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From regional planning to port regionalization and urban logistics. The inland port and the governance of logistics development in the Paris region.

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Abstract :

Large urban regions are the main logistics markets. They concentrate warehouses, distribution centres and terminals in numerous logistics zones; they polarize thus regional, national and international flows. Some of these logistics facilities correspond to inland ports directly connected to seaport(s) with high capacity transport mean(s) either via rail, road or inland waterways. Their development results from the dynamic of port regionalization, which is characterised by seaports becoming integral parts of extensive hinterland networks, intermodal transport corridors and inland ports. Therefore, in city-regions, inland ports are part of larger logistics systems associating diverse logistics facilities and zones. The ways inland ports are governed, planned and owned must thus be understood in connection with the governance of the diverse logistics spaces at the metropolitan scale, including transport infrastructure and land use planning. Research has documented the very fragmented politics of logistics zones and the limited scope of spatial planning dedicated to logistics facilities and activities. The specific role and importance of the governance of inland ports within urban and regional governance arrangements framing and supporting logistics development is still unclear. In order to contribute to a systematic urban and regional approach of the connection between the governance of logistics development and the governance of inland ports in urban regions, the paper empirically analyses the inclusion of the inland port spaces and institutions within Parisian metropolitan logistics strategies. Based on a qualitative methodology (policy documents and semi-structured interviews), it shows that the inland port spaces and institutions take part in every metropolitan logistics policies. They constitute one of the few policy tools for implementing both regional planning and developing urban logistics sites in order to spatially (re)organize logistics facilities and activities. At the same time, inland port infrastructures are identified as strategic assets for a metropolitan agenda of economic competitiveness, aiming at increasing port regionalization. In this perspective, inland port institutions contribute to the metropolitan governability vis-à-vis logistics issues but, finally, do not permit to regulate logistics sprawl.

Key words:

Inland port; Paris region; logistics development; urban and regional governance; regional planning; port regionalization.

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1. Introduction

Large urban regions are the main logistics markets (Dablanc & Frémont, 2015). They concentrate warehouses, distribution centres and terminals in numerous logistics zones; they polarize thus regional, national and international flows. Some of these logistics infrastructures correspond to the definition of inland ports: facilities “with or without an intermodal terminal and logistics companies, which [are] directly connected to seaport(s) with high capacity transport mean(s) either via rail, road or inland waterways, where customers can leave/pick up their standardized units as if directly to a seaport” (Witte et al 2019, p. 54). Their development results from the dynamic of “port regionalization”, which is characterised by seaports becoming integral parts of extensive hinterland networks, intermodal transport corridors and inland ports (Notteboom & Rodrigue, 2005).

A diversity of logistics facilities connects this way seaports to their urban hinterland. They range from distribution centres (DCs), only connected to road, “to complex entities that include [intermodal terminals], logistics zones and a governance structure, such as a port authority” (Rodrigue et al, 2010, p. 519), often referred as “dryports” (Flämig & Hesse, 2011). The DCs dedicated to hinterland flows are generally located in logistics zones with other urban, regional and national logistics activities that do not manage hinterland flows. As well, dryports also generally host other logistics activities without any connections with seaports. Therefore, in city-regions, inland ports are part of larger logistics systems associating diverse logistics facilities and zones.

The ways inland ports are governed, planned and owned must thus be understood in connection with the governance of the diverse logistics spaces at the metropolitan scale, including transport infrastructure and land use planning (Hesse, 2008; Cidell, 2011; Dablanc & Ross, 2012). The modes of governance of logistics development in urban regions address challenges concerning both economic and social development (efficiency of supply chains, location of firms and jobs), sustainability (freight flows generated by logistics sites, land consumption) and quality of life (local pollutants, smells, noise and visual pollution). A metropolitan perspective on governance will highlight how the governance of inland port can contribute to face these challenges and to shape the regionalization process (Raimbault et al, 2016; Witte et al, 2016). It is indeed necessary to broaden the analysis of port regionalization from logistics organization towards land use and from port areas to larger regional governance and planning system (Flämig & Hesse, 2011) in two ways. How do metropolitan policies guide the development of inland port? How does the specific governance of inland ports impact the larger governance of logistics challenges in metropolitan areas?

