



Title: Paris, Urban Laboratory for Urban Logistics

Project Number: 15-2.1c

**Feasibility of Consolidated Freight Deliveries in Cities; and
Alternatives for More Efficient Use of the Road and Parking Space in
Cities**

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FINAL REPORT

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Abstract

There are several specific characteristics that can be attached to the transport of freight in cities. The purpose of this study is to focus on the actors that develop alternative solutions for freight and urban logistics in order to create green and sustainable cities. There is a multitude of different stakeholders whose interests and goals often diverge. City councils, retailers, carriers and local citizens are only a few of them. Nevertheless, it has become important and urgent that the different stakeholders cooperate in order to create an efficient system with a good overall outcome (De la Calle and Alvarez, 2011; Ehrler and Hebes, 2012; Riehle, 2012). Urban logistics introduced new stakeholders in the governance of urban projects. Urban logistics which now results in experiments of "logistics solutions" in the city, actually underline the novelty of certain experiences of public and private actors in the modes of production of the city. These experiments reflect new practices in terms of planning and urban development. City logistics becomes a laboratory, in which public and private actors are experimenting with new ways of designing urban development.

By analyzing four logistics experimentations in the City of Paris, we will describe the different process of the realization of these logistics activities and the part played by each stakeholder. In this study we conducted many interviews with the actors responsible for the realization of these logistics solutions in Paris. From these interviews, we will be able to highlight the contribution of these kinds of experiments on the changes of urban practices.

First, the development of experimentations of urban logistics solutions causes a multiplication of the stakeholders involved in the urban production. Then, urban logistics solutions developed into the City of Paris constitute a new way to develop cities in a sustainable way in a bottom-up approach, because discussions and governance with all the different stakeholders come before the realization of the project. So, the development of logistics activities in the city is not only a good way to develop greener solutions for freight but is also a good way to improve relationships between all the urban stakeholders and test some new modes of coordination for urban development.

Keywords: Urban logistics, urban laboratory, logistics innovations, governance, public policies, urban experimentations

INTRODUCTION

Last mile deliveries pose great challenges on urban distribution networks. Traffic regulations, old, one-directed and narrow streets and congestion can disable the reliability and speed of these deliveries. Many new solutions in terms of depots and inner city distribution alternatives such as outer-city consolidation centers, mobile depots and intermodal combinations have been multiplying due to the aforementioned strain on urban logistics. These solutions contribute to the development of urban logistics in cities, particularly in dense metropolitan centers. They are the physical expression of a new conception of the city. Logistics activities are vital parts of urban life and a necessity (Hesse, 2008; Anderson, Allen and Browne, 2005; Quak, 2013; Arvidsson and Browne, 2013). At the same time, urban logistics causes negative externalities and can be perceived as a disturbing element. Air pollution,

congestion and noise are negative externalities of urban logistics that are frequently mentioned in literature (De la Calle and Alvarez, 2011; Ehrler and Hebes, 2012; Quak, 2013; Arvidsson, Woxenius and Lammgård, 2013). Freight transport is responsible for a major share of these negative externalities, even though the total number of freight vehicles in urban traffic is much lower than that of private cars (Lindholm, 2013). Urban logistics influences the economy, society and environment in multiple ways, and different actors have different priorities and goals regarding the impacts that stem from urban logistics operations. Whereas the private sector usually emphasizes economic efficiencies, public authorities have a strong interest in the well-being of the citizens. Therefore, regulations as well as supporting and restricting measures of city authorities often have the aim to improve and secure environmental and social aspects. This can often be in contrast with the aims of private actors (Macharis and Melo, 2011; Arvidsson and Browne, 2013).

There are several specific characteristics that can be attached to the transport of freight in cities. There is a multitude of different stakeholders whose interests and goals often diverge. City councils, retailers, carriers and local citizens are only a few of them. Nevertheless, it has become important and urgent that the different stakeholders cooperate in order to create an efficient system with a good overall outcome (De la Calle and Alvarez, 2011; Ehrler and Hebes, 2012; Riehle, 2012). Urban logistics introduced new stakeholders in the governance of urban projects. Urban logistics which now results in experiments of "logistics solutions" in the city, actually underlines the novelty of certain experiences of public and private actors in the modes of production of the city. These experiments reflect new practices in terms of planning and urban development. City logistics becomes a laboratory, in which public and private actors are experimenting with new ways of designing urban development.

PROJECT OBJECTIVE

The purpose of this study is not to propose an economic evaluation of urban logistics solutions experienced in Paris. Several studies (Maes, 2014) show that very often these businesses are not yet cost-effective nor are they competitive against other modes of transportation, especially trucks. Numerous experiments towards more environmentally friendly urban transport solutions have been attempted over the last years. However, as there seems to be no lack of innovative ideas but rather of sustainable business models, most of the developed projects have failed to make it beyond the trial stage (Lindholm, 2013). The high failure rate of innovation projects can be seen as an obstacle when it comes to persuading officials and stakeholders to implement new solutions. It is therefore valuable to provide an overview of the different type of innovation projects and trials that can take place in the context of green city logistics. By analyzing past experiences, reasons for success and failure can be identified. This leads to an overview of critical topics that have to be kept in mind when designing a new city transport solution. This section shortly summarizes different transport initiatives, reviews and trials about transport projects and draws policy practice implications from them. The purpose of this study is to highlight the innovations in the management practices of public and private actors. Also, the aim of this study is to show how urban logistics has turned the city into a laboratory and take a part in the renewal of production of the city.

PROJECT DESCRIPTION

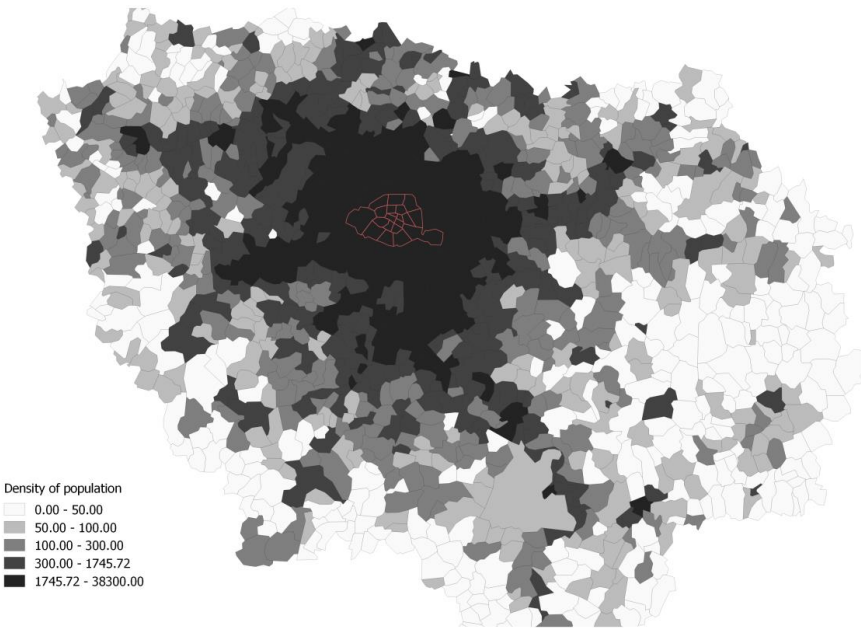
Background: experiences in urban logistics, a state of art

In France, in the late 1990s and early 2000s, we gradually slipped from a sector-based approach of freight transport in the city to a more integrated approach of logistics in the city. Through the analysis of the evolution of the studies conducted on behalf of the cities on the transport of goods, we are able to seize the paradigm shift. Urban logistics was born from the integrated vision of urban goods transport in interaction with the city. Urban logistics is a "vital function" of the city. Today a conception of the city as an urban system that integrates and optimizes the flow, such as urban logistics goods becomes more and more important in urban planning. So we need to understand the regulation in which it operates, and the distribution of competencies among the actors.

But if the regulation of urban goods transport is not a new concept, it has adopted new environmental objectives and is now related to urban development. Freight and logistics are up to the private sector, the public policies are conditioned by the limits of the private sector, so they need to adopt new modes of action on sector and on the territory. The renewal of the city also means a renewal of the practices of the public stakeholders. They have little experience in the field of urban logistics, so cities like Paris experiment in urban logistics and turn the city into an urban laboratory. Urban logistics influences the economy, society and environment in multiple ways, and different actors have different priorities and goals regarding the impacts that stem from urban logistics operations. An extensive literature analyzes a number of logistics solutions already tested in several cities. This literature has mostly examined the evaluation of these experiments: their success or failures, but also their economic model. They can be classified in two types of solutions: urban projects or alternative transport solutions. The literature in economics and management has been very interested in assessing economic models of these solutions, but not that much in practices of urban planning. So, in this study we will focus on four different urban logistics experiments conducted in Paris. Therefore, this study does not attempt to evaluate these experiments, but to highlight the innovations in terms of planning and urban practices that emerge from the development of this kind of experiments.

Paris is one the densest parts of the metropolitan area as we can observe on the following map. In this context, the development of logistics activities seems more difficult because the new logistics solutions have to be clean, sustainable and capable of adaptation in a dense urban environment where land prices are very high and represent a major investment.

Figure 1- Population density in the Paris metropolitan area in 2015



Definition of the subject

Urban logistics: a definition

There is a multitude of different stakeholders with parts in urban logistics. All these actors need to coordinate in order to implement these city logistics experiments. It is therefore interesting to investigate the different actors of urban logistics in the case of Paris and understand their multiple interconnections between them. These experiments transform the city into laboratories where new forms of governance between public and private actors can be experienced at the scale of an urban logistics project. The observation of the part of the stakeholders in these projects will allow us to analyze the different types of governance of urban logistics. In the literature the link between practices of planning and urban logistics is still quite tenuous, while the link between urban planning and transport of goods has grown considerably in recent years. City logistics is a new field that experienced new management practices and a new governance that takes into account a large number of stakeholders from the freight sector and from the public authorities. This governance by project in the city opens the debate on a new dimension in the urban production.

