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BULLETIN FAL

FACILITATION OF TRANSPORT AND TRADE IN LATIN AMERICA AND THE CARIBBEAN

The complex urban freight puzzle

I. Introduction

Urban mobility and logistics are critical issues in Latin America and the Caribbean and if fundamental changes in policies and behaviour and customs of society will not occur, energy consumption and emissions of greenhouse gases, as well as other negative externalities will put the liveability of cities and metropolitan areas in Latin America at a considerable risk.

In this context there is an urgent need for sustainable and integrated public policies, which, in the context of urban mobility, will promote sustainable mobility concepts based on a differentiated use of transport services, strengthening of public transport, active transport modes (cycling and walking) and restricting the expansion of the use of individual motorized transport in the cities in Latin America.

Indeed, the cargo cycle is not a new thing, it is deeply imbedded in the society, basically, in the lower income segments, and it makes up a vital part of the informal sector of the society. Nevertheless, although there are hurdles to overcome, many believe that the cargo bike could be a viable solution for tackling some of the problems related to contemporary urban transport. From a technical point of view the concept is already feasible, however, since it has never really been considered, the norms or rules regarding the concept are not clear.

Although subject to substantial regional and national differences, more than half of the world population (54%) reside in urban agglomerations today, a share that is estimated to reach 66% by 2030. Currently, the most urbanised regions are North America, Latin America, and Europe (UNHABITAT, 2012).

In Latin America 80% of the population was already living in urban areas in 2014. By 2050 this share is estimated to reach 86%. Bogotá (Colombia) and Lima (Peru) are expected to grow beyond the 10 million mark by 2030, joining Buenos Aires, Mexico City, Rio de Janeiro and Sao Paolo (UNHABITAT, 2012). See figure 1.

This issue shows why urban logistics is a relevant topic in the discussion of urbanization and provides arguments why the last-mile should be included in policies on sustainable mobility in the region. The issues also delivers insights and arguments how a modern perception of the cargo bike and its inclusion in sustainable logistics policy can deliver towards more sustainable urban logistics development.

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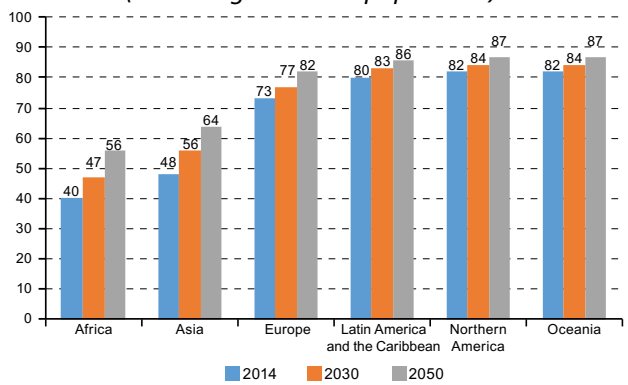
Figure 1
SHARE OF URBAN POPULATION 2014, 2030 AND 2050 ESTIMATES
(Percentages of total population)



Source: Compiled by the authors based on UNHABITAT (2012).

In light of this, it is imperative to acknowledge the threats accompanied to this rapid growth which, unless properly addressed, may compromise the sustainable development of our cities (Ibid.). Thus, challenges related to sustainable development will be very significant in these areas, and consequently, new innovative ideas, adequate policy measures and integrated policies are urgently needed if wanting to shape the sustainable future of the human habitat.

In Latin America in particular, car ownership has throughout history to a great extent been restricted to a narrow part of the population (Millard-Ball & Schipper, 2011; UNHABITAT, 2013). In recent decades, however, in conjunction with economic growth, the surge of a new middle class has augmented the motorisation of the urban conglomerates (UNHABITAT, 2013). In many developed countries the market of motorized vehicles countries has reached saturation (Millard-Ball & Schipper, 2011). This level is regarded as the actual saturation level of motorised traffic. European cities, in e.g. Germany, England and France, have all gone through the stage of heavy motorization and subsequently experienced the negative impacts of excessive urban motorisation. As a result, alternative freight and transportation modes have recently been on the upswing (DG-MOVE, 2012). Nevertheless, Latin-America is still at distance in comparison to its western counterparts when it comes to car ownership. According to some estimations, in Colombia, Chile and Argentina, the respective shares are at around 131, 201, and 148 cars per 1000 inhabitants, respectively, and consequently, car ownership is far of the expected saturation limit of 500 cars per 1000 inhabitants (BBVA, 2012; Millard-Ball & Schipper, 2011).

