in each zone and street. Today these activities are disorganised and no plan has been formulated that addresses the topic. In regard to this study, Mr. Pérez from the Secretary of Mobility added that: *"…in many of these zones we are trying to find strategies, and without a doubt, in many of these strategies the bike or cargo bike could be included".* What they also want to accomplish is a more detailed plan on how several clusters (i.e. UCCs) could be developed throughout the identified problem zones which would further improve the structure and organisation of the cargo flows. When the investigation is complete, it can hopefully be determined in more detail where the freight cycle would best be put to use (D Pérez 2015, pers.comm., 13 April; authors' translation).

### 4.3.2 Feasibility of Cargo Cycling

When first approached with the cargo bike concept most of the respondents are quite surprised, this since no one has ever brought this idea to the table: *"I think that you're the first people who might speak of this subject here, and we're talking about this in English"* (A.F Archila 2015, pers.comm., 24 April). Many of the respondents express their admiration of the "European way" of developing the cargo bike concept in which the ECLF has become a collective voice for the cargo bike concept, however, such a platform does not exist in Colombia as of yet (D Pérez 2015, pers.comm., 13 April; authors' translation). The support found in the Bogotá is exclusively limited to technical support, for example, the provision of an expert. Furthermore, the cargo bike is still not considered as a solution to the problems related to cargo movement. According to Mr. Prieto: "*It [the cargo bike] has always existed here but it has never been like a reason for anybody to start thinking. I think that you guys are one of the few, or perhaps the only ones, that has approached this theme to really study from an academic point of view... and it is very interesting. It has never before been a main area of investigation in this field, there has never been any analysis of the cargo bike or especially not a discussion of this concept"* (G Prieto 2015, pers.comm., 10 April; authors' translation). This is also confirmed by several of the other respondents. Mr. Jara also emphasise that although cargo bikes are not part of the top planning processes in Bogotá: *"…at least now they are talking about freight, which is a big step forward…Now at least, the Secretary of Mobility is more receptive to all these problems related to freight, and there is an ongoing conversation of how you're going to fit the trucks in the city, how you're going to solve some of the congestion"* (A Jara 2015, pers.comm., 24 April). Moreover, in connection to this, Jaime Ortiz

also emphasised the power of the informal world: *"Bikes here are not a new thing…The real use is deeply embedded in the society, basically in the lower income segments, and their movement of goods is a very important piece"* (J Ortiz 2015, pers.comm., 13 April). Despite this, although there are hurdles to overcome, all of the respondents believe that the cargo bike could be a viable solution for tackling some of the problems related to the contemporary urban transport. On that note, from the political sphere, Mr. Sandoval put forward that: *"Nobody has considered and it [the cargo bike] and it is going to take some time for us to research and learn, understand, and use it. But I do see a window of opportunity to be worked on. A really huge window of opportunity"* (R Sandoval 2015, pers.comm., 22 April). Nonetheless, Mr. Márquez believe that through a technical point of view the concept is really feasible, however, since it has never really been considered, the norms or rules regarding the concept are not clear. As of today, there is no policy that has invited any firm to actually use the cargo bike, and although some two large firms have cargo bikes in their vehicle fleet, the concept has not expanded in any other formal way (D Pérez 2015, pers.comm., 13 April; authors' translation; E.M Márquez 2015, pers.comm., 13 April; authors' translation)

In order to push this type of modal change, Mr. Márquez stresses the importance of stakeholder coordination: "*what we see is that the activity is there, but there is no coordination"*. The cargo bike is in use, but to turn it into a standard or a best practice, coordination is crucial: *"The model is established, i.e. the model through the point of view of the 'Logistics Plan' which talks about centralisation of the cargo flows so that large vehicles are concentrated to a specialised infrastructure [consolidation hub]…this is the model, however, although this happens to some extent, it is not coordinated from the policy side."* (E.M Márquez 2015, pers.comm., 13 April; authors' translation).

Today, given the complexity and fast growth of urban Bogotá, policy-makers are forced to look for new and innovative ideas. According to, inter alia, Mr. Márquez, the cargo bike is truly a realistic option in Bogotá, particularly given that the growth-related problems have become more acute. The same view is also held by other respondents from academia (G Prieto 2015, pers.comm., 10 April; authors' translation; C. F Urazán 2015, pers.comm., 17 April), as well as Mr. Pérez at the Secretary of Mobility. The latter also put forth areas where the cargo bike has potential, which are areas where loading and unloading is difficult due to accessibility issues. Some areas in Bogotá are currently being extended to connect to a pedestrian street where only bikes (plausibly also cargo bikes) could enter. Given that Bogotá is a very large city, Mr. Ortiz accentuates the importance of "zoning", meaning that some zones might be better suited for this type of freight transport than others. In order to do so these zones must be subject to restrictions on e.g. speed or entrance of motorised vehicles (J Ortiz 2015, pers.comm., 13 April). Currently, there are various areas in Bogotá that are restricted only to pedestrians or bikes. According to Mr.

Sandoval, Bogotá has initiated the construction of around 45 km of safe pedestrian streets (planned to be finished in 2017). These areas are strongly linked to commercial activities, thus, distribution will have to be reorganised in order to gain accessibility (R Sandoval 2015, pers.comm., 22 April).

### 4.3.3 Augmenting the cargo bike concept

All the respondents are very receptive to this new innovative idea. From the political sphere, Mr. Sandoval believes that the cargo bike could be included in the policy plans: *"I am going to start seriously considering it. And I'm going to suggest to some other people that we do some research, some big research on it, because we have never, ever, ever, ever, considered it! I mean, I'm seriously trying to think of one single meeting, where I have faced it, but no, it never happened"*. (R Sandoval 2015, pers.comm., 22 April). Similar perceptions are also held by all other respondents in the Bogotá context.

#### *4.3.3.1 Pilot projects*

All the respondents believe that various pilot projects are needed in order to improve the perception of cargo bike and introduce it as a sustainable means of transport. Interesting to mention, however, is that it was noted that nearly all of the respondents had not previously considered the cargo bike as a sustainable form of transport. La Ciudad Verde, an NGO that holds an integral role in the bicycle movement, confirms this statement and conclude that: *"Now that you brought up the idea of cargo bikes I will actually propose that we go more into that. This since it is a really good opportunity"* (J Cordoba 2015, pers.comm., 7 April; authors' translation). Nevertheless, many of the respondents call for more research on the topic, and Mr. Cordoba also expresses the need for challenging or putting pressure on a company to use it for a period of two to three months and subsequently evaluate it. Convincing the enterprises that the cargo bike is actually cheaper is something that many respondents accentuate, but it must come in conjunction with incentives directed from the policy side, e.g. various incentives or benefits targeting to the use of sustainable modes of transportation, such as the cargo bike.

#### *4.3.3.2 Positioning of the cargo bike concept*

Due to it being deeply embedded in the informal sector, a recurring thought conveyed across the selection of respondents is that the positioning of the concept must be enhanced. Although the concept has not been given much attention as a sustainable means of mobility, it is slowly gaining more ground. Mr. Prieto further explains that: *"…it does not look so good to have cargo bikes. This is the same pattern that we have seen with the bike in general, that it was for people with less money. Therefore, one have to work much to augment the status of the cargo bike"* (G Prieto 2015, pers.comm., 10 April; authors' translation). At the Ministry of Transport it is put forward that what is needed is the technology from Europe, this since the cargo bikes in Colombia are heavy and hard to manoeuvre (J.C

Moscoso 2015, pers.comm., 24 April; authors' translation. Senator Mrs. López also stresses the lack of sufficient resources and technical capacity as a hinder to the integration of urban sustainable solutions in Bogotá (C López 2015, pers.comm., 3 March; authors' translation), something which was also confirmed by Mr. Jara who claims that policy-makers are always in need of constant technical assistance when wanting to implement new practices (A Jara 2015, pers.comm., 24 April). Mr. Moscoso suggests that tax exemptions on import of European cargo bikes would be a mean from the policy side to promote this, especially since national production is very costly (J.C Moscoso 2015, pers.comm., 24 April; authors' translation). Furthermore, in order to convince the private enterprises one need to show facts and figures regarding the use of cargo bikes (J.C Moscoso 2015, pers.comm., 24 April; authors' translation; A Jara 2015, pers.comm., 24 April). As Mr. Jara puts it: *"There is a huge opportunity, but also a huge challenge, because you have to think how to switch people's minds…you have to develop a cost analysis, and show clearly to the private sector how they are going to be benefitted by this kind of programs…These people think in numbers, all day long. It will be more feasible this way* (A Jara 2015, pers.comm., 24 April).

### 4.3.4 The Institutional domain

What is lifted forward by nearly all of the respondents is the lack of political will, something also confirmed by the Senator Mrs. López, as well as Mr. Sandoval, advisor to political representatives in both the House of Representatives (*Cámara de Representantes*) and in the Senate (*el Congreso*) (C López 2015, pers.comm., 4 March; authors' translation; R Sandoval 2015, pers.comm., 24 April*).* At the Secretary of Mobility, however, Mr. Márquez explains that the department is currently working on a new investigation that aims to develop norms and regulations for the cargo movement in the city centre. On the local level, there are so-called "Partial Plans" (*Planes Partiales*) that deal with the cargo flows in specific zones. Many plans exist that deals with the extended centre, and it does not go unnoticed that it is in this area where most of the conflicts occur (D Pérez 2015, pers.comm., 13 April; authors' translation). These type of investigations are crucial according to Mr. Archila since cargo is largely diverse: *"…you really need to inquire with more depth on what type of cargo that's in there, where is it coming from. How is it being handled? If you want to make better policies"* (A.F Archila 2015, pers.comm., 24 April). What is more, a constantly occurring theme in the urban landscape in Bogotá that is quite similar to the cargo bike concept is the use of informal so-called "*bicitaxis*" (bike-taxis). According to many of the respondents, there have been many takes on trying to formalise this concept. On that note, Mr. Sandoval confirms that, on request of the bike-taxi sector, they have currently succeeded to reach a compromise with the government trying to make it a formal means of transportation. Surprisingly, there is no

resistance from the informal bike-taxi sector: *"Actually, what we face is that they are saying 'please help us!' that's why we are became so eager to solve this problem"* (R Sandoval 2015, pers.comm., 22 April)

#### *4.3.4.1 The view of the role policy-actors*

Many respondents included in this research put forward innovative policy-makers as important drivers to the changes experienced in Bogotá. Mr. Archila thinks that the public sector is crucial when driving for new sustainable urban solutions (A.F Archila 2015, pers.comm., 24 April). Looking back only a few years, Mr. Prieto recall that it has been very hard to get the attention from the public sector (the mayor, the councillor, the senate and so on). Mrs. López at the Senate also confirms this perception, claiming that there are not many politicians dedicated to sustainable urban logistics. Now, however, with the citizen movement and the vast attention from mass-media concerning the bike concept, the public sector is listening (G Prieto 2015, pers.comm., 10 April; authors' translation).

Urban logistics is regulated on a national level, however, *"…when we go down to the Bogotá level, this branch, I don't know if it get lost but at least it loses its importance, unfortunately"*. (E.M Márquez 2015, pers.comm., 13 April; authors' translation). This statement is also confirmed by Mr. Pérez who states that cargo distribution has not been given the importance it deserves, and that there are only few people specialized in these themes. He continues: "…*One thing is that people and policy-makers have tended to think that cargo is something that is the responsibility of the companies and that it does not affect us. But that is a complete lie"*. At the government or policy level, the normal standpoint is to regard it as a problem that only pertain to the private sector, but today, the problem is growing out of proportion to such a degree that they are forced to consider it. Unfortunately, although the logistics plans take into account light vehicles for last-mile delivery, the cargo bike is not considered in these plans (although motorcycles are) (D Rodríguez 2015, pers.comm., 13 April; authors' translation; E.M Márquez 2015, pers.comm., 13 April; authors' translation). In connection to this Mrs. López confirms that there is still a lack of political candidates that are dedicated to the matter of urban logistics, and so especially sustainable urban logistics, something confirmed at the political level. Connected to this, Mr. Ortiz stresses that the general neglect of the concept is directly related to informality: *"It's this dichotomy between formal and informal. And people tend to formalise, and if they can't fit something into the formal [then they disregard it]"*. This is also confirmed at the Ministry of Transport: *"The cargo bike is something that manage itself, that's why we have not looked at it. The bikes, or cargo bikes here are so natural, they are a part of the environment, and now when you mention it…I start to think…"* (J.C Moscoso 2015, pers.comm., 24 April; authors' translation).