Typology of urban logistics solutions experimented in cities

There are several types of logistics solutions tested in Paris. We chose to study four of them, which correspond to three different types in order to have a good representation of each one, and observe if the type influences the success or failure of an experiment, and especially to understand the relations and the parts played by the different stakeholders in each experiment.

First category is the Urban Consolidation Centers. An urban consolidation center is a warehouse that usually works in a hub and spoke system. UCCs are located outside of the inner city area in order to reap the benefits of lower rents and costs compared to more central areas. Deliveries are made to the UCC and freight is then consolidated in order to make all final deliveries more efficient. According to Lin, Chen and Kawamura (2014), there are potential environmentally related benefits in employing UCCs when vehicle utilization is optimized through consolidation. Theoretically there are also cost related benefits of using UCCs outside of the city center compared to employing expensive storage at central customers' sites. Apart from last mile deliveries from UCCs, more environmentally friendly vehicles and shorter routing distances, an UCC can provide value added services to its customers such as storage, consignment unpacking and labeling (Browne, Allen and Leonardi, 2011). Given these circumstances, an UCC can be both environmentally and economically beneficial compared to a non-consolidated solution. However, most of the investigated UCCs still receive strong support from the local public authorities. UCCs are sometimes solely seen as an additional step in the supply chain as well as an obstacle when it comes to profit distribution to the various actors of an UCC. Accordingly, Gonzalez-Feliu (2014) found that as a consequence of additional costs and responsibility transfer, most carriers do not gain on passing through an UCC. In this study we have chosen to analyze two urban consolidation centers, one already active and the other one still in construction: the urban consolidation center Beaugrenelle (*Espace Logistique Urbain*) in Paris 15th arrondissement, and the Urban Distribution Center of Montorgueil in Paris, 2nd arrondissement.

The second category is river barge. Using river barges as an alternative for mobile depots in urban freight solutions has various advantages and disadvantages. First of all, a river barge can carry large freight volumes and thus provides great capacity measures in areas where demand is high. However, natural reasons limit the reach of a river barge in a city, making the last mile delivery from the barge station to the final customer important from a cost perspective. A river barge is only possible where a river is running centrally through a city such as Paris, Amsterdam, London or Chicago (Lumsden, 2007).

There is also need for different off-loading areas along the central river, something that is likely to have significant costs not only due to the initial investments when such areas do not already exist, but also because of the high estate prices and rents in central city areas. This is the reason why most urban depots have moved out of the central areas (Taniguchi and Thompson, 2014). Concluding this section, aspects such as customer density and freight demand volume, time windows and current strain on traffic and congestion to find the best-fit solution must be taken into consideration when evaluating different distribution modes and depots for urban freight distribution. In this study we have chosen to analyze the company of Vert Chez Vous which provided a delivery service in Paris by river barge and electric cargo-cycle in Paris.

The third category is emission free last mile solutions. Last mile delivery and the last mile problem that are often discussed in logistics refer to the last part of a freight delivery process from a warehouse, distribution center or UCC to the final recipient. A lot of attention is paid to last mile solutions due to the fact that it can sometimes be considered the least efficient step in the whole supply chain (McKinnon, Browne, and Whiteing, 2012; Lin, Chen and Kawamura, 2014). Transport operators are often restricted in their last mile operations according to vehicle size and weight restrictions. When large trucks are restricted, transport providers are forced to implement lighter, and thus additional, vehicles into their last mile operations in order to comply with the increase in demand in frequency for goods delivered to urban retailers. In the following, several options for last mile delivery are discussed: Bikes, E-Cargo Bikes, and Tricycles. With increasing focus on sustainable freight vehicles in central urban areas, bikes are often suggested as an alternative to trucks and vans for last mile deliveries. In this study we have chosen to illustrate this type of urban logistics experiments with the company The Green Link in Paris 10th arrondissement.

RESEARCH APPROACH

Conceptual framework

Analyzing practices and considering urban logistics solutions as urban experiments refer directly to the concept of “laboratization of the city” (Evans, Karnoven, 2013). Laboratization is about setting boundaries within which controlled experiments can take place and be recorded. The purpose of these spaces is to allow the staging of experiments that can be repeated dependably anywhere, transforming experiments into knowledge. The concept of the urban laboratory implies that the real world can function as a laboratory. Like Kohler's natural experiments (2002), urban laboratories are highly privileged spaces of experimentation that promise relevance by dint of their adherence to life ‘as it is really lived’. Like Darwin's Galapagos Islands, they are ‘living laboratories’ that are located in cities and focus on the myriad complexities of urban development processes. And like the activities of early population biologists, the epistemological credentials of these laboratories are predicated on a systematic approach to data collection. In order to produce laboratory knowledge in the field, urban laboratories need to be able to provide a richness of data that allows statistical patterns to emerge. Furthermore, to create spaces that are capable of providing the conditions required to experiment in this way, material, institutional and conceptual boundaries have to be set. The setting of boundaries produces what Kohler calls a ‘proper place’ for experimentation and involves the negotiation of how place specificity affects knowledge production (Hodson and Marvin, 2009). The importance of built form and bounded space in facilitating knowledge production and urban adaptation has largely been ignored by urban and regional researchers (van Heur, 2010; Evans, 2011). We turn to the case study in order to highlight the space of knowledge production inscribed by the urban laboratory and its

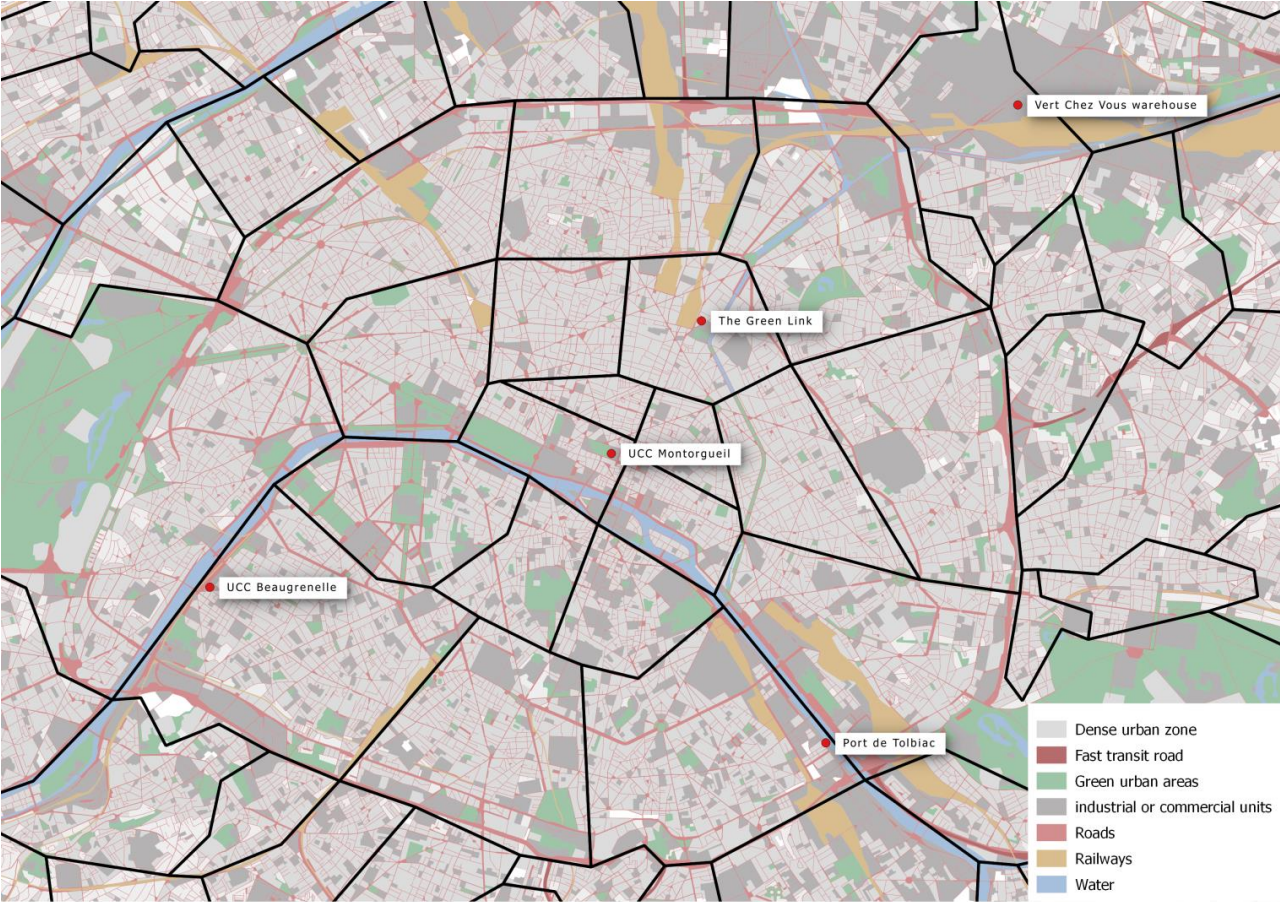
implications on governance. More importantly, the concept of "laboratories" recognizes that cities are still "in the pipeline", on the move (Guy, 2009); they are active rather than static process Analysis of the urban development process suggests that the way knowledge is debated on cities and deployed must change radically. Understanding the Chicago school, urban laboratories connect the concept of obvious to the tradition of American pragmatism, but the ideas of the collective and recursive learning also resonate with the ideas of participatory and deliberative democracy and the right in the city (Lefebvre, 1968). In all cases, these construct innovation spaces provide a fascinating lens through which to critique and reflect on the future of cities.

This study aims to understand how urban logistics stakeholders transform the city into laboratories and make their urban practices, management and relationships evolve in order to create a new city logistics. These transformations become possible thanks to a new governance, which the different stakeholders create. This governance is a new way for producing the city, and can be considered beyond urban logistics.

Methodology

Based on four case studies of experimental urban logistics in Paris, we have analyzed the stakeholders involved in each experimentation: the UCC Beaugrenelle, (Paris 15th arrondissement), the UCC Montorgueil (Paris 2nd arrondissement), The Green Link company (Paris 10th arrondissement) and Vert Chez Vous Company (Pantin and Paris).