In the next section this FAL discusses the relevance of urban freight transport and the last mile logistics challenges. Section III presents European experiences in using cargo cycles in urban logistics strategies. Section IV presents the possibilities and challenges to promote and develop cargo cycle logistics in Bogotá. Section V derives policy recommendations to strengthen the diversity of urban logistics.

II. The importance to acknowledge urban freight transport

Rapidly paced urbanisation and high population growth create continuous pressure on the urban landscape where complex demand patterns in metropolitan areas drive increased urban freight movements (UNHABITAT, 2013). As a result, the urban environment is confronted with numerous negative externalities, foremost those associated with traffic accidents, congestion, local air pollution and noise, which consequently calls for the development of alternative methods that deal with these issues. Urban air pollution is a growing concern world-wide. Particular matter (PM10-2.5), mostly black carbon, is a great health concern in our cities today and it is estimated that in 2012 over 7 million people, or one out of eight, died from indoor and outdoor air pollution (UNDP, 2014).

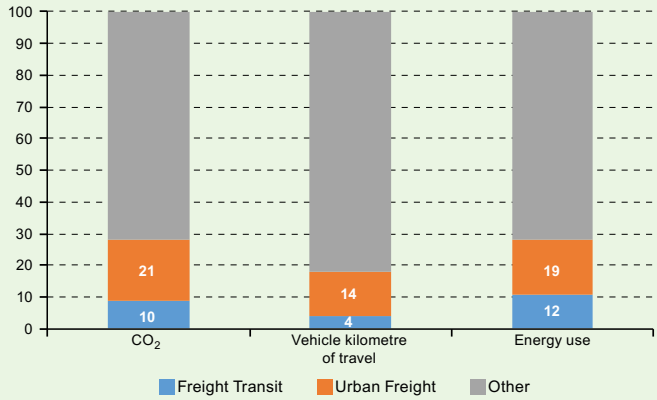
An efficient urban freight system is an essential prerequisite for an urban region to develop in a sustainable manner and to remain competitive (UNHABITAT, 2013). Population density offers additional challenges to urban development, this since it correlates closely to the patterns of urban goods transport. Quite a paradox, however, although high density levels often are campaigned as an objective of sustainable development, if not tending to the complexities it derives, high urban density poses challenges in the form of congestion and unsustainable urban development. Nevertheless, high urban density is regarded as an opportunity for urban logistics, especially for implementing urban logistics platforms and if the urban landscape is characterised by small outlets and nano-stores, a peculiarity often attributed to developing world cities. It produces opportunities to consolidate urban freight movement and to introduce alternative modes of transportation, especially so in the last part of the supply chain; the last mile.

Urban freight contributes to a large share of the negative externalities faced in urban areas today. Urban mobility accounts for between 20 and 40% of the overall CO_2 emissions and approximately up to 70% of other pollutants derived from transport, related to urban areas. See figure 2.

In cities in developing economies more than 50% of all city road traffic can be attributed to commercial freight movement (Herzog, 2010). On a global scale, the majority of the urban freight fleet is old and a large part of truck capacity remains underutilised. Thus the use of motorised vehicles in urban freight transport is neither efficient nor

sustainable, and apart from emissions and congestion generates high levels of nuisance (UNHABITAT, 2013; Savy, 2012; Dablanc, 2008). Recent increases in urban cargo movement come partly as a result of rapid economic growth and are further exacerbating traffic congestion and thus, are an immense threat to human welfare and sustainable urban development (UNHABITAT, 2012; Jirón, 2013). Given that urban freight flows are principally characterised by small and frequent deliveries, there is even a greater need for a well-articulated and efficient urban logistics system.