According to Mr. Márquez at the Secretary of Mobility, there are some policies on the national level which are regulated through the Ministry of Transport, and there are some other entities as well that regulate and control the cargo movement in the country. This should in theory also be done in Bogotá, unfortunately, it is not happening (E.M Márquez 2015, pers.comm., 13 April; authors' translation) Many of the respondents, Mr. Márquez included, warrant for policies that aim to promote non-motorised transport. For instance, policies that confer economic stimulus directed to the private sector, as well as the development of coordination between the private and public sector, are put forth as crucial factors. Although some respondents mention that policy-makers must bring authority to the streets ad be consistent in their behaviour, Mr. Archila from LOGYCA[11], emphasise the difficulties to enforce policies in Bogotá, and on that note, he would not recommend coercive or restrictive policies. Since the productivity gap is so huge in Colombia he suggests collaborative programmes as the way to go forward: *"For one, the police does not do the work. They do not enforce it, so it probably would not be as effective as you would want it to be. So for practical reasons it would not really work. Then the other thing is that I think we have to educate people first, and then you can go and punish them"* (A.F Archila 2015, pers.comm., 24 April)

Furthermore, according to Mr. Márquez and Mr. Pérez at the Secretary of Mobility, policy-makers must provide assistance to private firms so that they can increase their awareness about the impact they have on urban mobility, congestion, and pollution. Today, however, the private sector is not contributing because they do not see the economic benefits of changing to e.g. cargo bikes or other sustainable means of transport. Based on that, Mr. Márquez calls for various restrictions of the unsustainable activity, in combination with activities or incentives that would facilitate the shift. For example, policy-makers could give preferential treatment to green vehicles entering streets that are normally closed to motorised traffic. Thus, policy-makers must strike a balance between giving incentives but at the same time pushing for the private sector to take initiatives themselves (E.M Márquez 2015, pers.comm., 13 April; authors' translation). Mr. Cordoba from the NGO side comes to a similar conclusion, where he calls for incentives and taxes, as well as the creation of an awareness that cargo bikes are cheaper, more sustainable and more efficient. As for the Secretary of Mobility, Mr. Pérez hopes that the new studies which are currently under investigation which target cargo movement will provide a platform that could be implemented by the private companies. Subsequently, the strategies that come out of the study

[11] LOGYCA, the leader in logistics and supply chain innovation in Colombia, works through, inter alia, the adoption of standards and the introduction of best practices between companies and other actors.

could be provided to the private sector as incentives, and many strategies could actually have the cargo bike included as a means of transportation, especially in some zones (D Pérez 2015, pers.comm., 13 April; authors' translation). He also warrants some sort of technical team that aid the companies in the modal change, e.g. helping them to deliver cargo in a more optimised and sustainable way. Today, the problems related to cargo movement in Bogotá are so vast and complex that private firms cannot confront them alone, they need the policy-makers to come in and regulate. Despite that some respondents lift forward that the changes must come from all levels of the society, they all agree upon that the biggest changes must come from the political side, and when looking at past success stories, it is concluded that policy-makers hold the key to success. Many systems are universal, both cargo movement systems of public transportation systems, but in order to implement them in a new context like Bogotá, the policy-makers must make the change possible (C. F Urazán 2015, pers.comm., 17 April; authors' translation; E.M Márquez 2015, pers.comm., 13 April; authors' translation).

### 4.3.5 The Organisational Side

Many actors included in this investigation state that a cargo bike fleet is much cheaper than a motorized vehicle fleet. Mr. Cordoba from La Ciudad Verde (NGO) suggests that one way to address the problem is to challenge the companies to change their model of distribution. However, since the cargo bike concept is mainly of an informal character there are real challenges connected to its implementation (J Cordoba 2015, pers.comm., 7 April; authors' translation). Mr Jara mention that he once tried to implement the cargo bike courier services with ServiEntrega[12], and although he went to the Netherlands to investigate, he did not follow through due to time restraints. Despite this, the company response was positive (A Jara 2015, pers.comm., 24 April).

#### *4.3.5.1 The view of the role of the private sector*

Although being part of the informality, cargo bikes are central in the urban distribution landscape in Bogotá (and Colombia). One large firm, ChocoRamo, use cargo bikes in their urban distribution fleet. However, just like all other cargo bikes they are not regulated and thus make part of the informality. According to many of the respondents, the private sector plays a central role in the implementation of new sustainable solutions, but to date, private firms have not been very innovative in developing their urban freight systems. Although some firms have done some routing optimisation, they are still running with half full or empty vehicles (A.F Archila 2015, pers.comm., 24 April). Nevertheless, the interaction between various actors (especially the private and the public) is regarded as weak, and this is an area which must be dedicated much more

[12] The leading freight-forwarder in Colombia.

effort to. Mr. Pérez agrees, and further emphasises that cargo movement, especially in the city centre *"is a total mess"* (D Pérez 2015, pers.comm., 13 April; authors' translation), partly due to the fact that there are over 100,000 distribution channels in one single city (A.F Archila 2015, pers.comm., 24 April). Mr. Pérez also concludes that the private firms do not invest money in logistical improvements, something which was also accentuated by some of the other respondents. Accordingly, the private firms only regard themselves as couriers: "…*they do not have any plan, they deliver the cargo when they want and in the space they want"* (D Pérez 2015, pers.comm., 13 April; authors' translation. This perception is held by many of the respondents, and Mr. Archila conclude that this is one of the biggest particularities of freight delivery in Bogotá – there are so many distribution channels and without proper regulations it becomes vastly unorganized.

The problems related to cargo movement in the city are increasing rapidly, and many of the respondents' stress that the private companies need the policy-makers to come in and regulate. Although ChocoRamo uses cargo bikes for urban distribution there is a vacuum since they are not regulated and are not even equipped with licence plates since the public side has never taken them into consideration (J.C Moscoso 2015, pers.comm., 24 April; authors' translation). Mr. Moscoso warrants the need for the need to show private companies the cost savings related to the use of cargo-bikes. Since there are studies done in Europe, these could be used to show the companies that there are cost advantages related to the use of cargo bikes. Mr. Jara agrees: *"these peoples thinks in numbers, all day long. It will be more feasible this way"* (A Jara 2015, pers.comm., 24 April). This is also confirmed by many other respondents (J.C Moscoso 2015, pers.comm., 24 April; authors' translation; E.M Márquez 2015, pers.comm., 13 April; authors' translation; C. F Urazán 2015, pers.comm., 17 April; authors' translation)

### 4.3.6 Agents: Stakeholders of knowledge transfer

Academia is accredited by many of the respondents as an important actor in searching and spreading new sustainable solutions. Many regard them as thinkers that constantly focus on finding solutions to apparent problems in the urban environment, especially concerning cargo movement. The respondents who represent the public sector emphasise the academic sector as important and believe that the interaction between them works well and that they constantly collaborate with one another. Mr. Márquez also lifts forward academia as an important factor in the transfer of best practices. According to him, the academic sector is constantly searching for best practices and concepts from, e.g. BESTUFS, in order to apply these methods for further investigation in the local context. In contrast to this view, representatives from the academic sector provide a different perspective and stress the difficulty of gaining hearing for new ideas among the public sector and to find a receptive audience within both the private and public

sector for their ideas and research findings: *"I think that many enterprises look at us like the typical and traditional teacher. That is us for most people. Most enterprises do not know what an investigator is…this is a big problem"*. (C. F Urazán 2015, pers.comm., 17 April). Mr. Jara from CRITERIA[13] also put forth that there is not much co-operation with academia, although, he would be happy to develop closer co-operation with this sector: *"We are co-operating with them, and I give some talks at some universities here and there. The academic community has these forums, but sometimes they only talk to each other. They rarely talk to practitioners - in some cities they talk more with the public sector, but I can't really think of good forums where you have practitioners, public servants and academia together, I haven't seen them very often"* (A Jara 2015, pers.comm., 24 April).

According to Mr. Prieto, there is a strong bike network in Colombia, a community network that is strongly driven by NGOs such as e.g. La Ciudad Verde. The World Bike[14] Forum held in Medellín is a good example on how initiatives like these that emerge from citizens could be supported. On being asked about the challenges that stand in the way of implementing models of sustainable mobility in Bogotá, Mr. Cordoba shared his view, arguing that the challenge exists across all layers of society, further expressing his opinion that the political process can be set in motion if the people are convinced first. By acting as a collective voice of the people, NGOs can effectively lobby to impact the political agenda, insisting on that these topics are taken into account when policies are formulated. This is precisely what La Ciudad Verde, the NGO which Mr. Cordoba represents, has managed to do on numerous occasions. Furthermore, there are also other entities included in this research crucial to the dissemination and implementation of new proven practices. Two of them are the consultancy companies CRITERIA and LOGYCA, both working with the dissemination of best practises (A Jara 2015, pers.comm., 24 April : A.F Archila 2015, pers.comm., 24 April).

### 4.3.7 Stakeholder interaction

Although many respondents believe that the interaction is far from ideal, they still perceive that the situation has improved compared to only a few years ago (J Ortiz 2015, pers.comm., 13 April : E.M Márquez 2015, pers.comm., 13 April; authors' translation). Mr. Márquez explains that the interaction between the private and public sector exists on the national as well as the local level. On the local level "The Road Freight Observatory" (*Observatorio de Transporte de Carga*)[15] exists, where the public and the private sector meet and interact on a regular basis, including

[13] CRITERIA Colombia work with city governments, local city governments, multilateral organisations, development banks, NGOs and so on, to export and import know-how and best practices.

[14] Initiated by La Ciudad Verde, The World Bike forum is "the biggest citizen led global event to promote bicycle in cities" (www.fmb4.org).

[15] The overreaching aim of the Road Freight Observatory is to harmonise the activities and investigate the characteristics of the cargo movement in the city, and subsequently also try to develop indicators.

manufacturers, transporters, public sector (e.g. the Secretary of Mobility), and so on. This is where the BESTUFS[16] platform enters the picture, a platform which aims to promote and extend the dissemination of proven city logistics solutions. Due to their access to global knowledge networks, universities are in the forefront in Bogotá when searching for best practices. Thus, they conduct the research and subsequently provide recommendations to the public: *"They [academia] communicate with us and give us recommendations so that we can coordinate and reach the adequate level [of understanding] that allows us to organise the concept"* sector (E.M Márquez 2015, pers.comm., 13 April; authors' translation). Thus, according to the respondents from the public sector, the interaction and communication with the academic sector is better than the one held with the private sector, given that the academia is very interested in aspects related to sustainable urban mobility (E.M Márquez 2015, pers.comm., 13 April; authors' translation; D Pérez 2015, pers.comm., 13 April; authors' translation). This perception, however, was not mutually confirmed by academia. The lack of funds for investigations, combined with the fact that the public and private sector want results right away hinders academia to proceed with its ideas and investigations:*"…a big problem here is that you want money to investigate and afterwards bring the solution. I think that here in Colombia it does not work like that. You must have the solution very clear and on the table, then they will talk to us"* (C. F Urazán 2015, pers.comm., 17 April). According to him, the underlying rationale for this could partly be due to Colombia's inexperience in the field: *"I think that politics and business think that the academia does not have the capabilities to do things"* (C. F Urazán 2015, pers.comm., 17 April).

Mr. Urazán also shed light on the always-present risk associated with investing in projects that do not guarantee financial return. Although academia works closely with, e.g. the Secretary of Mobility, the academic investigators assume a more peripheral role by passively assisting their counterpart instead of being the driving force behind the research. According to the respondents from the public sector the interaction between private and public sector is even more uncertain, as: "*It is very hard to generate the interest from the private sector to co-operate and work with the public sector. They are not very concerned about sharing information about their activity with us. Thus, it is a very complex task to take upon oneself to formulate a policy, or policies, to successfully be able to implement a more concrete project with the private sector because they are not interested to work with us"* (E.M Márquez 2015, pers.comm., 13 April; authors' translation).

### 4.3.8 Knowledge Transfer and Transferability

According to Senator López there is not much knowledge and diffusion of sustainable practices in the cities in Colombia as of yet (C López 2015, pers.comm., 4 March; authors' translation),

[16] See section 4.1.1 for an explanation of BESTUFS.

however, her political party, La Allianza Verde[17], is currently drafting a law in an attempt to increase the adoption of better practices from other parts of the world in order incentivise people to commute by bicycle (R Sandoval 2015, pers.comm., 22 April). Nevertheless, one of the most prominent cases of successful replication of proven practices from foreign contexts to Bogotá is the TransMilenio[18], which served as a kind of milestone in new thinking (G Prieto 2015, pers.comm., 10 April; authors' translation). Not only did Colombia replicate the Curitiba BRT system, it improved it and subsequently exported it to cities around the globe. As of now, it is implemented in China, and Mr. Jara (managing director at CRITERIA) who works in close co-operation with the Chinese local authorities also mentioned that the knowledge goes both ways – that is, they are currently getting feedback from China on improvements that are now implemented in Bogotá. He further emphasises that the Swedish government is presently working on the replication of its "Vision Zero" project in Colombia, a road traffic safety initiative which seeks to achieve a highway system with no fatalities or serious injuries in road traffic, an idea supported by both Volvo and Scania (A Jara 2015, pers.comm., 24 April)

As to the actual nature of the transfer of knowledge and obtaining new ideas, many of the respondents emphasise networking as a central aspect: "*Networking is essential. You have to be right in the middle you know. You have to get contacts, high-up contacts. You have to sell your ideas…My point is that it is all about the way you are talking to others. That is why I make more emphasise in the speech. You have to create not an illusion, but you have to be like a magician"* (A Jara 2015, pers.comm., 24 April). Having been involved in projects all around the world, he further emphasises the importance of platforms for knowledge-sharing and that he is *"permanently doing the search in order to find out which are the best practices"* (A Jara 2015, pers.comm., 24 April). Regarding the public sector, Mr. Márquez states that it has not worked with best practices to a large extent. According to him, and many others, it is predominantly academia and other organisations (such as CRITERIA or NGOs) that engage in this activity. Important organisations, such as LOGYCA and CRITERIA are crucial since they function as important bridges in the knowledge dissemination process (A Jara 2015, pers.comm., 24 April; A.F Archila 2015, pers.comm., 24 April). LOGYCA also makes important contributions to the field of urban logistics, continuously researching, interacting and collecting data to benchmark, for instance, best practices. However, as Mr. Archila puts it: *"…when we're going to these seminars, forums, we talk about freight. Most of the audiences, it's the first time they even hear the word! So we're doing a lot of 'preaching work', which is what I call it"* (A.F Archila 2015,

[17] A political party in Colombian politics (In English: The Green Alliance).