Two distinctive trends in literature tackle such aspects of logistics facilities governance. On the one hand, research on the governance of inland ports focuses on the efficiency of the coordination between inland ports, transport corridors and seaports (e.g: Rodrigue and Notteboom, 2009), on the regional land use planning challenges concerning dryports (Flämig & Hesse, 2011) and on the inland port-city relationships (e.g.: Witte et al, 2014, 2016). However, little systematic local and regional attention is conducted on larger urban and regional governance arrangements dealing with the diversity of logistics spaces (e.g.: Witte et al, 2019). On the other hand, studies dedicated to the governance issues of metropolitan logistics development highlight the very fragmented politics of logistics zones and the limited scope of spatial planning dedicated to logistics facilities and activities (Raimbault et al, 2019). The specific role and importance of the governance of inland ports within urban and regional governance arrangements framing and supporting logistics development is still unclear.

In order to contribute to a systematic urban and regional approach of the connection between the governance of logistics development and the governance of inland ports in urban regions, the paper

empirically analyses the inclusion of inland port spaces and institutions within Parisian logistics metropolitan strategies.

The case of the Paris Region is particularly emblematic of the rise of continental logistics metropolises (Dablanc & Frémont, 2013). Its strong dynamic of logistics sprawl has been carefully analysed (Heitz & Dablanc, 2015) and explained by its high political fragmentation into more than one thousand municipalities in charge of land use regulations (Raimbault et al, 2019). However, these analyses do not include the specific governance of the Paris river port infrastructures in the Paris region, which represent between 5 and 10% of warehouses and freight flows of the Paris region and which are in connection with the seaport of Le Havre. Contrasting with the piece-meal approach prevailing for the other logistics zones, river port spaces are managed by a unique public port authority directly accountable to the central government. Port spaces are furthermore carefully preserved by the regional planning documents. Moreover, the current metropolitan political agenda, known as the “Greater Paris” policy, has framed the connection of the seaport of Le Havre to the river port of Paris as a key factor of this economic competitiveness. (Inland) port issues are the only logistics questions selected in this political agenda. Eventually, the river port authority contributes to the development of logistics sites in the dense area, especially in partnership with the municipality of Paris (Raimbault et al, 2019).

In order to identify more precisely the evolving role of the river port in the metropolitan governance system, two main hypotheses are explored. First, port spaces and institutions could represent crucial financial, land and political resources for conceiving and implementing regional and municipal spatial planning aiming to (re)organize logistics facilities and activities. Second, the Paris port infrastructures could have been framed as strategic for the national economic competitiveness in a neoliberal perspective. These two perspectives would indicate contrasted roles for the inland port in the governance of Parisian logistics development.

Based on a review of the literature concerned with the governance of logistics spaces and inland ports, the first section of the paper will precise these hypotheses, the analytical framework and the methodology followed. The second section explains the specificities of the river port governance in the context of the Parisian logistics landscape. The third section examines the inclusion of the inland port spaces and institutions within regional planning policies, the metropolitan political agenda and municipal policies of urban logistics. The fourth section will analyse the consequences of the evolving inland port governance for the logistics development governance in the Paris region. The fifth section will discuss the results of the case study vis-à-vis the two hypotheses. The sixth section will present the conclusions and two research perspectives.

2. The modes of governance of logistics development in large urban regions

In order to connect the governance of logistics development and the governance of inland ports in urban regions, the paper proposes an institutional approach of the evolving governance of the Paris river port. The concept of governance was developed so that the analysis of public policy would no longer be restricted to governments (Le Galès, 2002). Governments alone are not responsible for the production of public policy: this also involves the participation of many stakeholders from outside the sphere of government, in particular from the private sector. This concept opens an area of research that sets out to explain the diversity of relationships at work between the various stakeholders involved in public policies (see also Obeng-Odoom, 2012; Pierre, 2005). Applied to inland port governance, this concept is a way to analyze the structures and mechanisms of coordination between public and private actors involved in the management and the development of port spaces, including formal coordination (such as laws and planning documents) and informal interactions based on their respective strategies.