Figure 2
SHARE OF EMISSIONS, ENERGY USE AND VEHICLE KILOMETRE OF TRAVEL OF URBAN GOODS TRANSPORT IN URBAN TRAFFIC
(Percentages of urban traffic)



Source: Dablanc (2008); Herzog (2010).
Note: In urban areas, urban goods transport account for (heavy goods vehicles included):
- 18 per cent of vehicle kilometre of travel (VKT)
- 31 per cent of energy use
- 31 per cent of CO_2 emissions
- 70 per cent of other pollutants (NO_X, SO_X and particular emissions etc.)

Due to growing concerns regarding economic activity and negative external effects combined with the demographic conditions faced in urban areas, the concept of sustainable urban logistics has recently started to receive more attention by policy-makers (Taniguchi & Thompson, 2015; Cherrett et al., 2012).

A. The last-mile challenge

During the 1960s and 1970s, research concerning urban freight movement was relatively abundant, especially so in some parts of the developed countries and Latin America, where, inter alia, truck traffic management were of interest (Ogden, 1992). In the following decades, however, these aspects lost magnitude to issues of, urban passenger transport (Taniguchi & Thompson, 2015). While urban freight transport has received more attention from policy makers and scholars alike, especially in the developed countries, data are still scarce. Freight transport is largely context dependent, and requires a holistic and comprehensive understanding of the diverse urban freight logistics activities.

The term "last mile" refers to a narrow sequence of the supply chain which involves the last leg of delivery. It 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).

The last mile has only recently captured the attention of urban policy-makers who, as a result, have increased their commitment and willingness to engage with urban-related freight transport issues (Gonzalez-Feliu et al., 2013). Nevertheless, freight transport, and more so sustainable urban freight transport, is still in an infant stage and no consensus exists about the required policy measures. 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 a pressure to develop a more sustainable urban logistics system, and hence, also addressing the most critical and costly part of the supply chain (Taniguchi & Thompson, 2015; Russo & Comi, 2012). Although the negative externalities of urban freight are relatively well comprehended (Allen & Brown, 2012), the integral role of policy-makers has been largely neglected, especially in developing economies. Lesson drawing between cities and dissemination of best practices is not well understood, and the inclusion of developing world cities in this equation is almost non-existing (Ibid.).

B. Contrasting urban landscape in developing cities

When forecasting future urban growth, there is no doubt that the chief part is attributed to developing world cities; and it is projected that of the top 25 largest cities in the world by 2025, only four will be found in what is currently referred to as the developed countries. Not only rapid growth, accelerating population density and infrastructure gap, but most prominently also the complex commercial landscape of developing world cities, are crucial to consider. By 2025 it is estimated that 1 billion new consumers will be found in emerging market cities (or 60% of the new urban consumers), and in conjunction with that urbanisation has grown faster than logistics policies are being developed and implemented. Furthermore, urban logistics is largely context dependent. In many developing markets, modern channels of distribution are only poorly developed, or even non-existing, and instead, traditional channels are overrepresented. In these cases, "one store-one owner" is a valid way to describe the complex web of informal and traditional channels, where so called nano-stores make up a large share of the urban commercial activity.

The number of nano-stores is huge; e.g. in Mexico City, Coca-Cola supplies about 1.2 million points of sales, and Unilever must deliver ice-cream to over 10.000 freezers (Blanco & Fransoo, 2013). In Bogotá, there might be as many as 140 000 nano-stores (Jallow & Johansson, 2015), and in this context, Colombiana (a Colombia beverage company), have distribution routes comprising over 100 stops per day in Bogotá (Blanco & Fransoo, 2013). By, 2025, at least 10 million of these nano-stores will be located in the 600 largest cities in the world (Ibid.). This illustrates the challenges related to last-mile delivery in an organised, structured, and sustainable manner when the urban logistics landscape is largely scattered and subject to informality. At the same time this is accompanied and contrasted by a rapid expansion of supermarkets of different sizes, with strict distribution logistics.