[18] TransMilenio is the urban bus system in Bogotá for public transportation that was copied from Curitiba, Brazil, opened to the public in 2000.

pers.comm., 24 April). In connection to that, he also thinks that Colombia is quite underdeveloped in that area and warrants more and better framed discussions. Nevertheless, the so-called "Road Freight Observatories", governed by the Ministry of Transport, actively look for proven practices to use as theoretical frames of reference in upcoming research. As mentioned, such initiatives are largely ascribed to the academia where, for one, the National University uses BESTUFS in its search for new ideas and concepts. Some examples of concepts include e.g. logistics platforms or micro-consolidation centres. According to Mr. Márquez, the rationale behind this is that the universities have better access to foreign connections than the public sector (E.M Márquez 2015, pers.comm., 13 April; authors' translation). On the same note, Mr. Cordoba illustrates how the NGO-side regularly communicates with like-minded organisations world-wide, in order to collect ideas that could potentially be implemented in Bogotá. The World Bike Forum served as an important catalyst to this development, and today people within La Ciudad Verde (NGO) have created a bike-network with a wide, global reach, where they interact and share their experiences, both from the foreign and domestic contexts (J Cordoba 2015, pers.comm., 7 April; authors' translation). One important aspect addressed by several respondents is the importance of considering the contextual differences when engaging in good practice exchange. In particular, Mr. Ortiz directed criticism towards the traditional one-way conceptualisation of knowledge dissemination vis-á-vis best practices. In many cases it is difficult to take an idea from one context and apply it effectively in another. Mr. Ortiz state that one should look at more similar contexts, such as Vietnam, southern China or India, because what happens there is more likely to happen in Colombia. Mr. Ortiz ends his account by re-citing a few lines of the speech he held at the World Bike Forum, in late-February 2015: *"We are 'Cundinamarca', not 'Dinamarca', the circumstances are unique* [19] *…I'm trying to re-enact what we already do - instead of looking at Denmark!*". Since a unique set of circumstances apply to Bogotá only, replicating a concept from another part of the world (e.g. Europe) could prove to be difficult. However, Mr. Ortiz continued on the same note as many other respondents: *"…many of the things we could learn now is the technological items [sic]. And the masterminding of things, the logistics behind it…but you have to translate them…the easy thing is to bring the pictures from Copenhagen. That's easy, but it's not real"*

Lastly, it is also perceived by many respondents that the institutional capacity plays a central role in the successful implementation of new ideas and practices: *"if you don't have the people who are skilled enough to understand and to implement it, it's not going to happen"* (A.F Archila 2015, pers.comm., 24 April). Although several respondents believe that a practice could be transferred

[19] "*Cundinamarca*", with its capital Bogotá, is one of the thirty-two departments of Colombia, whereas "*Dinamarca*" is the Spanish word for Denmark.

from a different context, Mr. Archila still conclude that if an idea comes from a similar context it will facilitate the implementation process (Ibid).

### 4.3.9 Challenges

#### *4.3.9.1 Perception and Attitudes*

All respondents were unanimous in the view that the cargo bike is something that is not well perceived in Colombia, and that the mind-set of the civil-society and the private sector is hindering the diffusion of the concept. Having this mind-set is more rule than exception, and it is widely held to be the biggest obstacle to the proliferation of new sustainable ideas, and even more so for the cargo bike concept. Mr. Jara illustrates how having a car is much related to social status, that it is *"how you show others that you are successful in your life"* (A Jara 2015, pers.comm., 24 April). A main challenge is therefore the perception held by individuals on all levels of society, and all respondents regard it as a crucial issue to address. Mr. Cordoba also explains that: "*…people think that the cargo bike is something that belongs to the past, something that will hinder them to go into the future, and something that is not of advanced character"* (J Cordoba 2015, pers.comm., 7 April; authors' translation).

Mr. Prieto is in agreement with the previous respondent: "*the cargo bike is seen as something that belongs to the past and with less [brand] positioning…when people see the cargo bike it generates a vision amongst the people that it is a poor company without funds, that it is old and not so advanced"* (G Prieto 2015, pers.comm., 10 April; authors' translation). With the disclaimer that he had not researched the issue well enough, Mr. Sandoval's reply to the same question is congruent to what the other respondents' answered:

*"I think it is something we consider as very 'Third World'. It is like we do it because we are poor, and whenever we are not poor anymore, we are not going to do it anymore"* (R Sandoval 2015, pers.comm., 22 April*)*. The same thing happened with bikes, however this perception is increasingly turning more positive: *"…the cargo bikes have not yet experienced the same positive change, but it can definitely be created"* (G Prieto 2015, pers.comm., 10 April; authors' translation). Mr. Ortiz agrees, cargo bikes are seen as something that do not equal advancement and although they are there, nobody wants to regulate about them so they are totally informal. He further concludes that: *"…the use of bicycles for cargo is a very important piece that nobody sees. And since policy-makers do not see them, they do not design for them"* (J Ortiz 2015, pers.comm., 13 April).

#### *4.3.9.2 Road safety and Infrastructure*

Road safety is another obstacle put forth by the respondents, however, this issue is regarded as more of a concern for regular bike riders. The road safety aspect has been hard for the decision makers to address, mainly because it is closely entwined with the driver-behaviour which difficult

to change (C. F Urazán 2015, pers.comm., 17 April). Nevertheless, although the problem is currently becoming less of an issue there is always room for more improvement (J Cordoba 2015, pers.comm., 7 April; authors' translation : E.M Cruz-Márquez 2015, pers.comm., 13 April; authors' translation). To refer to what was shown earlier (see section 4.2.2), the number of accidents leading to injury or death has declined in parallel to the growing motorisation-rate. On that note, Mr. Velandia offered a speculative and seemingly contradictory, yet plausible explanation to this development. Due to the lower speeds rendered by more traffic fatalities and injuries have gone down (E Velandia 2015, pers.comm., 14 April). Despite this, road safety still remains a worrisome topic, but Mr. Prieto thinks the safety issue is not of major concern for freight cycles, this since the cargo bike is much larger and has a lower velocity. Many respondents compare it with the bike-taxis*: "They use the same routes, have the same dimensions, and they also use the space in the roads in the same way. The perception that I have is that the accident rate is very low"* (G Prieto 2015, pers.comm., 10 April; authors' translation). Furthermore, many of the respondents believe that the infrastructure needed for the cargo bike already exists, something Mr. Cordoba shed light on: "*Of course we have to do more, but Bogotá is one of the cities in South America with the best infrastructure for bikes"* (J Cordoba 2015, pers.comm., 7 April; authors' translation). He also gains hearing from several other respondents, where for instance, Mr. Ortiz state that the main obstacle is not the infrastructure, it is the mind-set of the people, at all levels of the society (J Ortiz 2015, pers.comm., 13 April).

### 4.3.10 Empirical Summary

Given the abundance of information presented above, the table below presents a comprehensive summary of the most relevant empirical findings related to the two main aspects of knowledge transfer and transferability, as well as the viability of cargo cycles in the Bogotá setting. This structure also allows to ease the forthcoming analytical process.

| Knowledge Transfer | Stakeholder Interaction |
|---|---|
| - Knowledge transfer in Bogotá is a reciprocal process; the city engages in both import and export of practices<br>- Institutional side: *"Public sector is not actively involved in knowledge transfer processes"*<br>- Networking is central for successfully implementing new practices in Bogotá<br>- Agents are prominent advocates of transfer activities<br>- Agents are integrated in global knowledge networks<br>- Low awareness of freight-related issues in all sectors<br>- Compatibility of practices originating in institutionally distant contexts is widely viewed as a concern | - Institutional side: PPP exist on national and local level<br>- Institutional side: "*Interaction with academia is working well, and better than with the private sector"*<br>- Academia: *"Interaction with institutional side is not ideal"*<br>- Academia is constrained by lack of resources (time and funds)<br>- Academia views appropriation as a problem<br>- Minimal public-private interaction, partly due to conflicting interests |

| Challenges | Opportunities |
|---|---|
| - Institutional capacity is a potential constraint<br>- Negative perception of freight cycles<br>- Poor technical competence and grasp of freight issues<br>- Topics of urban freight are under-prioritised in policy-making<br>- Meagre stakeholder interaction<br>- Conflicting public-private interests | - Urgent need for innovative solutions<br>- Complex distribution landscape favours frequent and small deliveries (> 100,000 delivery locations)<br>- Dense city core favours agile means of transport<br>- Bogotá is one of the most congested cities in the world<br>- Exclusive zones for pedestrians and non-motorised vehicles only<br>- A freight investigation has been commissioned (cargo cycles could potentially be included)<br>- At first glance, all respondents stand unequivocally positive to the idea of introducing commercial freight cycles for distribution in Bogotá |

*Table 2: Empirical summary.*

# 5. Analysis

*This chapter returns to the conceptual model developed in section 2.6 and uses the outlined propositions as an analytical point of departure in order to answer the research question adequately. It is divided into two parts: (1) first the conditions for knowledge transfer are scrutinised through the developed propositions, where the major outcomes are concisely summarised in a table, and thereafter, this understanding is applied to the Bogotá setting through the lens the freight cycle.*

## 5.1 Knowledge transfer between dissimilar contexts

This thesis provides empirical evidence which suggests that knowledge transfer of best practices between two dissimilar contexts is not straight-forward and simple, but a rather meandering and complex process characterised by informality. When juxtaposing the preconceived conceptual model with the empirical evidence it can be inferred that there are discrepancies to the initial model.

***Proposition 1a.*** *Knowledge of best practices is transferred between institutions from a foreign context to the local context directly by superimposition.*

Bogotá's transfer experience stands in stark contrast to the methodological nationalism which was argued by Stone (2001, 2004) to permeate the transferability literature. After having examined the empirical data, it becomes evident that Bogotá's experience of introducing practices from abroad has not typically come as a result of superimposition between the two institutional contexts. To illustrate this, the most successful proven transport practice implemented in Bogotá

and Colombia has arguably been the TransMilenio BRT[20], an experience which was highlighted by several respondents as a milestone in new thinking. Nevertheless, the practice cannot be said to have been superimposed, since Curitiba neither intended to export its BRT system, nor did there exist any broad-based consensus among policy-actors in Bogotá concerning the replication of the system. On the contrary, after having remained latent for two decades, Curitiba's BRT system was independently "discovered" by a progressive mayor who came up with the plan to copy the concept. Initially, nobody believed in the system's viability and because of financial constraints the transporters had to resort to external borrowing abroad in order to fund the venture. What the experience illustrates is that, although the practice received some support, the transferability was largely indirect and the procedure characterised by a high degree of informality. The experience resonates well with what Macário and Marques (2008) described as the "osmosis effect", wherein a policy is transferred to a city under the influence of a great number of informal channels and sources of indirect as well as direct contact. Thus, this implies that under the influence of osmosis, which is contrary to direct superimposition from one urban context to another, cities draw from each other's experiences and their ideas filter through cities within the same country or, as in this case, through a city in another country.

***Proposition 1b.*** *Successful transfer largely depends on the fit between formal and institutional structures of the originator and receptor contexts.*

To connect to the discussion of *Proposition 1a*, another possible explanation as to why the institutional side has not extensively engaged in knowledge transfer of sustainable urban practices relates to a preconceived notion of contextual incompatibility, which causes public actors to overlook solutions that have been proven elsewhere. During the interview with Mr. Ortiz[21], he essentially expressed this view, adding that Colombia should preferably look to countries with similar institutional landscape when considering the uptake of a particular measure. He further accentuated that policy-makers in Colombia have had a tendency to disregard measures which are ostensibly difficult to formalise, which certainly is the case for practices is coming from institutionally distant contexts. This adds to the findings of Gudmundsson et al. (2005) and De Jong (2008), who emphasise the importance of considering the institutional fit between origin and target context when evaluating the viability of knowledge exchange. Specifically, these authors argue that success is a function of differing capacities of governments to regulate, enforce, coordinate, and finance interventions. Moreover, institutional capacity came up as a

[20] TransMilenio is an urban bus-system copied from Curitiba (Brazil) around the turn of the millennium.

[21] Co-founder of the *Ciclovía*, a practice of urban bike paths initiated in the early 1970s which has been replicated to numerous cities around the world.

concern across the interviews, and although a few of the respondents did not view it as crucial, they still agreed that if a practice has been proven in a similar context, the chances of it being successfully applied in practice in the local context are greater. Somewhat interestingly, since several respondents elaborated quite extensively on institutional aspects related to exchange, this scepticism may in fact reflect a general reluctance, rather than a lack of identifying capacity, towards embracing practices originating in an institutionally distant context. Much of what was disclosed during the interviews regarding institutional compatibility is broadly in line with what the reviewed theory suggests (e.g. De Jong (2008) and Gudmundsson et al. (2005) – and to a lesser extent – Minken et al. (2003) and Macário & Marques (2008)).