Figure 2 – Location of the four logistics experimentations



Before contacting any person involved in those projects, we first listed all the potential stakeholders that could possibly be involved in this kind of project based on an exhaustive typology made by the CEREMA (2015).

Table 1- Typology of the stakeholders usually involved in urban logistics projects

Public	Private	Mixed public and private
Public authorities (City, Department, Region)	Professional organization of transport operators and shippers	Semi-Public Companies specialized in urban planning, urban management, urban design
Public organization for mobility (ex: SDRIF)	Transport operators	Transport System operators
Chambers of Commerce	Shippers	
Central State (government)	Private companies	
Urban agencies	Associations of resident Retailers	

Then we tried to contact the stakeholders to find the person in charge of these projects, which required some research and a lot of patience. We followed these experiments in the year 2014 and 2015; at least two visits and one interview were conducted in each of these experiments. At the end of the year we counted 13 interviews, 15 hours of interviews, 9 different interviewed stakeholders. During these interviews we identified the different actors involved in these projects. We can group the different actors interviewed. We chose to interview actors who worked on projects from a political or an economical point of view.

Table 2 – List of the interviews

Interviews	Date of interviews	Organism	Projects
Laurence Morin	Jun.2014	City of Paris, Director of department of roads and mobility	UCC Beaugrenelle UCC Montorgueil The Green Link
Christophe Ripert	Apr. 2014	Sogaris, Director of the Real Estate Department	UCC Beaugrenelle
Mickael Cartron	Nov. 2013 May 2014	Chronopost, Accountant in Sustainable development department	UCC Beaugrenelle
Michael Darchambeau	Apr. 2014 May 2015	The Green Link, CEO and co-founder of the Company	The Green Link
Julie Hak	Nov.2014 Apr. 2015	Vert Chez Vous, Project Manager for the River Barge experiment	Vert Chez Vous
Christophe Cornilleau	Oct. 2014	UPS, France Transportation Manager	UCC Montorgueil
Sandrine Gourlet	Nov. 2015	Region of Ile-de-France, Director of Transportation Department	UCC Montorgueil UCC Beaugrenelle
Marion Mastreacci	Nov. 2015	City of Paris, Project manager Prospective and Mobility Department	UCC Montorgueil UCC Beaugrenelle The Green Link
Pierre Berger	Nov. 2015	Sogaris, Accountant for prospective and development	UCC Beaugrenelle UCC Montorgueil
Matei Gulea	Nov. 2015	La Poste Group, Accountant in Business	UCC Beaugrenelle

The first interviews were exploratory interviews. They allowed us to identify the issues of the relation between all the stakeholders. The second wave of interviews could have been made by mail or phone. Interview is the main tool used to collect qualitative information on urban logistics experiments but also on political and marketing speeches associated with these projects. Nevertheless these speeches are the political context in which stakeholders express their ideological point of view on these experiments. Initially our questionnaires included a section of questions about financial information on the experiment (amount of public or private subsidies, amount of invested capital, and return on investment calculations ...). But we have not managed to get this information deemed too sensitive for these economic models covered by industrial secrets. Our discussions thus focused on the role of different actors from the installation of the project until its operation through its implementation. The analysis of these interviews helped to develop governance models around the actors within each of these projects.

Then we identified the part that each stakeholder plays in each project. First, there are the **decision makers**. These are elected representatives (municipal, regional) concerned with decision-making power over the project, in terms of financing, strategic direction or validation. Their role is to provide guidance to the project and to provide the necessary resources. It is important that all relevant decision-makers are involved in steering the project, even symbolically, to avoid later political obstacles. Then, we have the **operators**. These are the actors in charge of the practical management of the project: the project manager, the employees of the administrations involved in the operational structure (project team), or representatives of associations. Their role is to carry out the project, realizing the targets set by policy makers. The **representatives** are the professionals who have a specific mission on the project: architects, sociologists, strategic consults. The **landowners**: they can be private owners wishing to enhance their parcel, or institutional owners (pension funds, insurance). Owners may also be public figures such as local authorities who wish to develop their land. Finally, we have the **users** who are directly involved in the project.

ANALYSIS AND RESULTS

Analyses des acteurs des quatre expérimentations

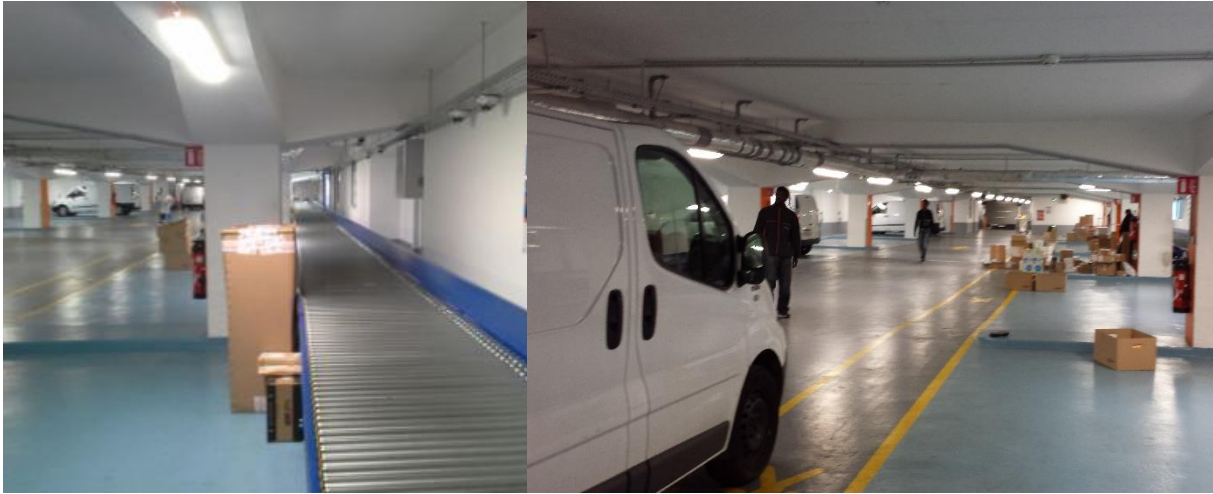
Urban Consolidation Center Beaugrenelle

In 2010, Sogaris started its operations in the UCC Beaugrenelle for Chronopost. This company specialized in urban logistics real estate, has built it in partnership with the SemPariSeine, developer, builder and manager of works such as the Front Seine project, and with the collaboration of architects Philippe Gallois. Located in the Beaugrenelle district in the fifteenth arrondissement, this site is the second UCC implemented by Chronopost in Paris after the one in Place de la Concorde. This area of 3000 m² on two levels is intended for distribution and collection of express parcels less than 30 kilos in the 15th district, but also in Vanves, Boulogne-Billancourt, and Issy-les-Moulineaux. Assisted by grants from the City of Paris through its two development companies, and after the authorizations of the architect authorities, the project was made possible. The project was technically complex and required heavy work, including the partial drilling of the slab to allow the passage of trucks. Ironically, the hardest was not the development itself, but to convince the community residents or the fire department. It took two years to plan the project and then one year to realize it. The UCC of Beaugrenelle opened in 2013. This UCC is integrated in the Chronopost network. The UCC Beaugrenelle makes it possible for Chronopost to optimize flows from the hub of Chilly-Mazarin while

being closer to the consumer market. The deployment of a fleet of ten electric vehicles and other alternative technologies of transport helped to reduce the number of kilometers and CO2 emissions. This UCC allows Chronopost to manage over 30 daily rounds. This UCC has received €500,000 of investment for development, security and mechanization from public and private sector.

This project forms part of the renovation of the district and comprehensive redevelopment program conducted on the Front de Seine project by SemPariSeine by giving life to a space not occupied by friendly environmental and economic activity in the urban environment. Beaugrenelle is part of Sogaris strategy on urban logistics which develops, depending on their geographical location, three building types (urban logistics platform, logistics, hotel, urban space distribution). This UCC constitutes the final delivery point and illustrates an innovative concept in logistics real estate.

Figure 3 – UCC Beaugrenelle, April 2014, photo: A.Heitz



Focus on the Semi-public Companies of Paris Specialized in urban planning and urban design:

SOGARIS is specializing in the creation and management of multimodal logistics platforms, Sogaris helped transport operators and local authorities in managing the flow of goods on territories, especially in urban areas, for more than 50 years. Designer of the reference platform in Rungis, the Semi-Public Company in urban planning has currently 518,000 m² of urban logistics areas in France. To remain a real benchmark for logistics and related services, Sogaris strives to develop innovative projects in terms of multimodality, technicality, accessibility, and respect of the environment.

SemPariSeine constitutes another Semi-public company in urban planning exerting a triple function of developer, builder and manager of public works. SemPariSeine accompanies local communities in the implementation of their projects with the aim of improving the quality of life of the population. The SemPariSeine led the redevelopment of Paris site operation Halles (1st) for the City of Paris and the tile work program of renovation Front de Seine (15th). It also conducts many other urban planning and construction projects: the ZAC Boucicaut (15th), ZAC Beaujon (8th), etc.

Urban consolidation Center Montorgueil

Urban distribution center Montorgueil is a project brought by the City of Paris and its partners, private or semi-private companies such as La Poste, the Semi-Public company in Urban Planning of the City of Paris SOGARIS, the Ile-de-France Region, The Chamber of Commerce and Industry and two Research

laboratories SPLOTT and LET. Their ambition is to experiment with a new UCC in the heart of Paris in the context of a non-delivery diesel by 2020 objective. In a context of partnerships and "Sustainable urban logistics charter of Paris" these actors seek to establish innovative solutions for urban distribution in a high dense commercial sector, based on final deliveries by clean modes (walking, scooter ...) and pooling vehicles. A 600 m² cargo area has been reserved in the development of the project in order to accommodate an urban consolidation center (UCC). Despite an underground location in the shopping center "Forum Les Halles", the UCC is not primarily destined for companies or shops located at the shopping center that already has three areas dedicated to logistics and deliveries. This project aims to provide services to other shops and commercial stakeholders from the Montorgueil Street close to the shopping center which is a small pedestrian area. The area of "Les Halles – Montorgueil – Sentier" is an ideal central place to develop a UCC considering the urban form. Indeed, this street inherited from the Middle-Ages is not easily accessible for trucks and vans.