2.1. The governance of inland ports and the governance of logistics sprawl

The governance of inland ports has first been analyzed through the lens of its efficiency within hinterland transport corridors, mainly from a dominant supply chain focused perspective (e.g.: Rodrigue and Notteboom, 2009; Rodrigue et al, 2010). In this framework, Monios and Wilmsmeier (2012) have identified two directions of port regionalization. The “outside-in” direction corresponds to the case of inland port development driven by seaside actors (seaport authorities and private terminal operators). On the contrary, the “inside-out” indicates inland port development strategies implemented by landside actors (local governments, inland port authorities, rail operators for instance). Elaborating on the inside-out direction, several institutional approaches on inland port have highlighted the complex relationships between the governance of inland port and the governance of its urban surroundings shaped by disconnection and reconnection dynamics between inland port authorities and cities (Hall, 2012; Debie & Raimbault, 2016). These relationships have been analyzed in terms of port-city challenges (Witte et al, 2014, 2016). Within this framework, “attention is focused on institutions and governance processes behind spatial projects in port cities dealing with” (Witte et al, 2014: 44) the “spatial, economic and institutional effects of expanding both cities and ports” (Witte et al, 2014: 42). They show that all port cities studied face the challenge to balance port and urban development, leading to different policy processes and spatial outcomes. However, port-city strategies are not easily formulated and implemented (Witte et al, 2014), which could turn many inland ports into weak links within transport corridors (Witte et al, 2016). These conclusions are consistent with those of Flämig and Hesse (2011) concerning the regional land use planning of dryports in the Hambourg region. They show that the State of Hambourg attempts to integrate land use and transport within metropolitan planning documents are only partial as binding development permissions for dryports are given by local authorities. Nevertheless, they highlight how regional planning is progressively shaping port regionalization. However, they do not investigate how this specific mode of governance contributes to the governance of other logistics facilities and activities in the Hambourg urban region. Non-maritime logistics activities indeed prevail in large continental urban regions such as Paris.

In several European and North American city-regions, research has documented the multiple urban governance arrangements supporting logistics growth (Dablanc & Browne, 2019). The Paris region has been especially studied in this perspective and appears to be concerned by the following results (Raimbault et al, 2019; Barbier et al, 2019). If spatial planning dedicated for logistics facilities and activities has emerged in many urban regions, local decisions are pre-eminent concerning the implementation of practical regulations (Hesse, 2008; Raimbault et al, 2019). These works have highlighted the primary role played by municipalities and local communities in the regulation of logistics land uses, the lack of regional coordination and vision and, within this context, the increasing power of the logistics real estate industry in terms of selection of logistics locations and definition of the features of logistics buildings (Cidell, 2011; Raimbault, 2016). This context has stimulated “logistics sprawl”, which is defined as the relocation of logistics facilities away from inner urban areas to outer-suburban areas (Dablanc & Ross, 2012), and its impacts on congestion and pollution. In parallel, some logistics real estate innovations have been implemented in denser areas, and especially in the city of Paris. They have led to new practices in terms of urban logistics services. However, as the regulation remains minimal in the outer suburbs, the result of these policies is a dualisation of logistics geography, between urban and (outer)suburban logistics (Heitz, 2017).

This literature review indicates the coexistence of specific governance arrangements and dynamics corresponding, on the one hand, to inland ports and, on the other hand, to more common logistics zones, which probably leads to different regulations by spatial planning policies. We therefore propose to analyze this dichotomy as the result of the existence of two potentially differentiated modes of governance. A mode of governance consists in a stabilized articulation of market, political and social coordination governing particular places and sectors of public policy (Le Galès, 2002). The mode of governance of logistics sprawl is characterised by the preeminent role of municipalities and

real estate actors. The mode of governance of inland ports is characterised by the association of seaside and landside actors, including port authorities. The two would juxtapose within the governance of urban regions. The literature analysis indicates however some potential connections. The findings about spatial planning policies dedicated for logistics facilities echo those on the partial inclusion of inland city-port challenges in spatial planning (Witte et al 2014, 2016). Besides, the observations that local decisions challenge the regional planning of inland port (Flämig and Hesse, 2011) echo larger difficulties of logistics regional planning policies in a context of a fragmented land use regulation (Raimbault et al, 2019).