***Proposition 2.*** *Organisational knowledge chiefly enters the receptor context through formal means of dissemination.*

In the European context, DHL Express' experience offers an account of intra-organisational knowledge transfer. Conceived in Amsterdam, the cargo cycle concept was soon replicated throughout the Netherlands before it was horizontally transferred to other European country organisations. Nevertheless, DHL Express has not yet engaged in any inter-organisational transfer[22]. Concerning the latter case, other firms are working on similar concepts (see Appendix 1), however independently so. The only exchange between these freight forwarders occurs informally at industry events and conferences. Moreover, the respondent further explained that DHL treats replication as hierarchical, meaning that some practices are allowed to vary across the country organisations in response to market-based learning, whereas others (so-called global standards) are to be uniformly implemented throughout the DHL sphere. Furthermore, much of the literature agrees on the fact that that inter-organisational transfer is widely used as a means by which MNCs attempts to gain competitive advantages over their competitors with the intuitive logic that knowledge which is accumulated in one place may be reused in other parts of the wider corporation (Wijk et al., 2008; Spender, 1996; Birkinshaw & Hood; 1998; Rugman & Verbeke, 2001). Somewhat contrary to what many scholars have suggested, although DHL Express' intra-organisational transfer has taken place under formal conditions, in nearly all cases the replication process has been initiated by a DHL ambassador who is also a cycle enthusiast. Since the cargo cycle concept is yet to reach the best practice status of a global standard within the wider organisation, it remains at the discretion of the individual country organisations to either adopt or reject the concept. Even though it is difficult to extrapolate any broader generalisations within

[22] As of yet the concept has not been replicated to any other regional organisation nor has it been formally transferred to companies outside the DHL sphere.

the organisational domain, DHL's account does, nevertheless, highlight the potential importance of ambassadors as well as informality in diffusing the concept across private entities. Furthermore, one important empirical finding in Bogotá, as well as in Europe, was the crucial role of perception in the proliferation of commercial freight cycles; interestingly, perception seems not to be an issue reserved exclusively for the civil society and the institutional domain, but also for the private sphere. Drawing from the generalisations made over the European lessons, cargo cycle ambassadors could conceivably come to play a similar, and no less decisive role in the Colombian context in overcoming issues of perception. Therefore, intra- or inter-organisational transfer of the cargo cycle concept can be argued to depend on informality and the existence of receptive managers in the local context. Altogether this finding is congruent to what Macário & Marques (2008) referred to as osmosis, where a measure is transferred from one context to another, while being subject to various influences through a number of sources of indirect or direct contact. In this case, the osmosis effect has rendered a rather informal transfer procedure where much of the knowledge is filtered through enthusiastic country ambassadors.

***Proposition 3a.*** *Agents serve as conductors of knowledge, bringing in novel ideas and concepts to the local context, merely supporting the transfer process.*

Although the importance of agents in knowledge dissemination is emphasised by various scholars (see e.g. Stone (2001), Nedley (2000) and Dolowitz & Marsh (1996)), such agents, whether private consultancies, foundations, academia or think tanks, have been given sparse attention in transfer literature. However, empirical evidence is supportive of those theoretical predictions which hold that agents are important middlemen in the process of introducing novel ideas and concepts into the local context (Stone, 2001; Dolowitz & Marsh, 2000; Dolowitz & Marsh, 2000). In Bogotá, however, their role can be argued to be under-appreciated, especially in regards to academia. In this context, NGOs, private mediators, academia and other non-state actors have surfaced as essential brokers of knowledge and even though academia plays a critical role in the dissemination of best practice knowledge, its potential remains unexploited. As seen in the model in section 2.6, agents operate behind the scenes, however, in reality, given that knowledge of best practices flows through informal channels (Macário & Marques, 2008), it is evident that such actors assume a much more central role than was theorised in the conceptual model. As observed in Bogotá, private mediators such as CRITERIA and LOGYCA, as well as NGOs and academia, hold vital keys in bringing in novel ideas to the local context. This is broadly in line with Stone (2001, 2004) who highlighted that due to, among other things, the globalised information-society, knowledge expresses itself in new forms through networks. The authors further emphasised the likely transition from inter-state horizontal learning to an increased prevalence of vertical learning

where various agents take on leading roles in the dissemination of knowledge. Additionally, in unison with Dolowitz & Marsh (2000), agents in the Bogotá setting (e.g. CRITERIA, LOGYCA, NGOs and academia) function as knowledge entrepreneurs creating an intellectual infrastructure and act proactively by engaging in the exchange process as independent promoters.

According to Taniguchi & Thompson (2015) there is a persistent lack of policy interventions in the field of urban freight, and in Bogotá, it was disclosed during the interview process that the public sector has not extensively been working with urban mobility best practice. Instead, congruent with e.g. Stone (2001, 2004), various agents, such as academia, NGOs, and private mediators (e.g. consulting firms) etc., are those that have predominantly taken the lead in this activity. In Bogotá, such actors have assumed a bridging role, serving as conductors of knowledge by continuously researching, interacting, and collecting data to benchmark proven practices. This largely reflects a lack of proactivity as well as an insufficient absorptive capacity on part of the institutional domain. What seems to be at the root of these shortcomings is insufficient knowledge, a lack of foreign connections and poor institutional capacity, something that was disclosed during the interview process. This connects to earlier research by Gudmundsson et al. (2005), who found that the differing policy-making approaches among countries proved to have hampering effects on the implementation of sustainable mobility measures in the respective institutional contexts. Although the literature put forth institutional capacity as key (De Jong, 2008; Hawkins & Wang, 2012; Gudmundsson et al., 2005), not much emphasis has been put on how to overcome this hurdle, and therefore, for the successful transfer of best practice, it is deemed crucial to acknowledge this shortcoming and take actions accordingly. What is more, a recurring education-related issue brought up by the represented agents is the considerable amount of "preaching work" that needs to be done when interacting with stakeholders, including policy-makers. Essentially, this means that much effort during consultations is dedicated to enlightening these actors of seemingly basic concepts and principles of urban freight transport. Given the already limited opportunities for institutional-agent interaction, ideally, more time should be spent on actually dissecting the issues of urban mobility, which is of course impossible unless there exists a somewhat common ground of understanding between the two for putting them into a fruitful dialogue. Second, and to bring nuance to the discussion, while policy-actors have not remained complete passive bystanders, many initiatives (e.g. the Road Freight Observatories under the auspices of the Ministry of Transport) that routinely searches for best practice can be accredited agents, with specific reference to academia. One speculation highlighted the fact that universities have better access to foreign knowledge channels through their extensive contact networks, which is also in line with Stone (2001) and

nevertheless, it is evident that there is vast untapped potential found in the academic sector that is yet not leveraged on, something that obviously hampers knowledge-sharing.

***Proposition 3b.*** *It lies in the interest of the agent to encourage and mediate interaction between the institutional and the organisational domains.*

The continuous emphasis on the nation-state (Scholte 1996; Stone, 2001; Nedley, 2000) has largely led to an overlooking of the fact that knowledge can be transmitted without state involvement. As indicated by Stone (2001), it is in the interest of the agents to complement the institutional domain in areas where it lacks expertise, especially so since the authority to implement is restricted to the public sphere, thus, it is crucial for the agent to encourage implementation. Notwithstanding, as put forth by, inter alia, Allen & Brown (2012) and Taniguchi & Thompson (2015), if wanting to implement sustainable urban transport it is crucial to promote public-private sphere co-operation. When scrutinising the empirical findings it becomes evident that it lies in the interest of the agents to encourage and mediate between these two domains. The empirical findings correspond largely to the literature, where it was found that successful implementation of imported innovative ideas and concepts depend on the existence of a productive public-private interaction, and consequently, such interaction is a prerequisite for the agents' potential ability to influence. What is apparent, however, is that the various agents' ability to influence, mediate, and encourage interaction depends not only on the role of the agent, but also their ability to engage in such activity. As revealed in this research (see e.g. section 4.3.7), academia found it rather difficult to find a ready audience for its ideas. This is partly coherent with Sjöstedt (1994) who claims that, for instance, the ability of the academic community to influence is relatively weak compared to other actors. Congruent with, inter alia, Dolowitz & Marsh (1996) and Stone (2001), the empirical findings further suggest that prominent private mediators, for instance consulting firms, with vast connections in the adequate spheres are more likely to be able to influence and mediate elsewhere proven practices than do, for instance, academia. Although academia does in fact have foreign connections and is in possession of deep knowledge reservoirs, this research suggests that its ability to influence in the local environment is limited. Nevertheless, independent of their ability to influence, it is still in the agents interest to encourage stakeholder interaction, since of failing to do so, the successful implementation of the acquired knowledge is impaired.

***Proposition 4.*** *After having entered the local context, the knowledge needs to be exchanged among actors from the different domains, in order for the imported practice to be successfully adopted.*

In line with Hawkins & Wang (2012), concerted efforts of mutual action involving diverse stakeholders and perspectives are crucial for effectively implementing a sustainable best practice. This is particularly accentuated in contexts similar to that of the Colombian context, characterised by limited institutional capacity (Ibid.). Moreover, it follows from this research that the channels are not as separate nor are they as apparent as initially conceptualised, where, in line with Stone (2001, 2004), networking plays a central role in the knowledge dissemination process. As mentioned, stakeholder interaction is imperative when aiming to introduce elsewhere proven practices (Allen & Brown, 2012; Taniguchi & Thompson, 2015). Nonetheless, in Bogotá, forums and other interactive platforms have typically been conspicuous by their absence, which should be viewed alongside the relatively weak institutional capacity and the almost non-existing public-private co-operation, which hampers the successful adoption of new practices. Despite this apparent shortcoming, respondents included in this research all agree that stakeholder interaction is key if successfully absorb and implement elsewhere proven practices, thus confirming this proposition.

### 5.1.1 Proposition outcomes

| Proposition | Evaluation |
|---|---|
| **Proposition 1a:** Knowledge of best practices is transferred between institutions from a foreign context to the local context directly by superimposition. | – **Largely rejected**: As opposed to direct super-imposition, knowledge flows through a great number of informal channels and sources of indirect and direct contact under the influence of "osmosis". |
| **Proposition 1b:** Successful transfer largely depends on the fit between formal and institutional structures of the originator and receptor contexts. | – **Largely approved** Institutional capacity is widely per-ceived as integral to effective transfer. Practices stemming from an institutionally close context are favoured over practices from distant contexts, which may reflect a general reluctance rather than a lack of identifying capacity. |
| **Proposition 2:** Organisational knowledge chiefly enters the receptor context through formal means of dissemination. | – **Largely rejected**: Contrary to what the literature would suggest, transfer largely takes place under in-formal conditions and is under the influence of "osmosis". |
| **Proposition 3a:** Agents serve as conductors of knowledge, bringing in novel ideas and concepts to the local context, merely supporting the transfer process. | – **Approved:** Despite their sparse attention in the liter-ature, agents play a pivotal role as mediators and conductors of knowledge in the complex and largely network-based web of knowledge dissemination. |
| **Proposition 3b:** It lies in the interest of the agent to encourage and mediate interaction between the institutional and the organisational domains. | – **Approved:** Since such interaction is necessary for agents to be able to influence, it is in their interest to encourage and mediate public-private interaction. |
| **Proposition 4:** After having entered the local context, the knowledge needs to be exchanged among actors from the different domains, in order for the imported practice to be successfully adopted. | – **Approved:** Congruent with the literature, interaction and exchange is crucial, especially between private and public domains**.** |

*Table 3: Propositions outcome.*

## 5.2 Viability of the cargo cycle concept in Bogotá

In relation to best practice dissemination, De Jong (2008) and Macário & Marques (2008), build a convincing case for that contextual variations, coupled with cultural barriers, are the most central aspects to account for when engaging in practice transfer. This literature sheds light on one of the many challenges that has a bearing on the transfer of mobility measures between distinct contexts.

### 5.1.1 Cargo cycling in Bogotá

At the global level, it is only recently that freight transport has become recognised issue in policy considerations (Savy, 2012; UNHABITAT, 2013). This is particularly evident in Bogotá where merely a handful of individuals formally address these topics, and they do so on a part-time basis. Having looked into the matter, it seems as if the negative perception of freight cycling has made policy-makers turn a blind eye to these issues. In spite of this, there are various factors which do in fact favour commercial cycle logistics. Given the vast amount of nano-stores (up to 140,000) and over 100,000 distribution locations that need to be catered to, a partial modal change to cargo cycles seems like a sensible alternative to mitigate some of the problems which the mega-city presently confronts. Moreover, the *"single owner-single store issue"*, gives rise to logistical bottlenecks in an already alarmingly congested urban setting, which is implied by the smaller volumes that need to be delivered frequently to a great number of customer nodes in the distribution network. Adding to this, there is an ongoing shift from motorised vehicles (in some parts of the urban area) to more sustainable means of mobility, however, as of yet cargo cycles are not a part of this shift. However, respondents included in this research were unequivocally positive to the idea of introducing freight cycles for last-mile distribution in the city; nevertheless, up until today, it remains an overlooked piece in the urban transport puzzle. Since the idea of freight cycling has not before been brought to light, it has consequently not been included in any policy, decision-making or development process, thus it remains completely unregulated.