III. European experiences and initiatives

In Western Europe, road transport is responsible for roughly 40% of carbon dioxide emissions (CIVITAS, 2013), and although European policy-makers 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, 2015). In many developing countries, vehicle kilometre of travel (VKT) 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 "obliged" to move towards alternative methods with lower negative impact on the local environment. This has led to a burgeoning number of EU-funded initiatives (e.g. BESTUFS, CIVITAS, IMPACTS 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. For example, 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). Many of these initiatives have started to target non-motorised modes of transport, where one example that has gained much ground in Europe in recent years is cycle logistics.

A. Cargo cycles and their role in European last-mile logistics

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 can 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 one more green, cost-effective, and competitive alternative to the current over-reliance on motorised vehicles (Ibid.).

Europe lies in the forefront in the development of cargo cycles as a last mile solution and many public and private initiatives have surged in recent years (although in many cases publicly funded). Ranging from local freight forwarders to global players, these have all realised that introducing cargo cycles as a last mile solution will not only relieve congestion in city centres, but actually also leads to real, tangible cost savings. Since a large share of the delivery costs are found in the last mile of the chain, the cargo bike does not only increase efficiency, but leads to actual cost savings for companies. Based on publically available information, pilot studies on cycle freight have been conducted by a handful of private companies. This section describes private and public initiatives which have mainly sought to examine the general applicability of the concept and whether or not it is a viable option for their respective organisation.

1. Private initiatives

United Parcel Service (UPS) performed a small-scale pilot, employing a total of six cycles in a total of five German cities, including Bochum, Cologne, Hamburg, Bremen and Hannover between 2010 and 2012. The overarching objective was to evaluate the potential of using freight cycles in densely populated parts of the cities or in areas otherwise inaccessible to larger conventional vehicles. In other words, the intention of UPS was not to replace their motorised vehicles, but merely to use the cargo bikes as a complement to their existing operational fleet. Throughout the duration of the pilot testing, the freight cycles collected parcels from motorised delivery vehicles, serving as mobile depots. UPS reported that one major advantage of incorporating cargo bikes into their distribution system, compared to more unwieldy means of transport, came through bypassing the need for repeatedly looking for parking spots. Additionally, higher utilisation rates did also come as a result of the possibility to distribute parcels for onward delivery via the mobile depots.

Moreover, Dynamic Parcel Distribution (DPD) initiated a pilot testing in Hamburg, Germany, in 2011, to assess the prospects of using cargo tricycles for their inner-city distribution operations. The principal aim of the project was to evaluate the necessary preconditions for an efficient applicability of cargo cycles, as well as to determine the benefits and costs. The logistical setup of the project involved a delivery area with a high spatial drop-off density coupled with a low drop-off factor, meaning that the points of discharge were located in proximity to each other but a lesser amount of parcels were to be dropped off at each discharge point. One of the core outcomes of the testing was that DPD managed to identify the availability of storage facilities in the inner city as a crucial precondition for the successful implementation of cargo cycles. The advantage of the centrally located storage facilities comes as a result of the freight cycles only having to travel a short distance to pick up new packages close to their area of use, following a drop-off. Another benefit which the company found was that, with the cargo cycles, the routes could be shortened and streamlined/optimised due to the greater flexibility permitted by the cycle and it being able to overcome non-vehicular accessibility (e.g. passing through narrow one-way streets in the opposite direction). DPD further noted that being able to park on the sidewalks conferred a major advantage as opposed to carrying out the parcel distribution using a light goods vehicle. All in all, the lesson drawn from the pilot project was that substantial cost benefits could be realised by using freight cycles in city-centre distribution of light goods. The company further concluded that its riders as well as its customers reported a positive perception towards the use of cargo cycles (Riehle, 2012).