2.2. *The role of large infrastructures in metropolitan governance*

In the Paris region, the river port is governed, as an infrastructure of national importance, by a State agency. The inland port governance thus strongly contrasts with the very local and fragmented mode of governance of most logistics zones of the region. The question is therefore to elaborate an analytical framework suited to understanding the role of a mode of governance corresponding to a State infrastructure in the metropolitan governance system articulating local coalitions and limited spatial planning policies. The field of urban and regional governance studies offers a wide diversity of concepts and analytical tools (Bevir, 2011). Based on the research done on the governance of the logistics development of the Paris Region, presented previously, and more generally on the recent studies about the governance of the Paris region (Kantor et al, 2012; Gilli, 2014; Enright, 2016), it appears that the case of the inland port is best understood through the lens of two competing conceptualizations of the role of large infrastructures and national States in metropolitan governance.

First, Lorrain demonstrates that in large urban regions, besides formal governmental institutions (local assemblies and executives) that are highly fragmented in space and across scales, public infrastructures constitute second rank institutions that *de facto* contribute to the governability at the metropolitan scale. The management of public infrastructures, which necessitates problem-based coordination between public and private actors in urban regions, often compensates land use planning and governance failures: “steering by infrastructure networks greatly contributes to the quality of that government” (Lorrain, 2014: 291). Despite the complexity of managing public infrastructures (Teisman et al, 2009), they constitute efficient tools in order to plan and guide the metropolitan development. The Paris region is indeed politically extremely fragmented with more than one thousand municipalities and four tiers of local governments. In parallel, the central State is still a crucial protagonist of the metropolitan governance. It was responsible for the regional spatial planning policy until 2013. It is still in charge of crucial infrastructures and facilities, airports, ports, railways, motorways, hospitals, universities, the wholesale market. It is also responsible for the major public land developers that steer the larger urban development projects of the region. Through its infrastructures, the national State guarantees a metropolitan governability despite the political fragmentation.

Second, the concept of “the rescaling of statehood” (Brenner, 2004) proposes another perspective on the role of central State in metropolitan governance (Brenner, 2009). For N. Brenner, metropolitan policies in Western Europe are firstly designed, driven and even implemented by the national States themselves as part of their neoliberal mutation. Based on the idea that competition between national economies is based on competition between European and worldwide metropolises, State policies take the form of “*urban locational policies*” (2004: 202) tending towards an “*overarching goal of enhancing the economic competitiveness of particular places or scales*” (2004: 203) by the “*localization of major socioeconomics assets within strategic urban and regional economies*” (2004: 213). States thus apply “*spatial selectivity*” (2004: 210) in favour of metropolitan spaces and of the challenges of competitiveness. This spatial selectivity is also found on the sub-metropolitan level. Metropolitan competitiveness is not based on the entire metropolitan area, but

rather on a certain number of sites and activities identified as strategic. Major projects have been carried out to reinforce them and key sites are governed in terms of “*new jurisdiction and area-specific institutional forms*” (2004: 216), often independent from local governments. Specific infrastructures, such as ports and airports, appear to be one of the key materialisation of the rescaling of the Statehood (Brenner, 2004, 2009). Moreover, the so-called “Greater Paris” policy initiated and largely implemented by national State in order to strengthen the competitiveness of the French economy, can be analysed as the rescaling of the French State in the Paris region (Brenner, 2009; Enright, 2013, 2016). In this perspective, river port infrastructures would have been identified as strategic for a neoliberal metropolitan political agenda.

In both perspectives, as a State infrastructure, the river port mode of governance would represent a crucial tool for governing the logistics development of the Paris region. Is this mode of governance a tool to improve the spatial planning of the regional logistics development in a context of fragmented land use governance that stimulates logistics sprawl (first hypothesis)? This first hypothesis would correspond to an inside-out approach of inland port governance. Or is it a tool for a neoliberal strategy of port regionalization as the connection between the seaport of Le Havre and the river port of Paris has been framed as a key factor of economic competitiveness (second hypothesis)? This second hypothesis would correspond to an outside-in approach of inland port governance.