Figure 4 – Montorgueil Street, Outdoor Market, Paris, October 2015, Photo: AFAR

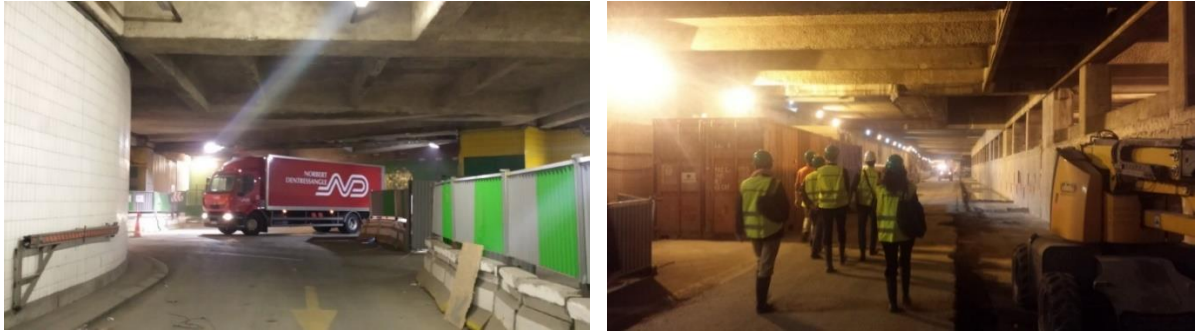


The creation of a UCC is an experiment that aims to be a model for the future establishments in Paris. The environmental benefits (reduction in the number of trucks in the pedestrian area and reduction of local pollution) and socio-economic impact for transport operators, logistics sector and traders are the main issues. However, this project primarily brought by the City of Paris has struggled to find buyers among carriers and transport companies. The project is a relatively small area, hard to use and to share. The City of Paris aims to create a space for sharing between multiple private stakeholders across multiple carriers and shippers. The difficulty lies in the need for coordination and agreement between several competing companies which are reluctant in sharing information and have difficulties finding their interests. Nevertheless, the interviews we conducted with UPS or Colizen show us that while they do not see immediate benefit they remain interested in these experiments because they want to anticipate an intensification of public policies and local regulations in terms of pollution and transportation. For now they tend to experience these projects as a forced cooperation but not constrained by the legislation suggesting some difficulties once the project is completed as to its use. During the discussions shippers, carriers, and transport companies were more interested in a single-operator solution. Regardless of this governance difficulty, another problem has been encountered during the test phase with Service Star (home delivery business). The use of cargo-cycle is impossible given the configuration of the place and that only electric trucks (type Goupil) are possible. So, some stakeholders like The Green Link or La Petite Reine which are cargo-cycle companies are excluded.

This project was supported by the City of Paris in a complicated political context, because the City sold to Unibail (a private company specialized in shopping centers) the shopping center "Forum Les Halles" which is situated above the UCC Montorgueil. This sale has complicated the relations between all the

stakeholders by the addition of a new representative in this project. For now the city remains the owner of the site and plans to make an AOT (Occupation Authorization of the Territory) or make a Public Service Delegation for private companies wishing to use this area, rather than transfer ownership. The City of Paris wants to keep a hand on this UCC in order to maintain a multi-operator system. This project is funded by the City of Paris and has also received financial support of ADEME for its construction. Private companies are still interested in this project, according to our interviews, but they have reservations on the multi-operator system.

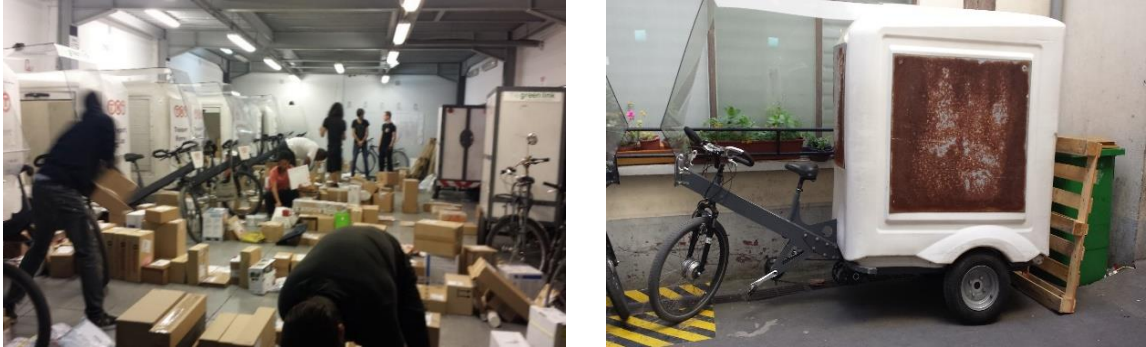
Figure 5 – UCC Montorgueil, April 2015. Photo: A. Heitz



The Green Link

Created in 2010, the company The Green Link runs on a very different and much simpler principle. It offers a delivery service in Paris, using cargo-cycles and electric vehicles, from three small terminals called “green hubs” located in the 10th district (center of Paris), 13th district (South-East of Paris) and 16th district (West of Paris). This company is a subcontractor for companies such as TNT, DHL, “Colis Privé” which was recently bought by Amazon for small parcels and express or “Saveurs et Vie” for food. Today, they have 80 employees called “eco-delivery-man”. The Green Link offers solutions to the issue of uncoordinated multi-operator deliveries by focusing on sustainable last mile logistics and offering zero emission consolidated deliveries in the City of Paris. Goods are transported by logistics operators to one of the Green Link’s three logistics hubs called Micro Distribution Centres, where they are consolidated for onward delivery using cargo bikes and electric vans. This model offers a win-win solution for all, as customers receive deliveries in a timely manner-the goods being consolidated according to the delivery area- and the Green Link couriers avoid the parking restrictions faced by trucks and other motorized vehicles.

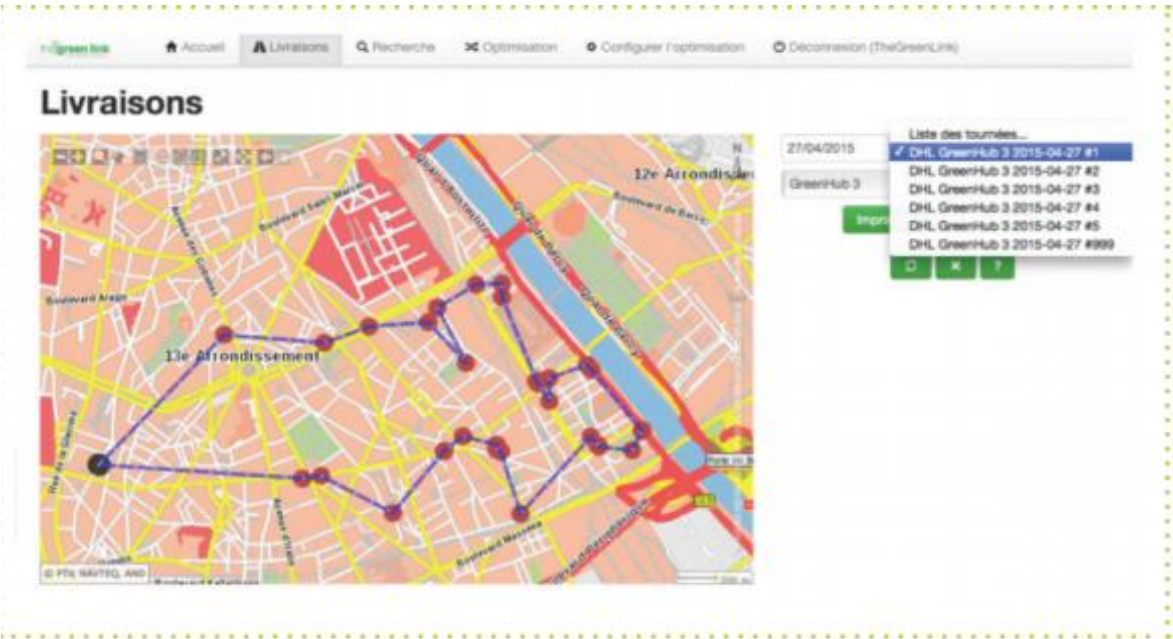
Figure 6 – Micro-hub of The Green Link Company in Paris 10th, photo: A. Heitz, September 2014



Flows are optimized by an information system which processes flows in real time, following the routes of the delivery drivers. They are testing a new ICT system that maps both road and cycle-routes. The

aim of the system is to optimize the calculation of routes taking into account various factors including speed, service time, distance, weight and specific bike accessibility such as bike lanes. The Green Link has the ability to create networks of drivers, each affiliated to a hub where parcels are consolidated and the rounds prepared. They are currently experiencing a new delivery solution based on temperature controlled cargo bikes. The objective of this trial is to test different types of temperature-controlled materials and analyze the rate of temperature drop. Deliveries using bikes have the potential to replace the standard refrigerated vehicles which are generally used for delivering temperature-controlled goods. The Green Link now supplies more than 800 customers per day using the cargo bike and isotherm boxes, which can be re-used for other deliveries as regular parcels.

Figure 7 – Route optimization via ICT mapping system, from Lamilo Project case study 2: The Green Link, October 2015



Through those three modi operandi, we get a glimpse of the diversity of innovations in the parcel industry in urban centers, where the return of such activities implies the development of innovative systems taking into account the constraints of urban space to deliver freight. Since these initiatives are also supposed to be sustainable, there are additional difficulties. It is the capacity to connect with the main freight transportation networks (generally through subcontracting), and the ability to ensure low range deliveries in a very constrained and dense urban center, that make these initiatives spatial innovations. The trend to localize the parcel industry in the dense urban center is amplified by these innovative solutions, which are currently multiplying. However, the question remains whether these solutions are profitable and thence, economically sustainable.