DHL is one of the few companies, and perhaps the only global player in the freight business, that has developed the use of cargo bikes beyond the pilot project level. In line with the company's green targets of CO_2 emissions, DHL Express set out to become a greener and more cost efficient company. Initially, the concept was only rolled out in the Netherlands (e.g. Amsterdam, Rotterdam, den Haag and Utrecht); however, after witnessing its success, the concept was further replicated throughout Europe (Germany, Belgium, Greece, Austria, the UK and Italy). As of today, cargo bikes make up about 10% of the DHL Express' vehicle fleet in the Netherlands, which is regarded as the saturation level in that particular city (Jallow & Johansson, 2015). DHL has been rather successful with this new innovative initiative and could be argued to be a forerunner in the European context when it comes to replicating the cargo bike concept in a larger scale. Today, the DHL Group operates over 11,000 environmentally friendly vehicles, in addition to its fleet of over 26,000 bike, out of which 9,000 are electric bikes or trikes. In April 2015, DHL announced the introduction of its new so called Cubicycle to its urban distribution in the Netherlands (see second picture in this *Bulletin*). The Cubicycle is a "quadracycle" where the container is removable and holds a volume of one cubic metre. The dimensions are the same as for a standard shipping pallet (80×120×100cm) which have facilitated the integration to DHL's standardized shipping handling processes. On an average route it is loaded with approximately 125 kg (DHL, 2015).

Furthermore, Gnewt Cargo, a London-based delivery company that specialises in last-mile solutions, has made room for freight cycles in their operations. The cycles operate within the "Congestion Charge Zone" which is imposed on the city's most central areas during weekdays. To reload the freight cycles, mobile depots are used which, in turn, collect the cargo at secondary hubs located outside the designated zone. Put differently, this means that cargo cycles, complemented by electrically driven trucks, are responsible for the last mile of the supply chain. Based on the Gnewt Cargo account, Leonardi et al. (2010) estimated that the company managed to curb its CO_2 emissions by almost two-thirds as well as cutting the distance travelled per parcel delivered by more than half (Leonardi et al., 2010).

2. Public initiatives

Until today, only very public sector-backed initiatives on the use of cargo cycles exist at national level. Individual projects are appearing, mainly in the field of electrical mobility. One such example was the "I replace a car"-project (German: "Ich ersetze ein Auto") which commenced in April 2012 and ran until June 2014

throughout Germany, funded by BMUB (BMUB, 2012). Ex-ante data from this project suggests that 42% of the deliveries where substitutable for cargo cycles, or 19% of the mileage. There was also a change in modal split following the project, where in terms of shipments, cargo cycles increased from one to 7% from 2012 to 2014.

As a result of the increased interest for cargo cycles as commercial urban transportation, the European Cycle Logistics Federation (ECLF) was founded in 2012. ECLF is the only professional body that works as a common voice for so called cycle logistics, a "new" piece of the urban puzzle that has been largely neglected up until recently, despite the fact that it historically has been a relevant piece in urban development.

Ambitious and coordinated action has come at the supranational level in form of ECLF's "CycleLogistics"-project, financially supported by the European Commission. This initial baseline study was conducted between May 2011 and April 2014 and sought to promote the viability of the cargo cycle as a contemporary and future transport solution for delivery and freight services. More specifically, the project's objective was to examine the potential use of cycles for transporting freight vis-á-vis potential customers, while simultaneously raising the awareness in urban areas in regard to the creation of adequate conditions for the applicability of cargo bikes for freight distribution. 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 lorries and vans, could be shifted onto cargo cycles (ECF, 2014). The current project "Cyclelogistics Ahead" has the objective of this project is to stimulate municipalities to create favourable framework conditions that facilitate the continued development of emission free cargo bikes in Europe, in part substituting vehicles driven by fossil fuels with cargo cycles; furthermore. ECLF's communication with municipalities and local authorities is one of its main responsibilities. The ECLF also organises the annual Cargo Bike Festival which is a forum for various actors (including, inter alia, DHL Express and Outspoken Delivery) 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.

Another example is Transport for London (TfL). In 2009 TfL investigated the potential applicability of cargo bikes for the distribution of freight within the city centre of London, taking into account practical factors directly related to the use of the bikes and also factors connected to the perception and attitudes towards the concept. The findings of the project led to a better understanding of the advantages and disadvantages of introducing freight cycles for last-mile distribution. The benefits and the limitations appeared to be combination of operational, "human", environmental and urban factors. The most emphasised factors were the attitudes and perception towards cycle freight in general, but scepticism from clients was also highlighted as a major challenge. Insights from consultations with experts within the field led to the conclusion that the situation can be overcome by means of strategic campaigning.