According to Taniguchi & Thompson (2015) the pillars of sustainability, mobility, and liveability are crucial in regard to sustainable urban transport. Therefore, apart from acknowledging the cargo cycle as a viable option to curb issues related to urban congestion and pollution, it is important that the policy-actors strive to stimulate private actors to embark on the modal change. In parts of the European context, this change has been facilitated by innovative and receptive policy-makers, as well as an already existing bicycle-culture. Accordingly, a first step would be to bring this completely neglected idea to the discussion table. Notwithstanding, it is crucial that cycle logistics is regulated, formalised and included in the logistical plans for the

city, in a similar way as other means of transport. Since Bogotá is still at an early stage of exploring urban freight policies, the city is still investigating how last-mile delivery can be addressed. As such, it seems like an opportune moment to start considering freight cycling seriously. There are indications suggesting that a shift is under way, and one such indication is the fact that policy-makers are initiating dialogues that are centred on freight transport. Moreover, another indication is the process of formalising bike-taxis, which shows that there exists political will to address other aspects urban mobility than public transport. These are examples of small steps that demonstrate that Bogotá is on the right track, however, more drastic and accelerated action to push this development is still called for. Despite this, the barriers to the implementation of sustainable urban freight measures presented by May & Crass (2007) and Minken et al. (2003) (see section 2.3) are also prevalent in the Bogotá context, especially so institutional barriers, political and cultural barriers, acceptability barriers, as well as practical and technological barriers. The weak institutional capacity and the relatively low political will regarding sustainable urban freight make it difficult to implement new measures. Moreover, the negative perception of the cargo cycle also reveals a prominent cultural barrier that impairs acceptability and subsequent implementation of this measure. Lastly, the lack of technological know-how and expertise (especially within the public domain) regarding urban freight in general provides another obstacle to successful implementation of the cargo cycle concept in Bogotá.

With that being said, given the lack of policy intervention regarding urban freight on a global level (Savy, 2012; UNHABITAT, 2013), a lesson learned from Bogotá is that policy-makers are too concerned with the replication of other good practices, most of which relate to public transportation, to actually recognise the existing resources that are at their disposal in the local context which remain completely unutilised, with the cargo cycle being perhaps the most notable example. In addition to the above mentioned barriers, and congruent with Russo & Comi (2012), public-private conflicts of interest seem inevitable also in the Bogotá setting. Nevertheless, there are actions at hand that could not only make the cargo cycle a feasible option for urban last-mile delivery, but also make private operators more competitive and help create a more sustainable and liveable urban environment.

### 5.2.1 Positioning and pilots

Given the negative perception of the cargo cycle it is crucial to position it as a viable solution to urban last-mile distribution. The fact that the freight cycles already exist in Colombia could be seen as an advantage, however this is somewhat counterbalanced by the fact that its use is deeply embedded in the informal sector. In line with, inter alia, May & Crass (2007), in Europe it was

emphasised that the process of "*convincing the conservatives*" is an impeding factor to the replication process, and thus also presents a critical institutional barrier. This is particularly apparent in Bogotá given the cargo cycles' strong association with the lower strata of society. Therefore, as an initial step, the cycles need to be formalised and regulated, accompanied by appropriate actions aimed at improving the general perception held of cargo cycle.

As stated by Allen & Brown (2012), to achieve a more sustainable urban transport system, it is imperative to push private-public collaboration. As with any other new project or idea, the initial step is to convince a company to conduct a pilot study to assess the practice's potential in the given context – this is how the concept picked up momentum in Europe, and it seems reasonable for Bogotá to follow in this chronological order. All respondents indicated their interest in the practice and would like to see the concept take a step further, so as to evaluate its potential in the local context. In terms of transfer, since the cycles already operate in the city, what needs to be imported from Europe is principally the technical know-how and the expertise required to effectively manage the entire logistics system. As put forth in the literature (see e.g. Minken et al. (2003), May and Crass (2007) and Macário and Marques (2008)), technological capabilities are important barriers to overcome in order to formulate long-term strategic plans for sustainable urban transport, which is also emphasised by several of the respondents. In the light of this, since numerous studies and pilot projects have been conducted in Europe, e.g. by DHL, UPS, and DPD (Meyer & Meyer, 2013) (see Appendix 1), it is important that their outcomes are properly accounted for when transmitted to Bogotá. To succeed with this, it is crucial that policy-makers leverage the extensive connections of various transfer agents. Therefore, the co-operation with key actors, as well as accessibility to the right people once again elucidate the importance of networking and informality related to the practice transfer. This implies that if aiming to successfully implement a new measure, such as the cargo cycle concept, in an institutionally distant setting, the prerequisite for success is the proper understanding of how knowledge is actually transferred.

#### *5.2.1.1 Challenges*

It is clear that the negative perception held of cargo cycling is the single biggest challenge to its effective implementation. This negative perception could thus be one of the reasons to the low awareness of the cargo cycle as a valid and sustainable means of transport. The most commonly encountered perception is that private firms will not by themselves embark on a modal shift unless they perceive tangible benefits and/or are properly incentivised to do so. This is particularly so since private actors tend to prioritise economic interests over environmental and social concerns (Russo & Comi, 2012). A conclusion drawn from both the European and

Colombian setting is that the rationale for using freight cycles is not strongly tied to the green credentials which the concept generates, nor a result of policy interventions, but rather the ability to increase efficiency and decrease cost. Consequently, a sensible approach to convincing the private sector could involve the provision of clear and unambiguous evidence (Appendix 3 could be a reasonable starting point) that freight cycles are in fact more economically viable than the poorly utilised and inefficiently operating motorised alternatives.

Other potential obstacles when introducing cargo cycles relate to infrastructure and road safety. With reference to the description of bicycle infrastructure in section 4.2.3, it is not a necessary prerequisite for the use of cargo cycles since these vehicles also operate on regular roads, however, it broadens the options for route optimisation. As to road safety, it is perceived by some of the respondents to be more of an issue for regular bicycles rather than for cargo cycles, given their relative size and their lower operational speed (see section 4.3.9.2). Even though no statistics are available accounting for the incidence of accidents involving freight cycles, the perception held by several respondents is that it is very low. Furthermore, statistics applying to Bogotá show that, although cars, motorcycles and regular bicycles have grown in numbers in recent years, cycle accident rates are steadily decreasing. As emphasised in the empirical findings (see section 4.3.9.2), one speculative, but highly plausible explanation to this is the increased congestion, where a strong correlation exists between the lower operational speeds and lower number traffic incidents.

Moreover, as put forth in Chapter 2 (see e.g. Bulkeley (2006), De Jong (2008), Gudmundsson et al. (2005) and Macário & Marques (2008)), institutional capacity of the receptor is key when implementing innovative and novel practices in a new setting. In Bogotá, the lack of political will, weak enforcement of regulations and policies, combined with an absence of technical capacity in dealing with urban freight, generate great difficulties for the institutional domain to introduce proven practices originating elsewhere. In addition, it is crucial to consider that the existing knowledge on how best practices are in fact understood, established, and applied in policy-making processes, transport etc., is scarce (Ward, 2007; Wolman & Page, 2002); hence, translation and adaptation to the local context is even more crucial. This is yet another example of the integral role held by agents and mediators when introducing new concepts into a highly dissimilar context. Quite often, these actors absorb the ideas, perhaps by chance, and subsequently assume a key role in the process of replicating the practice in the local context. As concluded from the empirical findings, Bogotá is not necessarily very receptive to externally imposed sustainable mobility solutions; thus, much time is dedicated to convincing and educating both public and private stakeholders of ostensibly basic logistical principles, whether private or

public, prior to actually discussing the measure at hand. Therefore, this once again indicates the need to gain an understanding of how knowledge regarding best practices is actually transferred, especially so between institutionally heterogeneous settings.

### 5.2.2 Perceived requisites for success

Based on the previous discussion, and in line with, inter alia, Gudmundsson et al. (2005) and Macário & Marques (2008), it is likely that in a receptor context where the institutional capacity differs greatly from that of the originator context, the implementation process will be subject to friction. Given these institutional differences, combined with that knowledge transfer of best practices is in fact not well understood in policy-making processes, transport etc. (Ward, 2007; Wolman & Page, 2002), it is paramount for the successful to gain an understanding of how knowledge of best practices is transferred. Failing to do so will most probably impair the successful implementation and result in improper actions and perhaps also the inadequate transfer. To exemplify, if only aiming to transfer the concept, one fails to understand that what is actually needed is not the cargo cycle per se, but mostly the technical know-how and logistical "master-minding" of how to organise such distribution systems. This being said, much pressure mounts on policy-actors to effectively introduce the measure. First and foremost, it is crucial that the cargo cycle makes it onto the political agenda in order to spark a debate. Since the authorities just recently drafted a legalisation which aims to regulate, and thus recognise bike-taxis in Bogotá, there is much hope that similar initiatives could be extended to include freight cycles. What is more, for a successfully introducing commercial freight cycling, accessibility to the appropriate stakeholders which ranges from high-profile politicians, managing directors of the relevant private entities, as well as to the civil society, is deemed necessary. What is more, in order to strike a balance between the conflicting interests of public and private entities (Russo & Comi, 2012; Allen & Brown, 2012), it is crucial that the public sector creates incentives to encourage private companies to see the value of pedal power, something which ought to be of particular importance in a context where the public-private interaction is relatively weak. Moreover, by stimulating the formation and bolstering the use of platforms where actors can interact and where "due process" is exercised, a foundation for the future introduction of measures and solutions can be laid.

Furthermore, the framework developed by Russo & Comi (2012) highlights many opportunities for applied freight cycling where, for instance, the narrow thoroughfares, the limited capacity and speed for transport in the older districts of the city favour agile means of transport such as freight cycles. Nevertheless, supporting infrastructure such as UCCs

or fixed depots are needed in order to take cargo cycling to the next level[23]. Moreover, various respondents identified the need for pushing the private sector down the road towards contributing to sustainable development, but also the need for creating the right incentives that will make firms act independently. Nevertheless, since freight cycles already exist in Colombia, it is not necessarily the technology, per se, that need to be introduced, but rather the underlying logistics, the technological expertise and know-how that accompany the cycles. Notwithstanding, cargo cycling is not the holistic solution that will solve all issues related to urban development, bur merely an important initial piece to the sustainable transition of a greater urban puzzle.

# 6. Conclusions

*By building on the arguments put forth in the analysis, this chapter sets out to provide an answer to the research question. Based on the sub-purposes of this thesis, this chapter ends by stating the three main findings of this thesis: (1) first, it adds a new perspective to the study of knowledge transfer between dissimilar contexts, (2) secondly, it yields an understanding about the challenges related to the implementation of cargo cycles in Bogotá, and (3) lastly, it offers a re-defined conceptual model and proposes policy-recommendations aimed at stimulating cargo cycle uptake. The chapter concludes by providing suggestions for further research.*

## 6.1 Main findings

This study focused on the dissemination of so-called "best practice" in the urban last-mile logistics chain between two institutionally distant contexts. The research question was articulated as follows: *"How can a best practice from Europe within the sustainable urban mobility field be successfully transferred to Colombia?"*. The main conclusion of this thesis is that when aiming to transfer best practice between institutionally heterogeneous settings, it is paramount to understand *how* such knowledge is in fact transferred. Furthermore, it is concluded that the institutional sphere is key for the effective adoption of best practice, where not only public-private co-operation is called for, but also the creation of platforms that invite all adequate stakeholders to fruitful dialogue.

Another outcome from this research is that the transfer of best practice is not a straight-forward matter, as in the case of superimposition, especially not when dealing with largely dissimilar contexts. What is found in this research is that the institutional domain has assumed a less pivotal role than what previous literature has suggested, and although it is concluded that policy-makers are integral to the successful introduction of sustainable best practices, informal actors that operate in the periphery are of great importance in facilitating to the diffusion process.

[23] Mobile depots could plausibly serve the same purpose as a makeshift solution (see Appendix 1).

Given the relevance of institutional capacity when engaging in best practice transfer (Macário & Marquez, 2008; May & Crass, 2007), one highly plausible conclusion reached in this research is that in contexts where the institutional capacity is poor relative to that of the originator context, informal channels play a far more important role. Another inference that can be deduced is that agents partly fill a vacuum created by the absence of state action, hence, complementing the authorities where their abilities and fall short. Although, inter alia, Stone (2001) elucidates the somewhat neglected role of the so-called agents, one main finding in this particular constellation of knowledge transfer is that agents serve as effective knowledge brokers, mediating and bridging gaps in the complex and ever-changing network of international knowledge dissemination. In Bogotá, the empirical findings suggest that agents are absorbing, exchanging, supporting and pushing the development of new ideas and insights, and although agents assume facilitating roles, they are far from a homogenous group, and some agents, such as academia, possess much potential which remains largely unrealised.

The observed passivity of the institutional sphere could partly be ascribed the organisational side. Respondent data suggests that private entities engage in knowledge transfer, however, the process is chiefly suppressed by two factors. First and foremost, in regard to sustainable urban mobility measures, private firms are not likely to pursue the adoption of novel measures unless they in pure economic terms can appreciate their viability, reasoning which is in line with, inter alia, Russo & Comi (2012). Secondly, and perhaps most importantly, private-public collaboration is key for successfully implementing sustainable best practice (Allen & Brown, 2012), however, in Bogotá as in many other places, this interaction is very weak. On that note, another notable finding in this case study suggests that fostering public-private collaboration is crucial in facilitating the implementation of sustainable urban mobility measures, particularly in contexts where the practice at large is negatively perceived. To connect to the agents, acknowledging the many indirect roles held by the various stakeholders of knowledge transfer is imperative as they not only serve as bridges to global knowledge networks, but also provide crucial links in the local context that help streamline public-private interaction.

The cargo cycle is a perennial feature of the Bogotá cityscape, however, it is typically associated with the informal sector and the lower strata of society. The negative perception of cargo cycling has resulted in that it up until today has been neglected in all policy considerations in the city. Perception-related issues do not solely pertain to the general public, but since private entities, the public sector, and various agents are operated by individuals, their views and preconceived ideas permeate the organisations which they represent, and thus hinder a proliferation of the cargo cycle concept. The negative perception is the greatest challenge to the

successful replication of the cargo bike concept, and is thereby also the main obstacle to overcome in order to give the cargo cycle concept a fair chance to materialise.