The Green Link is a private company that develops urban logistics and "sustainable and innovative" solutions as a primarily function. The company received subsidies from the municipality for the launch of its activity, as well as European Union grants under the Lamilo project in 2015 in order to finance the new experiments. However, the company did not receive any support from the public authorities for the acquisition of the property in Paris which represents a huge investment for a start-up company in Paris. In 2006, the City of Paris defined measures for sustainable logistics, 47 partners including The

Green Link, drew up a charter of best practice for transport and distribution of goods in Paris to enhance the sustainability of transport and distribution activities. Today The Green Link is consulted by the City of Paris on urban logistics projects and participated in the new “Sustainable Urban Logistics Charters for Freight”.

Vert Chez Vous

Vert Chez Vous is created in 2011 by Gilles Manual and two associates from road transport companies Tendron and Labatut which are not specialized in urban freight but want to develop their transport supply. Vert Chez Vous offers solutions for urban distribution. "Over Water" (*Au fil de l'eau*) program launched by Paris promotes transport combination of bike and river boat. This combination allows a new logistical and organizational management in the parcel delivery in Paris to overcome traffic congestion. The company selected to carry out the river transport is Euroflots. This company created in 2009 is convinced that river transport is relevant in the context of a reorganization of the last mile in urban freight. Vert Chez Vous chose to use Euroflots because it offers a service by boat at a reasonable cost. Vert Chez Vous is a transport service that combines a logistics warehouse, cargo-cycles and a river boat (Vokoli). The parcels are loaded on the boat in the port of Tolbiac (Paris 13th arrondissement), from a warehouse in Pantin, where they arrived by truck.

Figure 8 – The warehouse of Vert Chez Vous, Pantin,; Port of Tolbiac Paris 13th, Photos : A. Heitz, Oct. 2014



Then, the parcels are loaded on the boat and then distributed in the cargo-cycles which are then unloaded onto one of the platforms or ports of the Seine in Paris. Until 2013 the service was operating with 10 cargo-cycles. The service is part of the parcel industry (less than 30kg). The company has various clients: pharmacies, small shops, textile companies, e-commerce, cosmetics but is not able to provide solutions for food. Vert Chez Vous had 1500 clients in September 2013. The trucks arrive at 7am to Tolbiac. From 9:30 am to 5 pm the barge makes a round trip on the Seine district and serves the following arrondissement: 1st to 16th. The other districts are supplied by electrical or LNG trucks. The ship is a refurbished Freycinet (38.5 x 5.05) bought by Euroflots for €85,000. To minimize the costs they proposed to reuse this old boat rather than buying a new one. The cost of work is estimated at €25,000 regarding safety measures, staircase local for cargo-cycles ... The cargo-cycles have a capacity of 2m3 to 20m3 or 200 kg of cargo, independent suspensions to protect the parcels and they can reload

their batteries in the hold of the boat. The business model is based on the density of outlets and customers near the Seine. The main problem is the succession of two breaking loads unlike full road transportation. This transport is quite slow and requires a slight handling docked but heavy handling at the port of Tolbiac, although it does not contain a complete sorting because it is done on the boat. The cost remains competitive with the road if we take into account the gains on the environmental cost compared to a traditional truck. Vert Chez Vous is conditioned by the ability to access the docks and ports of Paris. The company pledged to release these areas for the development of its activity but must deal with another use of the Seine River as part of a mixed-use policy with tourist and leisure activities ("Bateaux-Mouches"....).

Figure 9 – Vokoli River Barge, July 2012, Photo: Business Immo



The areas, where Vert Chez Vous develops its activity, are categorized by the PLU (Local Urban Plan) in areas classified as "Large Urban Services". This kind of area is dedicated to logistics. The project which has received no funding and no subsidies from the public authorities, is an experiment conducted by the private sector. Today, this experience is stopped. The technical problems that they faced during the experiments brought the financiers to temporarily suspend it, until they find new innovations that will make this system more efficient. On all the experiments that we have analyzed, this one is the only one that is no longer active. For this experiment the degree of involvement of public power is the lowest.

Multiplication of the stakeholders involved in the urban logistics projects

All of these four experimentations share a lot of similar characteristics. Despite the fact they are located in different arrondissements, all of them present the same density characteristics, the same difficulties regarding accessibility, and urban insertion in the neighborhood. These urban characteristics will be treated in another study on urban logistics solutions. The present study focuses on the characteristics relative to the part played by stakeholders and the governance of these projects. We will study similarities and differences in urban governance of the experimentation projects, and then we will be able to conclude how those experimentations have changed the general governance on the urban project and urban practices in urban planning.

Table 3 – Summary of all the stakeholders involved in the logistics experimentations

UCC BEAUGRENELLE	UCC MONTORGUEUIL	THE GREEN LINK	VERT CHEZ VOUS
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Project leader(s)	Chronopost	City of Paris CCI Région IDF	The Green Link	Vert Chez Vous
Decision-maker(s)	City of Paris Architecte des Bâtiments de France	Ville de Paris	Ville de Paris	Mairie Paris Port de Paris
Financer(s)	Chronopost Ville de Paris	Ville Paris ADEME	The Green Link Ville de Paris European Union	Labatut Tendron
Landowners	SemPariSeine	Ville de Paris Unibail	The Green Link	Vert Chez Vous
Operators	SOGARIS SemPariSeine	SOGARIS SemPariSeine	X	X
Representatives	Philippe Gallois du Cabinet d'architectes SAGL - Architectes Associés.	Bureau d'étude Jonction + Agence architecte + IFSTTAR + LET	X	X
Users	Chronopost, locataire de l'espace	Prospection en cours (UPS, FedeX, Star Services)	The Green Link	Vert Chez Vous Euroflots

If we observe all the different stakeholders involved in these experiments, we can say that public actors are very present. They are also present at all stages of the project like in the case of the UCC Beaugrenelle and Montorgueil. The public authorities act directly on urban logistics through subsidies for public companies (La Poste) or private companies (The Green Link), and indirectly through its "armed wing" Semi-Public Companies specializing in urban planning like Sogaris or SemPariSeine. Moreover, as an extent of its experiments, the City of Paris revised upward its ambitions with this project, because it should not only allow the pooling of delivery services, but also ensure the existence of an area shared between different shippers and carriers. Among the public stakeholders, the City of Paris is an important driver but it is not the only one to take part in these projects: the Ile-de-France region, ADEME, Ports de Paris are also major stakeholders either through financial support or through the issuance of authorization for the use of the public domain. In this nebula of stakeholders, the system of players that forms the general government is in the middle of the process of experimentation of urban logistics. City logistics is composed of heterogeneous actors operating in a multifunctional urban space. In fact, different relationships - alliance, confrontation, complementarities, animate the junction between these actors, whose interests are divergent. The major challenges of urban logistics require careful management of these social relations in order to balance the connection between individual interests and community issues. For this, after presenting the various actors of urban logistics through these four experiments and their roles and contributions in the project, we will analyze the different forms of existing partnerships between the public and private spheres.

Two spheres of stakeholders compose and organize urban logistics: the decision-making sphere, urban sphere and the economic sphere. In fact, these stakeholders are involved at different levels of urban logistics and have, depending on their positioning in the sector, a variable influence on the project. Through the study of their characteristics and their objectives we will seek to describe their functions in urban space and their degree of involvement in urban logistics. First, there are the players in the decision-making sphere that includes "elected officials (local authorities and consular chambers), technical services (public space managers and transport infrastructure), police services and security,

etc... These public stakeholders are especially concerned with the improvement of living conditions of their citizens. The elected group is an essential element to urban logistics because it holds decision-making power in the urban space, particularly through the urban jurisdiction and since implementing a policy on mobility. Technical services adjust and configure the urban space, in order to improve the movement of goods in the city. Finally, the police and security services play a key role in the emergence of urban logistics since they comply with regulations and laws relating to the road, freight and urban space. Through incentives, restrictive or mandatory, public authorities can change the behavior of each actor in urban logistics. These include: the subsidy for the purchase of “clean” delivery vehicles, the limitation and regulation of access to urban space for delivery vehicles, the obligation of carriers to use the Urban Distribution Centre (UCC). A change in the legislation will give more power to this sphere, and strongly encourages private actors to work upstream with these public sector actors in order to anticipate a tightening up of legislation for the transport of goods in urban areas.