B. Lessons learned and transferability[1]

One general conclusion that may be drawn based on the hitherto publicly released results, is that the practice of using cycles to distribute goods in urban centres has at large been well-received, particularly when introduced in tandem with market and/or cost incentives. In the majority of experiences considered here, freight cycles as a support component in a larger system typified by the prevalence of motorised vehicles. Because of the freight cycle's performance constraints (i.e. maximum payload and operating range), in most cases its implementation besides the investment in the equipment and bikes, had to be undertaken in conjunction with investments in specific logistics infrastructure, most notably centrally located storage facilities. However, this was not a critical concern in those projects where operations were carried out within a short distance to the main depot. There is still a long way to go, however, cargo bikes have proven to be a viable solution to urban freight delivery throughout many European cities. The market is growing rapidly, however the awareness, perception, and thus, subsequent acceptance of the concept is crucial for successful proliferation.

The cargo cycle has much potential to be replicated in other cities, not only in Europe, but also in Latin America and the Caribbean. The concept is not a contemporary phenomenon, but rather an important piece of the traditional urban landscape in many developing city contexts. The lessons learned from the European settings are manifold, and there is much hope that it can be also successful in contexts largely divergent from that of e.g. Amsterdam or Berlin. In Latin America cities face the before mentioned challenges from fast urban growth, high population density, complex urban commercial landscapes, high level of informality, large income disparities, and a lack of knowledge and policy interventions in urban freight all complicate the urban puzzle in the developing world. Nevertheless, if addressed

[1] The results are based on 17 expert interviews in Europe and Colombia undertaken 2015 (Jallow & Johansson, 2015).

adequately, the cargo cycle could proliferate even in such heterogeneous settings. Actually, it is not the concept per se, but the actual logistical "masterminding", technical know-how and expertise within the field of last-mile logistics that could be disseminated to cities in Latin America. Motorisation levels are still quite low in many cities throughout the continent, and combined with the aforementioned particularities, as well as the lesser road space per km^2 found in these urban conglomerates, various obstacles lie ahead of municipal governments when designing urban mobility policies.

Since the last-mile is a costly and complex part for private entities, and since urban freight transport generates severe negative externalities to the urban habitats, it is paramount that city-to-city lesson drawing can flourish, so that cities in the region can leap-frog the European urban freight development, and omit committing the same costly mistakes as the developed world. Indeed, new innovative ideas and solutions as the cargo bikes are a good way to start solving the urban logistics puzzle, where urban polices must not only takes this type of mobility into consideration, but should proactively promote and give incentives for modernisation of this traditional form of freight mobility in order to ensure its development and coexistence besides other modes. In the following section a case study from the Colombian capital Bogotá is presented, elaborating on the challenges and possibilities of cargo bike proliferation, and thus serving as a valid point of departure for many urban conglomerates in the region.

IV. The acute need for new innovative urban freight initiatives: a story from Bogotá[2]

Embraced by a mountain range 2,600 meters above sea-level, 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 with a history of poor infrastructure and with significant security and safety problems, Bogotá only recently embarked on a journey to convert towards a more sustainable and liveable city. Despite progress in many areas, the aspect of urban freight transport and logistics in general, has largely been neglected. In Bogotá the human resources in the public sector to address these challenges are very limited. As in many other dense urban areas in LAC, the informal sector is still prominent. Bogotá is also a city with high population density, close to 15,000 people per square meter, which, in combination with inadequate and insufficient infrastructure, leads to high levels of congestion that negatively affect accessibility, mobility and livelihood in the city. Further, income disparities are huge, more than half of the urban population belongs to the lower income strata, and an additional 40 percent to the lower-middle income segment and only a timid share make part of the upper strata. Conjointly, these factors create unique conditions for urban freight.