### 6.1.1 Revisiting the research question

In order to successfully transfer a best practice within the sustainable urban mobility field there are two main areas to consider: (1) First, unless there exists a thorough understanding of *how* best practice knowledge is transferred between institutionally distant contexts, implementation will not be successful. This relates to the fact that the transfer of best practice is not well comprehended (Ward, 2007; Wolman & Page, 2007), and perhaps less so in the studied target setting; hence, making sense the process is a crucial prerequisite for the achieving success. (2) Second, given the perception issues and lack of awareness regarding the concept, in order to effectively introduce such a solution, the institutional sphere must be prepared to take on a leading role in the development. As for the latter, policy-makers must strike a balance between providing adequate stimulus for private entities to engage in such activities, but at the same time push these actors to act on their own. Since private actors are driven by economic sustainability (Russo & Comi, 2012), proper studies must be conducted on the actual economic viability of the practice. Through the presence of innovative and proactive agents (e.g. NGOs and private mediators), private entities could be challenged to initiate pilot-projects, and if addressed in conjunction with the aforementioned, the cargo cycle concept could very well proliferate. Therefore, consistent with Allan & Brown (2012) and Russo & Comi (2012), platforms for stakeholder interaction are paramount for this success, however, it should be added that not only public-private actors, but all stakeholders, including academia, should be included in this dialogue in order for any foreign sustainable urban mobility measure to be successfully implemented.

## 6.2 Revisiting the conceptual model

After having subjected the empirical data to scrutiny in the analysis chapter of this thesis, the newly acquired evidence forces a re-conceptualisation of the initial model to better account for the observed phenomenon. Based on the empirical evidence, the adjustments and adaptions are formulated accordingly:

(1) The institutional domain may introduce new practices, measures and solutions through superimposition from a distant context; however, new knowledge is much more likely to enter the new context under the influence of a vast number of informal channels (osmosis), and/or indirectly through transfer agents that mediate the exchange process between the originator context and the receptor context. (2) The organisational domain may facilitate the process of introducing new knowledge into the local context by directly engaging in inter- or intra-organisational transfer; nevertheless, these actors have a higher propensity to adopt

practices in the local context by indirect means through interaction with agents, as well as through informal arrangements. (3) Although they lack implementing capabilities (Stone, 2001; Sjöstedt, 1994), agents hold a decisive role in bringing in novel ideas, concepts and practices to the local context, as well as in their subsequent uptake. (4) Effective imposition and adoption of external knowledge require not only the active participation of various stakeholders and perspectives, but also concerted efforts of mutual action (Hawkins & Wang, 2012). This is especially so when considering a context where the local institutions have poor knowledge of the measure at hand, coupled with limited implementing capabilities. Based on the empirical findings, in the local context, mutual coordination activities solely involving institutions and organisations are almost in-existent. (5) As indirect means of coordination, discussion forums and other interactive areas provide key opportunities for all stakeholders to meet, engage in critical discourses, learn of and share experiences. Although potentially important, not much knowledge is brokered through forums.

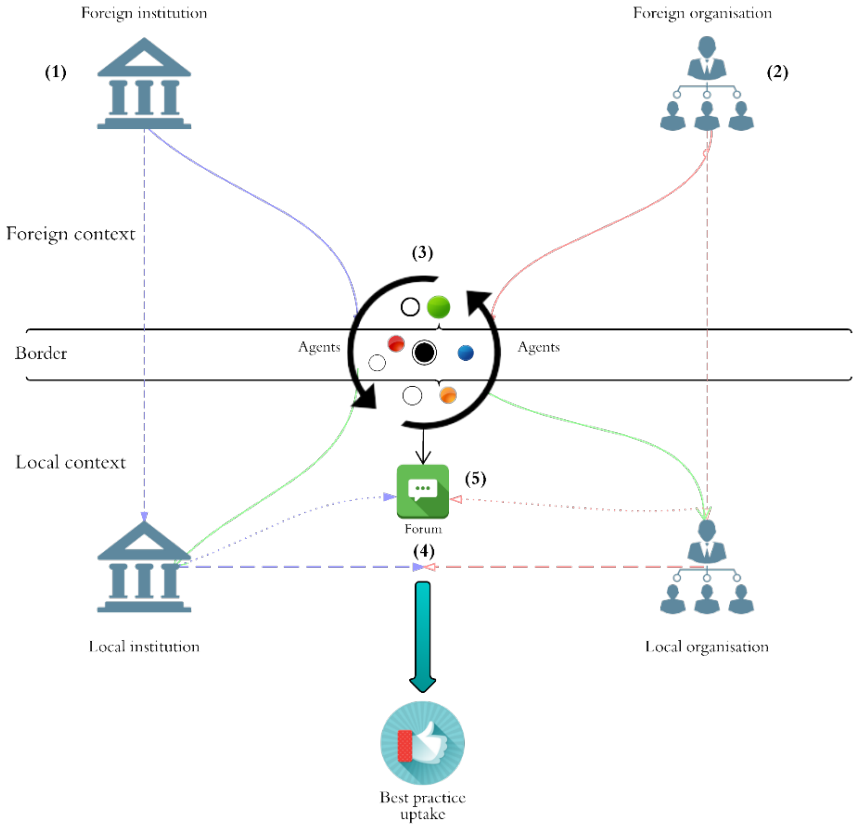


*Figure 9: A revisited conceptual model. Source: Compiled by the authors.*

### 6.2.1 Theoretical Implications

In order to capture where knowledge is generated, transferred and used between two divergent contexts, it was necessary to develop a conceptual model. Since the literature addressing exchange of best practice largely has been a transatlantic affair involving Europe and North America, (Stone, 2001; Nedley, 2000), the revisited conceptual model proposed in this research provides a slightly more nuanced account of this under-researched phenomenon. This study extends theories of knowledge transfer by highlighting the various roles held by transfer actors as well as their associated functions in the process. Most studies concerned with policy transfer has been state-centred and as such they have mainly directed analytical gaze towards the government's role in the process (Scholte, 1996; Stone, 2001, 2004). This thesis is arguably the first which, in some depth, attempts to look to the transfer of a sustainable mobility best practice between institutionally distant contexts, offering a more penetrative understanding of the knowledge transfer process.

The revisited model sheds light on a different perspective that deviates from the traditional Western view which is well-documented in the literature (Nedley, 2000). It adds to the knowledge base and understanding of a complex phenomenon by scrutinising the transfer process of best practice within the field of urban sustainable mobility between Europe and Latin America, two institutionally heterogeneous contexts. The implications of this research go beyond that of a feasibility study, and apart from staging the ground for possible pilot projects, it challenges and re-defines the extant view of how best practice knowledge is transferred across contexts. It not only educates practitioners where knowledge is generated and through what channels it is disseminated, but by emphasising networking between actors as key to the effective implementation of foreign practices, it gives policy-makers a hint of where their efforts should be invested. The conceptualisation infers that, ideally, policy-actors should seek to establish platforms (e.g. forums, conferences etc.) where stakeholders of transfer and urban mobility can interact, and in other ways engage in mutual partnerships, advocacy and dialogue, foremost agents and the private sector. Moreover, the updated model refreshes the contemporary literature, and confirms Stone's (2001, 2004) prediction of the undergoing transition from inter-state horizontal learning to an increased prevalence of vertical learning, where agents assume a much more prominent role in the diffusion of knowledge. If set to continue, this trend suggests that networking will be even more important in the future to come. Taken together, the major theoretical implication highlights the central role of networking as a conduit to transferring knowledge effectively.

## 6.3 Policy Recommendations

Taking the above-mentioned conclusions into account, there are measures at hand for policy-makers that could lead to the inclusion of more sustainable freight measures in Bogotá. Below, some policy recommendations are outlined, which aim at stimulating the adoption of commercial freight cycling; however, although they are developed with cargo cycles in mind, they could plausibly also be extended to other sustainable means of transport.

| **Policy Recommendations** | |
|---|---|
| **City logistics plans** | **Include topics of urban freight in municipal-level plans**<br>– No robust long-term freight plan exists on the local level and only a handful of people are in charge of freight matters in the mega-city.<br>– Insufficient coordination and planning call for the allocation of more technical personnel that works in close liaison with the private sector. |
| **Context-specific urban freight studies** | **Structure urban freight planning**<br>– To gain a complete picture of urban freight (number vehicles, deliveries, and specific characteristics of such deliveries).<br>– To lay the ground for solid, effective freight policies.<br>– To help private actors to plan and be pre-emptive in this process. |
| **Foster stakeholder interaction** | **Development of platforms which encourage stakeholder interaction**<br>– Both private and public sphere must understand the urban freight system.<br>– Academia and other non-state actors must also be included.<br>– Create forums that promote interaction and co-operation.<br>– Policy-makers should take a leading role in this development. |
| **Financing of pilot projects** | **Launch custom-made pilots in the complex urban context**<br>– Such initiatives often require financial support, thus, both local authorities and state government should co-finance such projects.<br>– This is a crucial aspect in the order to push innovation given the difficulties to find funding for innovative solutions (e.g. the BRT system).<br>– European pilot projects serve as good points of departure (see Appendix 1) |
| **Logistics infrastructure** | **Lack of urban space**<br>– There is a need to formulate inclusive plans for land-use.<br>–Similar plans exist (e.g. UCC development), but there is no rigid plan covering commercial freight aspects.<br>– Get more people to work on this complex matter will to foster innovation and include alternative vehicles (e.g. cargo cycle) in logistical plans. |
| **Regulations on freight emission** | **Private entities are driven by economic incentives**<br>– Target freight emissions to tackle the negative externalities from urban freight vehicles.<br>– Incentives should also be evaluated and strengthened to phase out the old vehicle fleet. This could push private entities in the right direction. |
| **Additional measures** | **Policy implementation is relatively weak, therefore, coercive or restrictive measures are not recommended.**<br>Policy-makers should:<br>– Educate people prior to installing coercive measures.<br>– Establish collaborative programmes to foster stakeholder interaction.<br>– Provide assistance and incentives to private actors to facilitate model shifts,<br>– Via the Ministry of Transport provide tax incentives that support imports of<br>more refined and sophisticated cargo cycles.<br>– Formalise the present informal use of freight cycles, by, e.g. drawing from the bike-taxi experience. |

*Table 4: Policy recommendations. Source: Compiled by the authors.*

## 6.4 Contributions and avenues for further research

Previous research in the field of knowledge dissemination of best practice has mostly taken a transatlantic perspective, overlooking the concerns that pertain exclusively to developing world cities (Nedley, 2000; Stone, 2001). Since sustainable urban freight in general, and cargo cycles in particular, have long been widely neglected by scholars and policy-makers alike, this study aims at shedding light on this under-researched field as well as provide tangible solutions to a multi-faceted problem. As such, this work fills the research gap presented in Chapter 1 by offering a new perspective on knowledge transfer of best practice between institutionally distant contexts. It does so by contributing to the current stream of literature (e.g. Dolowitz & Marsh 2000; Macário & Marquez, 2004; Stone 2001) through a nuanced theoretical account including a conceptualisation with plausible scope of application to similar contexts, and/or practices. The study further addresses practical considerations by giving policy recommendations that are deemed necessary for the proliferation of cargo cycles in the developing city context.

In order to create a fundament for evidence-based decision making directed towards sustainable urban mobility, there is a need for future research addressing how various measures (e.g. incentives, regulations etc.) influence a potential modal shift towards cargo cycles effectively and efficiently. Therefore, further investigations should include the conduct of pilot projects, cost-benefit analyses as well as comparative studies, similar to this one. In order to obtain concrete performance data, as well as to confirm the outcome of this study, the initiation of pilot studies are necessary, especially for assessing the use of freight cycles in selected zones. Financial analyses are crucial since they make up the basis of attraction for private entities to consider a modal shift, and comparative studies are particularly called for given the complexity of this particular under-researched phenomenon. Future research could favourably also set out to advance the conceptual model developed in this thesis in order to make sense of how such a modal shift could effectively take place. Last but not least, since this study is limited to manually powered freight cycles in last-mile distribution, more research effort should be devoted to investigating how electrically assisted cycles fit into this framework. This is crucial since not only cargo cycles, but all sustainable and non-motorised solutions are important to address when aiming to achieve a sustainable urban environment.

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# Appendix 1: Description of privately funded cargo cycle initiatives

| Company name | Description | Objective/Structure | Outcome |
|---|---|---|---|
| United Parcel Service (UPS) [24] | Pilot project (2010 - 2012)<br><br>Small-scale pilot, employing a total of six cycles<br><br>Bochum, Cologne, Hamburg, Bremen and Hannover (Germany) | **To evaluate the:**<br>– Potential of using freight cycles as a complement to its existing vehicle fleet in densely populated urban areas or areas with low accessibility | – Bypassing the need for finding parking spots<br>– Higher utilisation-rates when distributing parcels for onward delivery via the mobile depots |
| Dynamic Parcel Distribution (DPD) [25] | Pilot project (2011)<br><br>Hamburg (Germany) | **To evaluate the:**<br>– Prospects of using cargo tricycles for their inner-city distribution<br>– Necessary preconditions for an efficient applicability of cargo cycles, and cost-benefit analysis | – Storage facilities in the inner city are crucial.<br>– Routes could be shortened and optimised due higher flexibility<br>– Possibility to park on the sidewalks<br>– Substantial cost benefits by using freight cycles in city-centre distribution of light goods |
| Gnewt Cargo [26] | Pilot project (2009 - 2010)<br><br>Cargo-cycle trial evaluation<br><br>London-based delivery company using cargo cycles in last-mile operations within "Congestion Charge Zones" | **To evaluate and compare:**<br>– Deliveries using diesel vans with the use of cargo cycles and electrics vans<br><br>**To evaluate the impacts on:**<br>– Total distance driven<br>– Road space occupancy<br>– Energy use emissions | – Managed to curb $CO_2$ emissions by almost two-thirds as well as cutting the distance travelled per parcel delivery almost in half |

[24] LENZ, B. & RIEHLE, E. 2013. Bikes for Urban Freight? Experience in Europe. *Transportation Research Record: Journal of the Transportation Research Board,* 2379**,** 39-45.