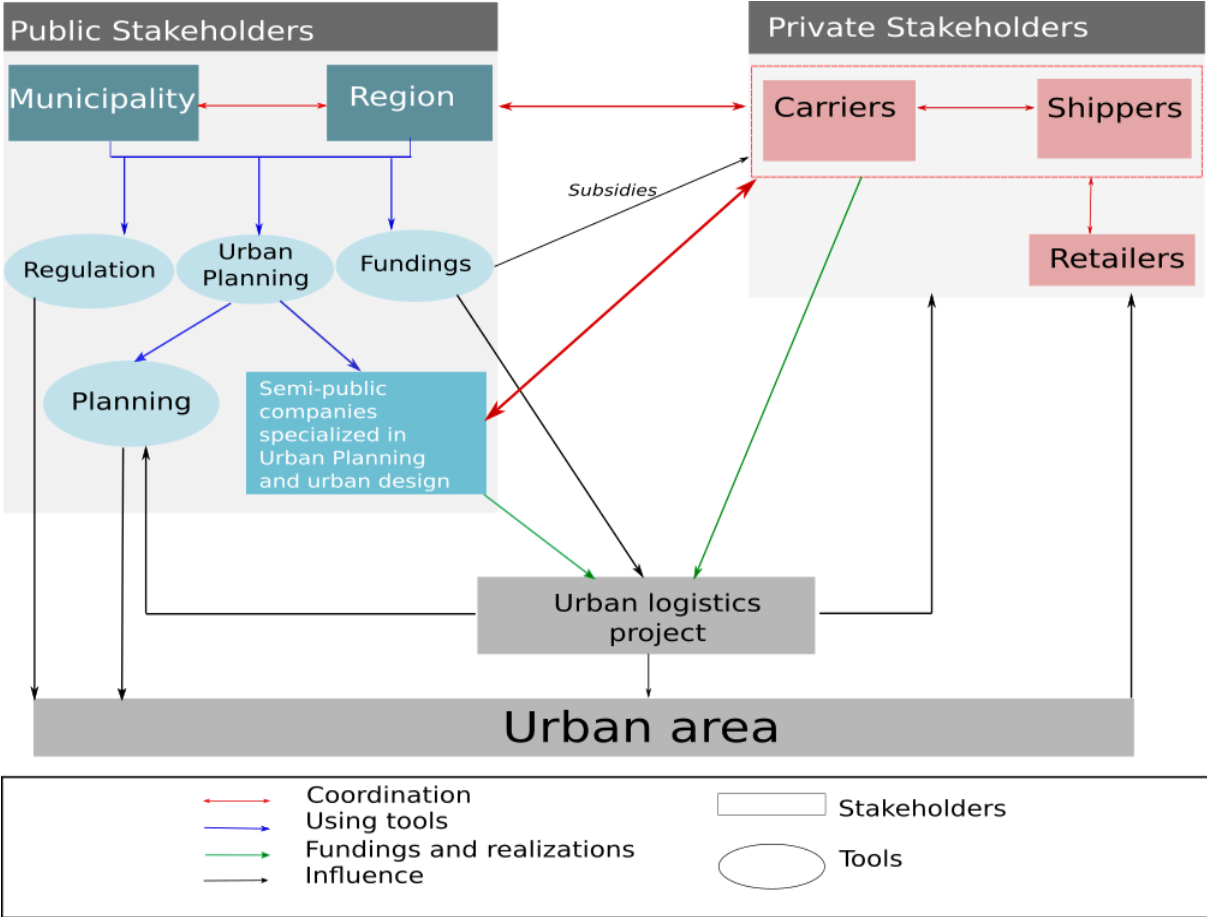
The other group of stakeholders of urban logistics is constituted by economic actors such as commerce, industry and crafts, and shippers and transport operators. The objectives of these players are efficiency and reliability. In town, shops and tertiary activities, administrative and craft receiving a lots of goods everyday and emit waste. Thus, a job generates on average a delivery or a pickup per week in urban areas¹. In a land prices elevation environment in urban centers, it is difficult for the business to have a large storage area. Thus, these activities require frequent need delivery. In the case of our analysis of experiments in urban logistics, this type of actors has occurred only in the case of the UCC Montorgueil. The City of Paris has made many approaches and has tried to involve the retailers of the Montorgueil Street in the project, and had a reserved success. The shippers and transport operators constitute the second group of stakeholders in the economic sphere. Two families characterize this sphere: that of the shippers and transport operators. In the case of the four experiments we studied, this group is present during all the processes of the urban logistics projects. Some of the transport operators can be service providers or subcontractors. These stakeholders try to penetrate the market of urban logistics by the development of cleaner and innovative solutions, like The Green Link Green or Vert Chez Vous. It is interesting to note that the public authority has more leeway on urban solutions like UCC, as it can both activate the financing lever and the lever of development through the grants and actions of its semi-public company that operate in the project. Indeed, in both transport experiments that we analyzed, the public authority intervenes only in the case of The Green Link through grants. Of the four experiments only Vert Chez Vous is suspended. One can wonder if the lack of involvement of public authorities could not explain this suspension. UCCs are related to institutional success factors such as financial stability and support, leadership and management, an interactive logistics network and engaged stakeholders as well as more operational aspects in terms of spatial coverage, the location of the UCC and the fleet and route management (Panero, Shin and Lopez, 2011).

Furthermore the establishment of Montorgueil UCC encounters some difficulties, because it is hard to find buyers among private companies (carriers or shippers) due to the strict conditions imposed by the City of Paris, including the fact of wanting to make a multi-operators UCC. The UCC Beaugrenelle and the Green Link are urban projects that have some success because they are economically stable and have found their balance in the multiplicity of actors involved in the project. Through these experiments we observe that it is not the number of players involved in the projects, neither the public or private nature that determines the proper conduct of the experiment but the existence of good coordination and effective governance throughout that determines its success.

¹ Paris Survey on urban freight (Enquête Transport Marchandises en Ville, LET, 2014)

Yet, through these four experiments we see that their success depends on the degree of involvement of public authorities and the commitment of the private actors such as retailers, shippers and carriers. Public power by these experiments not only transforms the City of Paris in the laboratory of urban logistics, but in a laboratory of the new management practices. These projects allow the experience of new form of production of the city through the establishment of governance needed between local actors and industry, public and private actors. From these experiments will emerge after involvement and coordination of a large number of players, a new way of building the city.

Figure 10 - The multiplication of the stakeholders and their relationships



The governance of urban logistics projects

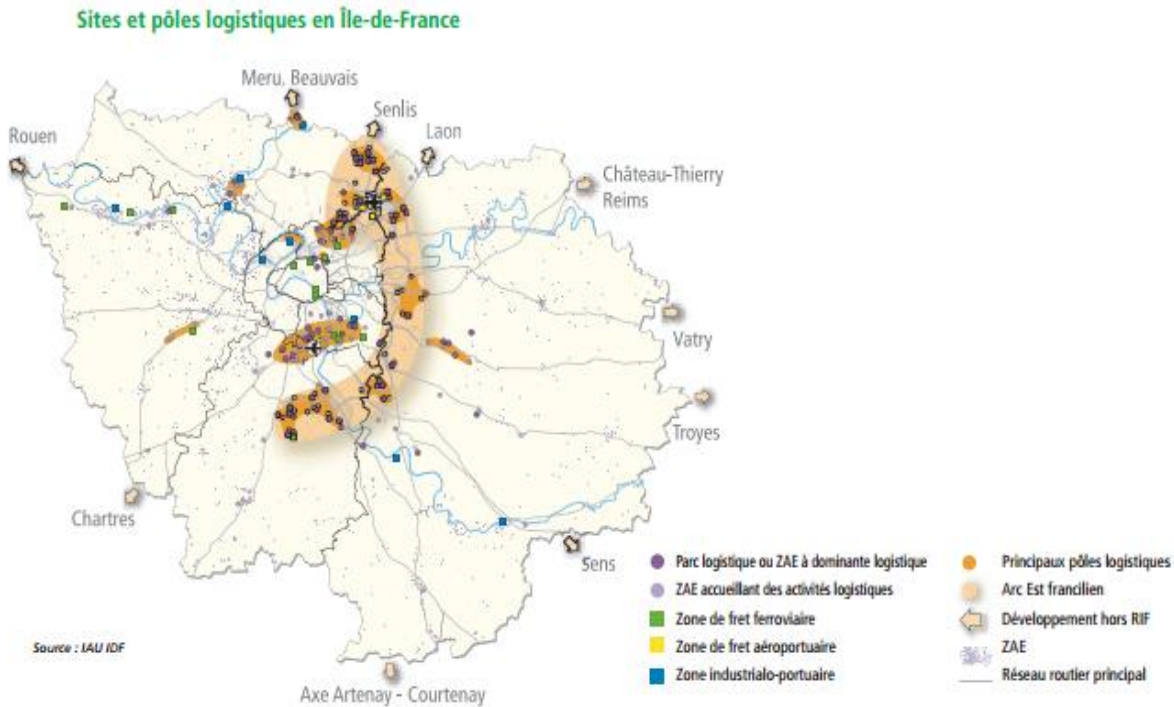
Legitimacy of the local public authorities to organize the governance of the urban logistics projects

In a complex urban space, where each stakeholders has different ambitions and usually competes, the regulation of the issues of urban logistics requires the creation of consultative bodies and governance, which are then used to legitimize the actions taken on urban freight. On urban logistics, we note that several major laws have gradually introduced the concept in the organization of the urban system by distributing this power to the different local actors. Local authorities have a responsibility to bare and build this governance in urban logistics projects. The Law of Orientation of Interior Transportation (LOTI), which aims to organize the public transport services in France, was created in 1982. The PDUs are intended to organize the urban mobility, but the goods were not considered. This law was a starting point to introduce the reflection on the mobility of goods. In 1996 the LAURE legislation introduced a

new ideology in the practice of urban planning: sustainable development and environmental concerns. In 2000 the Law on Solidarity and Urban Renewal (SRU) reinforced the action of the PDU and included freight transport in the city urban policies. Indeed, the SRU law introduced the urban freight transport in the Territorial Coherence Scheme (SCOT). As part of Act III of decentralization initiated by the Government, the Law on "the modernization of territorial public action and the affirmation of cities" (MAPAM) was adopted January 2014. This law reinforces the competences of the public authorities regarding urban freight and transportation. The law will create an authority in charge of urban transport planning and regulation for goods. With this new law the Region and the Municipalities will be responsible for the planning of city logistics. This law also promotes the implementation of urban logistics projects and their experimentations.

The Ile-de-France region has also set up a plan (PDUIF) that attaches great importance to the development of freight transport in the city. A major objective of PDUIF is to optimize the management of flows of goods to improve conditions of supply. The PDUIF wants to encourage modal shift to rail and waterway developing sites including logistics vocation, the railway and river junctions. The PDUIF intends to improve the environmental performance of freight transport, and preserve or develop logistics sites in dense areas and integrate urban logistics in the new urban development projects. The region supports local authorities in the development and implementation of charters on sustainable urban logistics and freight, and joins the process "Objective CO2" carried by ADEME.

Figure 11 – The location of logistics activities in Paris and Ile-de-France Region, Extract from PDUIF, 2015



Today, the urban plan encourages the experiment with pilot sites and financial and regulatory conditions for viable logistics operations, and the will to optimize space to build dense and concentrated metropolitan areas. If Paris already promoted "urban laboratory of mobility" (Tironi, 2012) in his experiments on the Velib and Autolib, Paris intends to continue this practice of management. Denis and Urry (2009) suggest that the "post-automobile" system requires a "disruptive

innovation and experimentation", in order to try different forms of mobility and urban organization more respectful of the environment. Today, the use of experimentation is recurring. The city is transformed into a huge "laboratory" testing and analyzing new practices. Different cities, such as Paris, conduct more or less experimental processes in terms of "smart" urban innovation related to environmental protection, the development of new applications and digital services, or to "green living experiments" (Marres, 2012). It is interesting to analyze systematically the effects of these processes as "urban laborisation" (Karvonen and Heur 2012). In other words, we examine the elements that are experienced (users, spaces, technologies, policies, etc.), the type of protocols that arise and forms of political actions that result. In this sense, the Smart Cities - which are far from the only automatic result of advanced technology - must be interviewed as the consequence of collective and political experiments and analyzed from different components. The region has other important powers such as project financing. The departments, municipalities, agglomerations, semi-public companies, RFF / VNF and EPFIF are eligible for grants from the region for the development project on urban logistics. On four experiments we analyzed, three of them have received direct grants from the municipality of Paris and/or the Ile-de-France region: UCC Beaugrenelle, the UCC Montorgueil, and the company The Green Link.