A. Complex urban logistics

In Bogotá, as in many cities in the region nano-stores and small outlets coexist with structured and modern retail outlets. It is estimated that a nano-store can receive over 30 deliveries per week, which complicates the urban freight puzzle. In Bogotá, around 17,000 freight trucks enter the city of every day, a city where the freight movement landscape differs vastly from that of Europe. What complicates the situation is the underdeveloped logistics system in the country, where Bogotá serves as a huge consolidation hub for all freight within the country, independent of origin or destination (Jallow & Johansson, 2015). In consequence, there might be as many as 140,000 nano-stores and over 100,000 distribution locations in the metropolitan area, a characteristic that normally would favour the use of small vehicles (Ibid.). Motorised vehicles are responsible for a large share of the urban distribution, operating at poor utilisation rates, rendering high logistics and operational costs for transport service providers. At the same time these vehicles are constantly competing for public space with the other transport options. Much of urban logistics in Bogotá is characterised by informality and "single owner - single store-issues" and many of the strategies promoted by the Secretary of Mobility in Bogotá have failed, especially the ones promoting night-deliveries. Despite the existence of policy-plans targeting logistics in general, and cargo movement in particular, no effort has been devoted to urban cargo movement on the local level, and the regulations regarding restrictions on freight transport are limited. Until recently, urban logistics has almost exclusively been a concern of private enterprises, and, no majority based consensus exists within the local logistics industry in relation to create logistics platforms and centres. Thus, although some large firms do have distribution plans, cargo movement in Bogotá is of very complex character. Furthermore, much of the freight activity is carried out using non-conventional cargo vehicles (e.g. freight trucks), such as motorcycles, cargo-motorcycles, cars, taxis, and cargo bikes (Jallow & Johansson, 2015).

Today there are some urban consolidation centres (UCCs) in Bogotá, 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.

[2] The results are based on 17 expert interviews in Europe and Colombia undertaken 2015 (Jallow & Johansson, 2015).

Although a public policy has been formulated to addresses the development of UCCs, 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. According to the Secretary of Mobility in Bogotá, the rationale behind this development is that no clear articulation or interaction exists between the public and private sector.

Important is, however, that the city of Bogotá is currently initiating a study with the overarching objective to investigate the cargo movement in the different zones of the city, thus looking at demand and how companies are engaging in these activities in each zone and on each street. Today, the logistics activities are disorganised and no comprehensive strategy has yet been formulated to address the topic. Furthermore, work is on the way to develop 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. Prevalent logistics plans of the city intend to centralise the cargo flows so that larger vehicles are concentrated to a specialised infrastructure (consolidation hubs), however, although this happens to some extent, it is not coordinated from the policy side, and as a consequence, urban freight remains largely unstructured.

B. The cargo cycle and the complex urban freight puzzle

Given the challenges faced in urban Bogotá today, the cargo cycle appears as a viable part of a holistic solution towards a more sustainable urban habitat. It might also be argued that cargo bikes could actually be included in the forthcoming strategies for urban delivery. The "European way" of developing the cargo bike concept is admired, however, a platform such as ECLF does not exist in Colombia (Jallow & Johansson, 2015). The cargo

fleet (see first picture, on the cover in this *Bulletin*), the concept has not expanded in any other formal way (Jallow & Johansson, 2015). In order to push this type of modal change, the importance of stakeholder coordination is crucial. The cargo bike is being used informally, but to turn it in to a viable solution to tackle the negative externalities in urban Bogotá, stakeholder coordination is crucial. Given the complexity and fast growth of urban Bogotá, policy-makers are forced to look for new and innovative ideas, where the cargo bike is truly a realistic option, particularly given the complex distribution system and that the growth-related problems have become more acute.

Most probably, it is in areas where loading and unloading is complicated due to accessibility issues where the cargo bike has the most potential. Currently, there are various areas in Bogotá that are restricted only to pedestrians and/or bikes (plausibly also cargo bikes), and additionally, the city 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 (Jallow & Johansson, 2015).

C. Challenges to the proliferation of the cargo cycle

Many stakeholders in Bogotá agree that the cargo bike is not well perceived in Colombia, and that, in part, the mind-set of the civil-society and the private sector is currently hindering the diffusion of the concept to reach the formal sector. Such mind-sets create significant obstacles to the proliferation of new sustainable ideas, and even more so for the cargo bike concept. Having a car is much related to social status and success the contrary is true for bicycles. A main challenge is therefore the perception held by individuals on all levels of society, and it is consequently a crucial issue to address. People refer to the cargo bike