[25] RIEHLE, E. 2012. *Das Lastenfahrrad als Transportmittel für städtischen Wirtschaftsverkehr. Eine Untersuchung europäischer Beispiele zur Abschätzung von Rahmenbedingungen und Potenzialen für deutsche Städte.* Master's thesis in the subject area Transport Systems and Planning, Technical University.

[26] LEONARDI, J., BROWNE, M. & ALLEN, J. 2010. *Cargocycle trial evaluation,* London, University of Westminster.

# Appendix 2. Description of publicly funded cargo cycle initiatives

| Sponsor | Description | Objectives/ Structure | Outcome |
|---|---|---|---|
| The German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) [27] | *"Ich ersetze ein Auto"* ("I replace a car")<br><br>Pilot project:<br>(2012 -2014)<br><br>Use of 44 electric cargo bikes in urban courier and express services<br><br>Berlin (Germany) | **To evaluate the:**<br>– The potential to reduce $CO_2$-emissions and congestion in urban freight transport | **Several positive aspects were identified compared to cars :**<br>– Cost efficient (in terms of purchasing, operational, parking, and congestion costs)<br>– Higher avg. speeds<br>– Lowered env. impact<br>– Safe and secure |
| The European Cycle Logistics Federation (ECLF) [28] | *Cyclelogistics - Moving Europe Forward*<br><br>Pilot project:<br>(2011 - 2014) | **Sought to:**<br>– Promote the viability of the cargo cycle as a contemporary and future transport solution for delivery and freight services<br>– Examine the potential use of cycles for transporting freight vis-à-vis potential customers, while simultaneously raising the awareness of the concept in urban areas | – One-fourth of commercial goods (parcels and smaller consignments) currently carried by motorised lorries and vans could be shifted onto cargo cycles |
| The European Cycle Logistics Federation (ECLF) [29] | *Cyclelogistics Ahead - Moving Europe forward*<br><br>Follow-up project:<br>(2014 - 2017) | – To reduce energy consumption and emissions from freight transport in urban areas by triggering near zero emission logistics applications across Europe | – N/A |
| Transport for London (TfL) [30] | *Cycle freight in London: A scoping study*<br><br>Pilot project:<br>(2009) | – To investigate the potential applicability of cargo bikes for the distribution of freight within the city centre of London | – The most emphasised factors were the attitudes and perception towards cycle freight in general<br>– Scepticism from clients was highlighted as a major challenge |

[27] MÜLLER, F. 2014. *Electric cargo bikes for courier and express service: Project "I substitute a car",* Berlin, Urban-e GmbH Berlin.

[28] ECLF. 2015b. *Cyclelogistics Ahead - Moving Europe forward* [Online]. UK. Available: http://cyclelogistics.eu/index.php?id=11 [Accessed May 2 2015].

[29] ECLF 2015c. *Final Public Report,* UK, Austrian Mobility Research, FGM-AMOR.

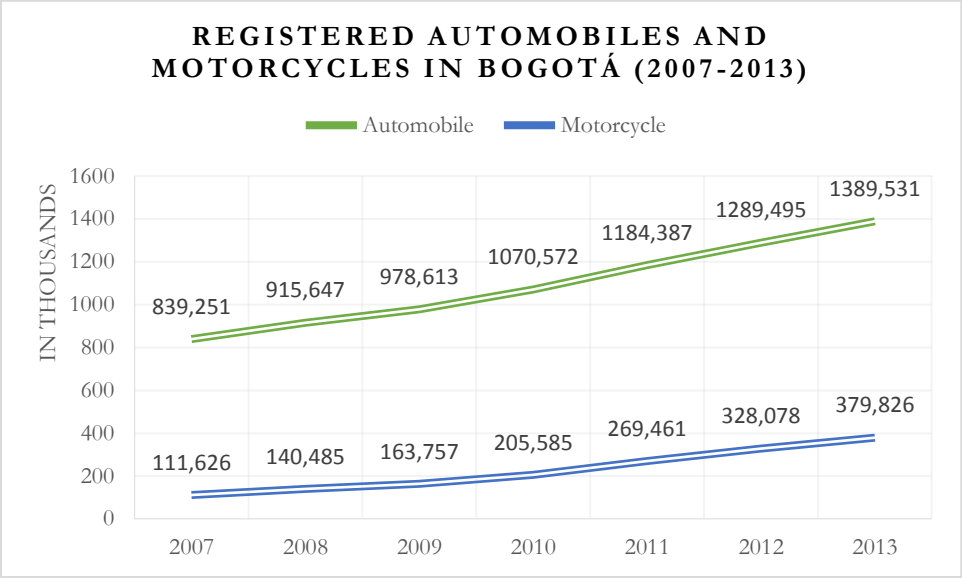
[30] TFL 2009. *Cycle freight in London: A scoping study*, Mayor of London.

## Appendix 3. The economic argument, cargo bikes versus vans

| TANGIBLE COSTS | CARGO BIKE | VAN |
|---|---|---|
| **SET-UP COSTS** | | |
| Purchase Cost | €2,483 (including cargo box) | €3,310 per annum (3 year contract hire, 10,000 miles pa*) |
| **RUNNING COSTS** | | |
| Annual maintenance | €237 | Included in hire cost in contract |
| Fuel | Zero | €1,1334 pa (10,000 miles per year, 56 mpg/13.32 mpl)** |
| UK Vehicles Excise Duty | Zero | €210 pa |
| Vehicle Insurance | €154 pa | €591 pa |
| **RIDER/DRIVER COSTS** | | |
| Hourly pay rate | €9.60 | Usually self-employed paid per delivery (e.g. €1.59 per delivery) |
| **INTANGIBLE COSTS** | | |
| Emission Contributions | Zero | 152g/km $CO_2$ |
| Congestion Contributions | Minimal impact | Additional vehicle on the road contributing to congestion |
| Noise | Minimal impact | Diesel clatter and noise |
| Average speed in city | 16 to 20 km/h (continuous) | 8 to 24 km/h (stop/start) |
| Parking | No problem | Restricted (parking tickets) |
| Flexibility | Access to restricted areas and cycle paths | Restricted to road networks |
| Range | 80 km per day | Unlimited |
| Contribution to driver/rider health | Rigorous daily workout | Sedentary |

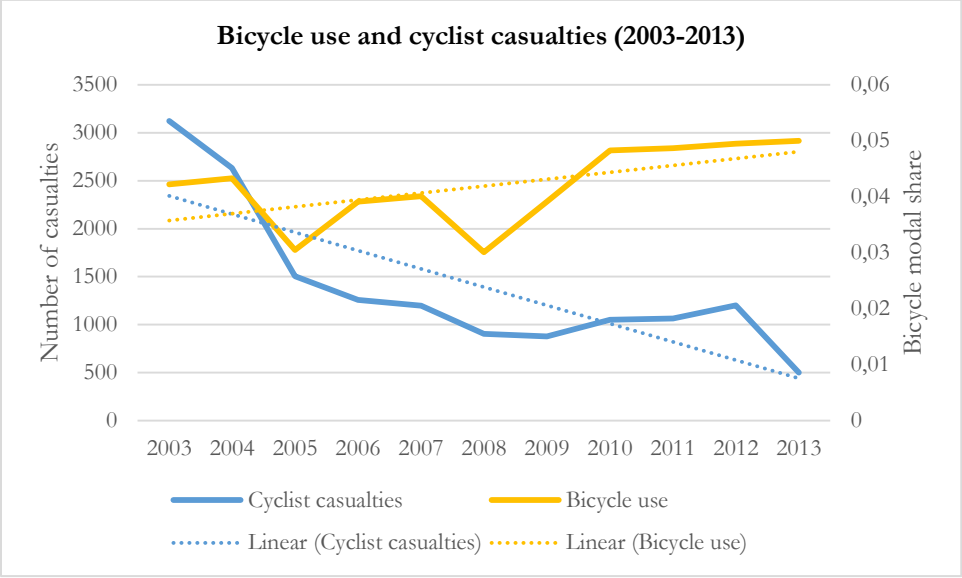
*pa = per annum **mpl = miles per gallon, mpl= miles per litre.
Source: Compiled by the authors based on ECLF (2015c)

## Appendix 4. Registered automotive and motorcycles in Bogotá (2007-2013)




*Source: Compiled by the authors based on BCV (2004)*[31] *and Verma et al. (2014)* [32]

## Appendix 5. Bicycles use and cyclist casualties (2003-2013)




*Source: Compiled by the authors based on Movilidad (2014)*[33]

[31] BCV 2014. *Resultados de la Encuesta de Percepción Bogotá Cómo Vamos 2014,* Bogotá, Bogotá Como Vamos.

[32] VERMA, P., VALDERRAMA LÓPEZ, J. S. & PARDO, C. 2014. *Bogotá 2014 Bicycle Account,* Bogotá, Despacio.

[33] MOVILIDAD 2014. *Documento análisis accidentalidad con bicicletas en la ciudad de Bogotá para los años 2007 a 2012,* Bogotá, Secretaría Distrital de Movilidad.

# Appendix 6. List of respondents

| *Respondent* | *Organisation* | *Language(s)* | *Interview method* | *Place* | *Date* | *Duration (total)* |
|---|---|---|---|---|---|---|
| *Claudia López* | **Senate/ Senate of Colombia (Allianza Verde)** | **Spanish** | **E-mail** | **Bogotá** | **2015-03-04** | **N/A** |
| *Gary Armstrong* | **ECLF, Outspoken delivery** | **English** | **VoIP-call, Digital recording** | **Gothenburg, Cambridge** | **2015-03-04** | **30 min** |
| *Arne Melse* | **DHL Express** | **English** | **VoIP-call, Digital recording** | **Gothenburg, Amsterdam** | **2015-03-25** | **45 min** |
| *José Cordoba* | **La Ciudad Verde** | **Spanish** | **In person, Digital recording** | **Bogotá** | **2015-04-08** | **60 min** |
| *German Prieto* | **University of the Andes, Chamber of Commerce, Bogotá** | **Spanish** | **In person, Digital recording** | **Bogotá** | **2015-04-10** | **50 min** |
| *Andrés Vergara* | **Secretary of Mobility** | **English** | **In person, Digital recording** | **Bogotá** | **2015-04-13** | **30 min** |
| *Daniel Pérez Rodríguez* | **Secretary of Mobility** | **Spanish** | **In person, Digital recording** | **Bogotá** | **2015-04-13** | **30 min** |
| *Édgar Mauricio Cruz Márquez* | **Secretary District of Mobility** | **Spanish** | **In person, Digital recording** | **Bogotá** | **2015-04-13** | **35 min** |
| *Jaime Ortiz Mariño* | **Architect and co-founder of Ciclovía*** | **English** | **In person, Digital recording** | **Bogotá** | **2015-04-13** | **80 min** |
| *Carlos Felipe Urazán Bonells* | **University of La Salle** | **English** | **In person, Digital recording** | **Bogotá** | **2015-04-17** | **100 min** |
| *Edder Alexander Velandia Dúran* | **University of La Salle** | **English** | **In person, Presentation Digital recording** | **Bogotá** | **2015-04-14** | **60 min** |
| *Andres Jara* | **CRITERIA Private consultancy, knowledge dissemination** | **Spanish** | **In person, Digital recording** | **Bogotá** | **2015-04-22** | **60 min** |
| *Rodrigo Sandoval* | **Urban Transport Advisor: House of Representatives (Congress)** | **Spanish** | **In person, Digital recording** | **Bogotá** | **2015-04-22** | **60 min** |
| *Juan Camilo Agudelo Moscoso* | **Ministry Of Transport** | **Spanish** | **In person, Digital recording** | **Bogotá** | **2015-04-24** | **90 min** |
| *Andrés Felipe Archila* | **LOGYCA Management Consulting, Logistics** | **English** | **In person Digital recording** | **Bogotá** | **2015-04-24** | **60 min** |
| *Grazyna Sotta* | **Business Sweden, Bogotá** | **English** | **Informal consultation** | **Bogotá** | **2015-05-12** | **60 min** |
| *Ana María Rodríguez* | **Business Sweden Bogotá** | **Eng./Spanish** | **Informal consultation** | **Bogotá** | **2015-05-12** | **60 min** |

*Initiated in the early 1970s, Ciclovía is an urban bike-path closed to motorized traffic that has been replicated to hundreds of cities in America, as well as globally.

# Appendix 7. Interview guide: ECLF and Outspoken Delivery

1. **Could you tell us about your experience with the ECLF and how it has evolved?**

2. **What is the role of ECLF in the dissemination of best practices (cargo bikes)?**
- What are the most critical pre-conditions for introducing cargo bikes as a last mile solution?
- What speaks in favour of the implementation of cargo cycles as a last mile solution?
- What is your opinion of the transferability of cargo-bike practices?