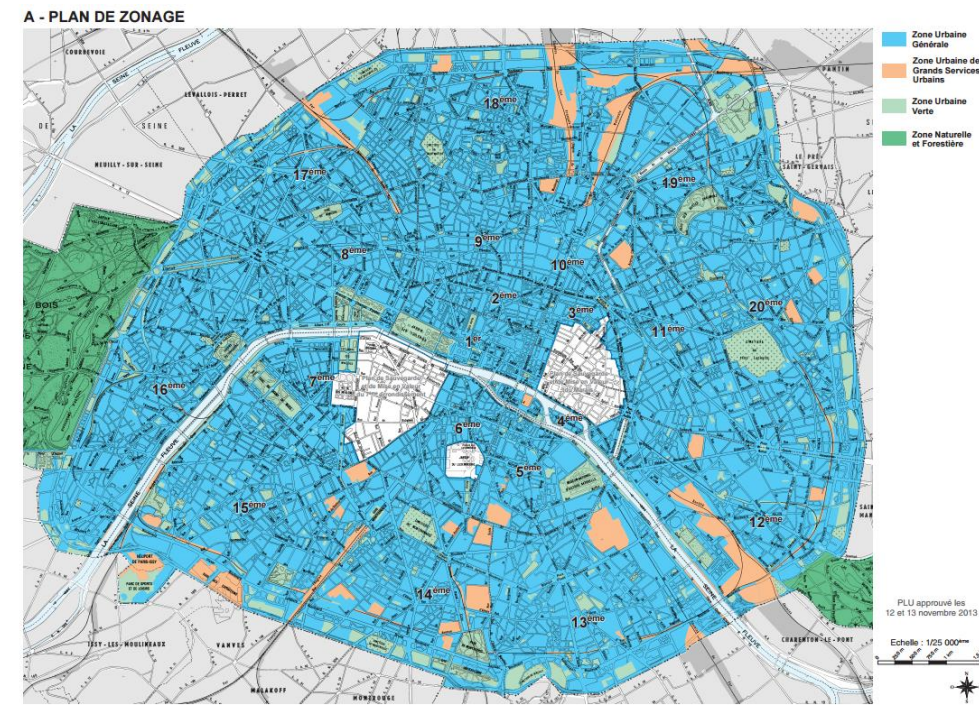
Regarding the powers delegated by the national legislation to the local government, it is their responsibility to legitimately organize spaces for dialogue between all stakeholders in logistics and planning, and implement the appropriate framework for good governance projects in urban logistics. Governance essentially means "all situations of cooperation that can be ordered by the hierarchy, including the government" (Simoulin, 2007). In this perspective, the notion of governance means a non-hierarchical cooperation where traditional boundaries between territorial levels and different professional activity sectors increase in porosity (Simoulin, 2007). Hamel (2005) highlights the fact that the policy is essential to the expression of differences and it represents a necessary basis for dialogue and democracy. Governance refers to a reconfiguration of traditional forms of public action that combines "the emergence of new modes of intervention and transformation of the modalities of public action" (Leloup et al., 2005). Therefore, the governance, far from beyond the instrumental aspect of a new method of coordination, attaches importance to new forms of power outside of institutions. Thus Hamel places such as the institutional basis for the emergence of governance. Institutions are today a consultation tool to "bring to the table" all the stakeholders of an urban project. Therefore the governance set up local governments, such as the City of Paris, as part of urban logistics and appears as the expression of a new form of power and affirmation of public power on its territory, but also as a new form of urban production.

Building governance: mobilization of all the stakeholders in urban logistics

This governance must bring together all the actors in an urban area: the local authorities, transport professionals, traders, residents, local residents and associations. The involvement of different stakeholders is needed to propose a common project. Dablanc (2007) states that a consultation process and governance is effective when it manages to bring together all the stakeholders, including small carriers and traders who are usually not interested in the problems of urban freight transport. Thus, the main objective becomes to propose concrete actions for urban logistics and freight in the city, or to propose a change in the regulation. During our interviews the question of the availability and the price of the land were particularly reluctant. The Green Link, Vert Chez Vous, Chronopost shared with us the difficulties they encountered for acquiring some land in Paris. The costs are too important to be able to acquire some land in the heart of Paris even though such location is very

valuable to them. They are eager for a change in land regulation, and use grants to acquire this land. The Parisian land is scarce, and it became essential to preserve some areas for equipment and services necessary for the city. To this end, these facilities have been collected in a specific urban area zoning policy, the “Great Urban Services Area”, which aims to sustain and promote their harmonious and sustainable development. The objectives of these areas are intended to improve the distribution of goods by reducing pollution due to transport, and promote the use of rail or waterway. The spaces occupied are land already allocated to transport such as railways terminals or such as ports docks of the Seine and canals; large allowances already allocated for special services: hospital, waste disposals, water tanks, etc. The creation of this new zoning regulation dedicates certain areas to the transport of goods and logistics. This innovation in terms of planning and sustainable development in Paris guarantees the maintenance of vital functions and strengthens the interests of many private companies (shippers and carriers) in sustainable urban logistics solutions.

Figure 12 – Location of the “Great Urban Services Areas” zones in Paris, extract from the PLU, 2015



However this first step of integration of logistics in urban areas and in the PLU is still shy because it does not have its own 'zoning'. Also the renewal of PLU Paris planned for 2016 has largely taken into account the problems faced by the private sector in the context of urban logistics. This next PLU relies on the results of these experiments. These discussions on urban projects related to urban logistics are a springboard for private and public actors to change the regulations. These experiments improved governance and regulations. Private actors are involved in the evolution of the local regulatory process.

Other forms of coordination combine public and private spheres, they are called Freight Partnerships. For example, cooperation between local authorities and logistics professionals can lead to the development of a charter for good practices in urban logistics, as is the case in Toulouse or Paris. The consultation procedures to prepare the PDU can also lead to the creation of consultation bodies of this type. In the UK, the Freight Quality Partnerships, another form of synergy between actors are regularly set up to organize the transport of goods in the city. The "Freight Quality Partnerships" (FQPs), are organized by urban local authorities. This synergy between the actors is defined as « *partnerships*

between the freight industry, local government, local businesses, the local community, environmental groups and other interested shareholders. Their aim is to develop an understanding of freight issues and problems, then promote constructive solutions which reconcile the need for access to goods and services with local environmental and social concerns »². Their aim is to raise awareness among all stakeholders of urban logistics in freight importance for the development of London, and develop sustainable urban transport goods, environmentally, economically and socially safe and effective. The FQPs like the Charters promote best solutions, organize exchanges of experiences and initiate projects in the city.

It is in this perspective that the City of Paris introduced the charter for “Sustainable Urban Logistics”. For 10 years, the City of Paris has set up partnerships with all the stakeholders of urban logistics (public and private). In 2006 some of them signed the “Charter for good practices in transport and delivery of goods in Paris” to promote inland waterway and rail transport modes, developing cleaner modes of transport. A review of the charter led to its renewal in 2013. This new charter is a more concrete and more operational incentive and relies on an increase in the number of signatory. All the signatories are more involved in the realization of the objectives by the presence of some “project sheet”. Each project gathers some private and public stakeholders in an independent workshop in order to discuss and propose concrete solutions to make the project a success. Each sheet is the subject of a regionalized action detailing the purpose, the pilot and the partners involved and the schedule and timing, expected results and costs incurred. This approach is scalable and adaptable. Under this charter some sheets are devoted to experiments such as freight-tram or development of inland logistics in the docks of the Seine. In these charters the use of experimentation is essential. By creating governance framed by the charter, the City of Paris gathered all the players likely to be involved in the practical implementation of urban logistics.

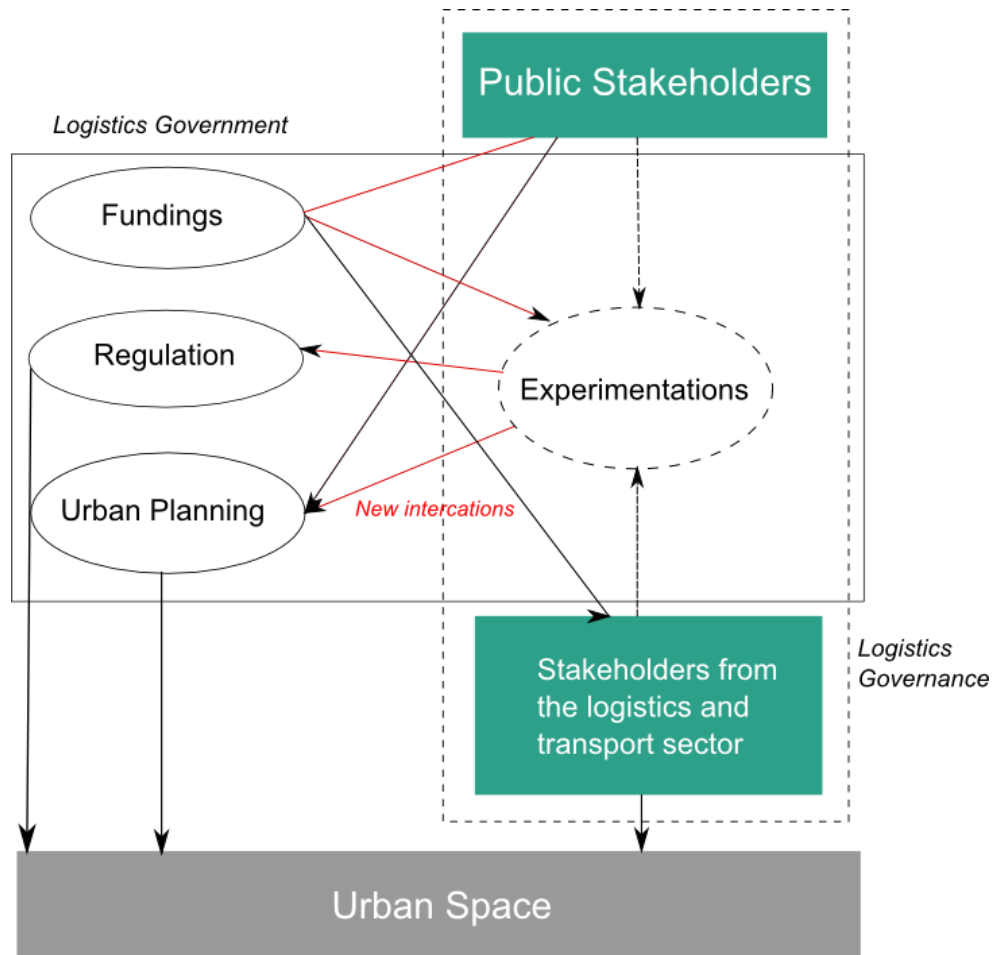
The collective implementation of these urban projects by cities and private companies is an important renewal of public action. Setting the agenda for urban logistics issues became almost a scientific process, from analyzing to testing and evaluating, and finally generalizing the process of regulation. The renewal of the urban practices induced by the implementation of the urban logistics project is a dynamic that one can oppose to those of planning as it was designed before. The 1980s instrument "urbanism plan" appears less suitable as tools for the development of urban logistics. Having little stepped back on urban logistics policies and on business models of urban logistics solutions, it appears difficult for the government to enact regulations now about it, so the pilot phase seems necessary. The time frames are disrupted; the importance given to the process of decision making for the validity and effectiveness of the action, as well as the importance given to the knowledge of the urban context are the first steps in the implementation of urban logistics solutions. Unlike the traditional method for urban planning, which starts with the plan, experimentations and collective discussions are becoming the first steps of the urban development and construction of the city. So the importance of "mobilization" of all the stakeholders in this urban project (Pinson, 2009) through new governance is the key for a renewal of the urban practices more adapted to a sustainable and changing city. The structuring network of local actors around common issues which collectively defines the project becomes the main urban practice. The governance of urban logistics projects is a new mode of production in the city. The city changes its way of developing urban projects.

By those experimentations, the City of Paris enriches and makes more complex the process of urban planning. As the following figure (Figure 13) proves, the governance supply in the urban planning

² *London Freight Plan*, Transport of London, 2007, page 24.

process is a bottom-up approach. In this way, the developments of the logistics experimentation show us the innovations in terms of urban planning and governance.

Figure 13 – Enrichment of the public action for the production of the urban fabric



CONCLUSIONS

This collective construction around the urban project leads to a renewal of the thought of the project and city politics. In "Governing the city by the project", G. Pinson (2009) focuses on the renewal of the structure of urban power these urban projects generated. Three main mechanisms are identified that lead him to lift a fundamental paradox of the concept of project. Indeed, Pinson observed primarily a phenomenon of proliferation of actors involved in the project dynamically in what he calls "pluralization". Indeed, as part of the four experiments that we analyzed we noticed the large number of actors involved and their diversity which complicates the exercise of coordinating these actors. New stakeholders are involved alongside the traditional players. This includes "actors and economic interests" as shippers and carriers, "agencies" as agents for companies realized the studies and the implementation of the project and "urban civil society forums". Yet these actors are less represented and less involved in the governance of urban projects of urban logistics. These projects constitute a singularity from the model defined by the urban project Pinson. Also, some of the stakeholders lose their weight within the city while others win. At this recomposition of the relationships between the

actors, we must add a transformation of the role of political actors around the "Direction" that supports the City of Paris, which becomes part and organizer of the new governance.

Regarding our analysis, we can make three major conclusions. First, the development of experimentations of urban logistics solutions causes a multiplication of the stakeholders involved in the urban production. Then, urban logistics solutions developed into the City of Paris constitute a new way to develop cities in a sustainable way in a bottom-up approach, because discussions and governance with all the different stakeholders come before the realization of the project. So, the development of logistics activities in the city is not only a good way to develop greener solutions for freight but is also a good way to improve relationships between all the urban stakeholders and test some new mode of coordination for urban development.

Recently, the City of Paris evaluates all these experimentations in order to generalize the principles and plan the city on the basis of these projects. These evaluations should take into account all the positive and indirect effects generated by these projects in terms of urban practices.

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References

- Anderson, S., Allen, J. Browne, M., 2005. Urban logistics—how can it meet policy makers' sustainability objectives? *Journal of Transport Geography*, 13(1), pp. 71-81.
- Arvidsson, N., Woxenius, J. and Lamngård, C., 2013. Review of road hauliers' measures for increasing transport efficiency and sustainability in urban freight distribution. *Transport Reviews: A Transnational Transdisciplinary Journal*, 33 (1), pp. 107-127.
- Browne, M., Leonardi, J. and Allen, J., 2010. Cargocycle trial evaluation. [online] London: University of Westminster. Available at: <http://gnewtcargo.co.uk/wp-content/uploads/2010/08/uow_cargocycle_trialevaluation.pdf> [Accessed 23 February 2015].
- CEREMA, 2015. La logistique Urbaine, Connaitre et agir, Références, 195p.
- Dablanc, L., 2007. Goods transport in large European cities: Difficult to organize, difficult to modernize. *Transportation Research Part A*, 41, pp. 280–285.
- De la Calle, A. and Alvarez, E., 2011. Sustainable practices in urban freight distribution in Bilbao. *Journal of Industrial Engineering and Management*, 4 (3), pp. 538-553.
- Denis, K., & Urry, J. 2009. *After the car*. Cambridge : Polity. Press.
- Ehrler, V. and Hebes, P., 2012. Electromobility for City Logistics—The Solution to Urban Transport Collapse? An Analysis Beyond Theory. *Procedia - Social and Behavioral Sciences*, 48, pp. 786–795.
- Evans, J. 2011. Resilience, ecology and adaptation in the experimental city. *Transactions of the Institute of British Geographers* 36.2, 223–37. Evans, J. (2012) *Environmental governance*. Routledge, London.

- Evans, J. and A. Karvonen. 2010. Living laboratories for sustainability: exploring the politics and epistemology of urban adaptation. In H. Bulkeley, V. Castán Broto, M. Hodson, and S. Marvin (eds.), *Cities and low carbon transitions*, Routledge, London
- Gonzalez-Feliu, J., 2014. *Costs and benefits of railway urban logistics: a prospective social cost benefit analysis*. [online] Available at: <<https://halshs.archives-ouvertes.fr/halshs-01056135>>
- Hesse, M., 2008. *The city as a terminal: the urban context of logistics and freight transport*. Farnham: Ashgate Publishing Ltd.
- Hodson, M. and S. Marvin (2009) Cities mediating technological transitions: understanding visions, intermediation and consequences. *Technology Analysis and Strategic Management* 21.4, 515–34
- Kohler, R. 2002. *Landscapes and labscapes: exploring the lab–field border in biology*. Chicago University Press, Chicago, IL
- Lefebvre, H. 1968. *Le Droit à la ville* suivi de *Espace et politique*, Paris, Anthropos.
- Leloup, F., Moyart L et Pecqueur B. 2005. La gouvernance territoriale comme nouveau mode de coordination territoriale?. *Géographie, économie, société*, vol. 7, p. 321-332.
- Lin, J., Chen, Q. and Kawamura, K., 2014. *Sustainability SI: Logistics Cost and Environmental Impact Analyses of Urban Delivery Consolidation Strategies*. New York: Springer Science+Business Media.
- Lindholm, M., 2013. Urban freight transport from a local authority perspective – a literature review. *European Transport \ Trasporti Europei*, 54, Paper n° 3.
- Lumsden, K., 2007. *Fundamentals of Logistics*. Gothenburg: Chalmers University of Technology.
- Macharis, M. and Melo, S., eds., 2011. *City Distribution and Urban Freight Transport: Multiple Perspectives*. Cheltenham and Massachusetts: Edward Elgar Publishing. Bus Rapid Distribution – Cost analysis of an innovative freight distribution model for urban areas.*
- Maes, J., 2015. *Welfare Economic Evaluation of Urban Freight Distribution Concept with Cargo Cycles*, Proceedings of the 94th Transportation Research Board Annual Meeting. Washington D.C., USA, paper #15-4817.
- Marres, N. 2009. Testing powers of engagement: green living experiments, the ontological turn and the undoability of involvement. *European*
- McKinnon, A., Browne, M. and Whiteing, A., 2012. *Green Logistics: Improving the environmental sustainability of logistics*. London: Kogan Page Publishers.
- Panero, M., Shin, H. and Lopez, D., 2011. *Urban distribution centers a means to reducing freight vehicle miles traveled* New York: The NYU Rudin Center for Transportation Policy and Management.
- Pinson G. 2009. *Gouverner la ville par projet, Urbanisme et gouvernance des villes européennes*. Sciences Po les Presses. p420.
- Quak, H.J., 2013. *Towards zero emission city logistics. FREVUE – demonstrating freight electric vehicles in urban distribution*. Available at: < www.utrc2.org/sites/default/files/Hans-Quak-Towards-zero-emission-city-logistics.pdf>
- Taniguchi, E. and Thompson, R. G., 2014. *City logistics: mapping the future*. Boca Raton: CRC Press, 2014. Bus Rapid Distribution – Cost analysis of an innovative freight distribution model for urban areas.

Tironi, M. (2012). *Mettre l'écologie en mouvement. Les controverses aux origines du projet Vélib'*. *Tracés*, (1), p. 65-83.

van Heur, B. (2010) The built environment of higher education and research: architecture and the expectation of innovation. *Geography Compass* 4.12, 1713–24.