3. **(ECLF is represented in eight cities), in what ways have the challenges and opportunities been similar across the partner municipalities?**
- How have these cities been selected connected to the project?
- Do you advocate the dissemination of such practices to cities where similar/the same conditions prevail?
- Do you think that the size of the urban population is key to the possible success of cargo bikes?
- Has any city stood out as more or less receptive of the cargo-cycle concept?

4. **Which are the most important stakeholders to convince? Governments, companies, consumers?**
- How important is the involvement of local authorities (municipalities) in this context?
- What do you regard as the most important catalyst for the successful implementation of cargo cycles; a top-to-bottom approach (where supranational or national governments are the main contributors to change) or a bottom-to-top approach (where local governments and "lower stakeholders" drive change) – or is it an interaction between the two?

5. **What do you regard as most important in order to successfully implement the cargo-bike concept in a city?**
- In your point of view, what do you think are the most critical factors for a successful implementation of cargo bikes as last mile delivery solution?
- Could you elaborate on the different attitudes towards the cargo-bike concept and to what extent it has been city specific?
- If having encountered any difficulties in regards to attitudes and acceptance of cargo-bikes, how have you worked/tackled these problems?

6. **What are the main obstacles you have experienced during the process/ development of the ECLF platform?**
- What do you think could be done in order to overcome these obstacles?
- Through your engagement in Outspoken Delivery, what are obstacles faced as a courier business?

7. **How do you view this institutional critique? Have you found any one institutional structure/governance mode that is especially conducive to the implementation of cargo cycles?**
- Conversely, have you found any one institutional structure/governance mode that is especially prohibitive to the implementation of cargo cycles?
- How decisive/crucial is the level of decision making in the context for implementation, i.e. a decentralized vs centralized decision making structure.

8. **Do you think that these initiatives will increase in the future and why?**
- What are your thoughts on the possible expansion of this best practice outside of Europe?

9. **Looking ahead, how do you perceive the viability as we progress into the future?**
- ...the short term? (<2 years)
- ...the medium/long term (>2 years)

# Appendix 8. Interview guide: DHL Express

1. **Could you tell us a little bit about yourself and your role in the DHL cargo-bike project?**
- How does DHL view the use of cargo bikes, e.g. how important is the cargo bike for the DHL image and in what ways?

2. **Throughout the organization, have cargo bikes been tested elsewhere before and/or after the pilot project in the Netherlands?**
- If yes, why did DHL chose to conduct a new study and what have the outcomes been?

3. **How did the idea of introducing cargo bikes emerge?**
- What are the main advantages and disadvantages with the use of cargo bikes in a business perspective?
- Are there any plans to implement this in other areas?

4. **Would you say that DHL the pioneer when it comes to cargo bikes among the larger global freight forwarders?**
- Has there been any response from your global competitors?

5. **Geography: For the successful implementation of cargo bikes, how do you view external/situational/circumstantial factors** (note to self: such as size of the urban area, geography, and demographics) for the successful implementation of cargo bikes?

6. **What is your opinion on the role of policy-makers in promoting the use of cargo-bikes for private companies?**
- Have you identified any essential prerequisites that need to be prevalence in a city of a cargo bike project to gain ground successfully?

7. **How does DHL co-operate with governments and civic society, respectively?**

8. **How has the experience been with the cargo bike project?**
- What did the employees say?
- How was the response from costumers and the general public, respectively, and how has it change over time?
- How was the response from policy-makers?
- How important is it for the success of the cargo cycle concept that there is a positive attitude in the local context?
- How do DHL work with improvement of attitudes?

1. **Compared to the alternatives, are there any safety concerns that you have encountered that have to emphasise when operating cargo bikes?**

2. **Policy-makers: how receptive/ supporting have policy-makers been in this project?**
- How do you view the local authorities' role in promoting/sustaining the viability of the cargo bike in the DHL business?
- What do you believe is necessary from the policy side in order facilitate the implementation/ further expansion of cargo bikes?

10. **In Germany, local/national authorities supported local projects there. Are there any concrete examples of national or local authorities getting involved/or supported the cargo bike project in the Netherlands?**

11. **What do you assess as fundamental/required conditions for cargo-bike business?**

3. **As a means of transport, how competitive is the cargo bike compared to motorized/other means of transportation?**

- Is this project scalable, both in regards to Europe but also to operations in other parts of the world?
- To what extend is the cargo bike used in DHL operations, and what is your assessment of the future potential of the cargo bike?
- What where your main takeaways from this project?

4. **Could you give any concrete examples of how you have previously transferred proven practices from one region/part of the organization to another?**

## Appendix 9. Interview guide: Public sector, Bogotá

1. **¿Podría contarnos un poco sobre si mismo y su trabajo?**
   **Could you tell us a little bit about yourself and your work?**

2. **¿Ha tomado usted alguna acción que tenga como propósito restringir el uso/tráfico de vehículos en la ciudad?**
- Por qué la han tomado?
- Tienen en mente implementar otras restricciones?
- Por qué?/Por qué no? Cuáles son los obstáculos?

   **Have you taken previous any actions to restrict the use/movement of vehicles in the inner-city?**
- Why did you take that action?
- Are you planning on implementing further restrictions?
- Why/ Why not? What are the possible obstacles?

3. **¿Respecto a la implementación de prácticas sostenibles innovadoras en Bogotá, cuál cree usted que son las más relevantes?**
- …oportunidades?
- …retos?

   **Regarding the transferability of innovative best practices from one context to another (to Bogotá), what are the main…**
- ... opportunities?
- ... challanges?

4. **¿Un tema, ampliamente debatido durante el "World Bikecycle Forum" realizado en Medellín este año fue la seguridad vial. ¿Qué tan importante es para usted la seguridad vial en la implementación de bicicletas de carga?**
- ¿Qué tan grande es el problema de la seguridad vial en Bogotá?
- ¿Cómo están trabajando actualmente para mejorar la seguridad vial en las calles de Bogotá?
- ¿Podrían ustedes darnos algún ejemplo sobre los resultados obtenidos en materia de seguridad vial?

   **One topic discussed at the recently held "World Bicycle Forum" in Medellin was road safety.**
- How big of an issue is road safety in Bogotá?
- How important would you say that road safety is for a proliferation of (cargo) cycles?
- How are you currently working with ensuring road safety on the streets of Bogotá?
- Could you point to any past achievements in improving road safety?

5. **¿Ustedes buscan prácticas o políticas relacionadas con movilidad urbana provenientes de otros contextos (por ejp ciudades) para desarrollarlas en Bogotá?**

   **Are you looking at policies or best practices from other contexts (cities) when developing on urban mobility?**

6. **¿Cuáles son las experiencias previas que tiene Colombia transfiriendo prácticas relacionadas con un desarrollo urbano sostenible?**
- ¿Qué tan exitosas han sido éstas experiencias?

**What previous experiences do Colombia or Bogotá have transferring practices related to urban sustainable development (from Europe)?**
- How successful have these experiences been?

# Appendix 10. Interview guide: Transfer agents, Bogotá

1. **Podría contarnos un poco sobre si mismo y su experiencia con la "Ciudad Verde"/CRITERIA/LOGYCA?**
- Como trabaja ustedes con el desarollo sostenible urbano?
- Están tratando de hacer las bicicletas más atractivas como medio de transporte? podría darnos ejemplos de como trabajan y cómo hacen para aumentar el conocimiento del uso de las bicicletas como medio de transporte sostenible?
- Cuáles son los obstáculos más relevantes que ha encontrado durante su trabajo?

**Could you tell us a little bit about yourself and your work with la "Ciudad Verde"/CRITERIA/LOGYCA?**
- How do you work with sustainable urban development?
- (You work towards increasing the attractiveness of bikes in Colombia. Could you give some concrete examples on how you do that?)
- What are the biggest challenges you have encountered in regard to this?

2. **En general, cómo trabajan ustedes para mejorar las prácticas sostenibles?**
- Qué características tienen para ustedes las mejores prácticas?
- Más específicamente, qué factores tienen en cuenta cuando estan averiguando si una buena práctica puede ser transferida de un contexto a otro?
- Miran algo en particular en el contexto original y en el nuevo contexo?

**In practice, how do you work with sustainable best practices?**
- In what ways do you work with BPs? ii. How do you define a best practice?
- What specific criteria do you look at when promoting the transfer of a particular BP from one context to another?
- … in origin and recipient context, respectively?

3. **Podría darnos algunos ejemplos de transferencias de mejores prácticas realizadas en el pasado? Algunas que han sido exitosos? Otros no?**
- Por qué fueron exitosos/o no fueron exitosos?

**Could you give some concrete examples of previous success/fail stories of the transfer of sustainable BPs?**
- What went right/wrong?

4. **Usted conoce el concepto de bicicletas de carga, es decir bicicletas de carga como modo de transporte comercial?**
- Qué conoce del concepto?
- El concepto de bicicletas de carga es algo que ustedes activamente estan tratando de promover?
- Usted conoce si existe algun proyecto que busque desarrollar el uso de las bicicletas por parte de las empresas?
    - De ser positiva la respuesta, cúales son?
    - De ser negativa la respuesta, ve usted posbilidad de integrar dicha iniciativa?

**Are you familiar with the cargo bike concept?**
- What do you know?
- Is this something that you are actively trying to promote?
- Are you aware of any project actively trying to promote the use of cargo bikes for commercial use?
    - If yes, could you provide some examples?
    - If no, do you see the possibility to integrate this initiative?

## Appendix 11. Interview guide: General question for all respondents, Bogotá

1. **¿Cuáles cree usted que son los principales obstáculos a superar a la hora de implementar prácticas sostenibles en Bogotá? Específicamente, prácticas sostenibles en relación con logística urbana?**
- A nivel nacional político
- A nivel empresarial
- A nivel civil o individual (sociedad civil)

Which do you believe are the main obstacles to overcome when aiming to implement urban sustainable practices in Bogotá? In specific, urban sustainable practices related to urban logistics?
- On national political-level
- On a business-level
- On civil society-level

2. **¿Se podría afirmar que Bogotá es una ciudad donde existen las condiciones que posibiliten la implementación de estrategias innovadoras en materia de desarollo sostenible aplicadas en otros lugares?**

**Could you say that Bogotá is a city where the necessary preconditions exist that could facilitate the implementation of sustainable urban practices taken from other places?**

3. **¿Cuál es el papel de las autoridades locales en la promocion de la viabilidad de bicicletas y bicicletas de carga?**
- ¿Qué cree usted que es necesario al nivel politico para facilitar la implementacion de soluciones sosteniblas urbanas, por ej. el cargo bike?
- ¿Cómo cree que las actitudes de los actores políticos en Bogotá, tanto históricamente como en la actualidad, han posibilitado generar soluciones urbanas sostenibles?

**How do you view the local authorities' role in promoting sustainable urban development?**
- What do you believe is necessary from the policy side in order facilitate the implementation/ further expansion of sustainable urban solutions, e.g. the cargo bike?
- How do you think that the attitudes of the policy-actors in Bogotá, both historically and today, have been towards sustainable urban solutions?

4. **¿Un tema bastante relevante, y qué también se abordó en el "World Bikecycle Forum" en Medellín este año, fue la seguridad vial. ¿Qué tan importante diría usted que es la seguridad vial en la proliferación de bicicletas de carga?**
One topic discussed at the recently held "World Bicycle Forum" in Medellin was road safety. How important would you say that road safety is for a proliferation of (cargo) cycles?

5. **¿Teniendo en cuenta los retos presentes en el tráfico urbano, podría usted elegir una categoría de políticas específicas especialmente importante en el favorecimiento de prácticas urbanas sostenibles?**
- ¿Qué tan importantes piensa usted que es tener en cuenta esas iniciativas en el futuro?

**Taking the challenges related to urban traffic into account, are you able to single out a certain category of policies that are especially important in facilitating the shift to more sustainable transport practices in urban areas?**

- How important do you assess the role of such policies in the coming future?

6. **¿A largo plazo, cuál cree que es el más importante aceleramiento que se podría generar en desarrollo de una movilización sostenible en las ciudades?**

- ¿Cuál sector de la sociedad creen ustedes es el más importante para acelerar este cambio?

**In the longer run, what do you think is the most important catalysts to drive the shift towards more sustainable urban mobility?**

- Which sector of society (i.e. civil society, business, and authorities) do you hold as most important for driving such change? Why?

7. **¿Qué tan importante es la interacción entre los actores institucionales y los organizaciones (en especial el sector privado) para el éxito de la transferencia de las mejores prácticas de un contexto al otro?**

- ¿Cómo ha sido esa interacción en el curso histórico?
- ¿Cómo es la interacción hoy en día?
- ¿Cómo debería ser dicha interacción?

**How important is the interaction between the institutional and organizational actors for the successful transfer of best practices from one context to another?**

- How has the interaction been?
- How is the interaction today?
- How do you believe it should be?

8. **¿Qué sector de la sociedad (empresas, sociedad civil, autoridades) cree usted que es el catalizador / factor clave en la creación de ciudades más sostenibles?**

**Which sector of society (business, civil society, authorities) do you believe is the key catalyst/driver in creating more sustainable cities?**

9. **Qué sector de la sociedad (empresas, sociedad civil, autoridades) cree usted que es el catalizador/ factor clave en la implementación de bicicletas de carga como medio de transporte de mercancías?**

**Which sector of society (business, civil society, authorities) do you believe is the key catalyst/driver when implementing cargo bikes as a mean of freight transport?**