2.3. Methodological approach

This case study of the governance of Paris inland port has been conducted in the framework of a larger qualitative survey on the governance of the logistics development in the Paris region. The goal of this survey has been the identification and the functioning of the different modes of governance at stake (Raimbault, 2014). Thus, about 100 stakeholders (local public administrations, para-public land development, regional planning officers, logistics providers and shippers, property fund managers and developers) have been interviewed in order to determine their practices, their strategies and their role in the different modes of governance of logistics issues, including their interactions with the other actors involved in the development and the management of precise logistics zones and inland ports (different case studies selected in the Paris region). All the in-depth semi-structured interviews were recorded and transcribed.

15 semi-structured interviews have been conducted with actors involved in the river port mode of governance: directors and managers of the port authorities of Paris (5) and Le Havre (3), civil servants of the State administration in charge of national infrastructures (3) as well as with managers of the spatial planning department of the regional authority (1) and of the urban planning agency of the Paris region (2) and of Le Havre (1). In parallel, different policy documents have been studied: the regional planning documents (master plan for the Ile-de-France region [SDRIF] of 1994, 2008 and 2013, Ile-de-France Transportation Plan [PDUIF] of 2014), the documents of the “Greater Paris” metropolitan agenda (“*Contrat de Développement Territorial*” [CDT] of 2010, Planning Contract between the State and the Regions of the Seine Valley [CPIER] of 2015), as well as the numerous political discourses done in this framework, and the Parisian (inter)municipal policy documents (Paris “Logistics charter” of 2013, “Pact for the logistics activities in the Greater Paris” of 2018). The analysis of the strategies of the port authorities have been completed by the study of their corporate documents. The confrontation with the interviews has refined information gathered in these documents.

3. The river port of Paris: public infrastructures in the Parisian logistics landscape

The concept of mode of governance reveals the coexistence of two specific governance arrangements and dynamics: on the one hand the mode of governance of the river port and, on the other hand, the mode of governance of logistics sprawl. The management of river port

infrastructures appears this way as a public mode of governance of logistics spaces clearly contrasting with the fragmented and property-led mode of governance supporting the logistics sprawl in the outer suburbs.

3.1. The logistics development of the Paris region

The Paris Region (1276 municipalities, 12.5 million inhabitants) is one of the most important global city regions and logistics markets (Dablanc & Frémont, 2013). Paris has experienced significant development in logistics over recent decades. It concentrates nowadays 16 million m² warehousing spaces and 375,000 logistics jobs¹.

Paris is first of all a consumption center. Internal retailing and e-commerce dynamics explain most of its logistics development. Some logistics activities correspond to a redistribution function to the other French regions within the supply chains of wholesaling, retailing and e-commerce. Indeed, the region also plays a role as the French economy's international gateway, with Roissy-Charles de Gaulle Airport, Europe's leading freight airport (2.3 Mt, 500 000 m² of warehouses in 2017).

Concerning maritime flows, the logistics Parisian market depends on two main seaports: Le Havre (180 km west, 73 Mt, 2.9 million TEU in 2017) and Antwerp (340 km north, 224 Mt, 10.5 million TEU in 2017). Part of warehouses, distribution centres and terminals located in the Paris region function as multiple interfaces between these ports, the Paris region and the other French regions.

The river port, *Ports of Paris* (21 Mt, 527,785 TEU including 161,887 river TEU in 2017), operates the crucial river link between Le Havre and the Parisian market. The port infrastructures concentrate several river and rail containers terminals as well as distribution centres dedicated to hinterland flows. Some flows managed by the river port are redistributed towards neighbouring French regions. The river port thus plays the role of an inland port (Frémont, 2012).

If Paris constitutes the main logistics node at the national scale and the centre of the national road and rail networks, it is only a second rank transport node at the European scale. Paris is indeed not situated on the main European corridors which connect the North-Western ports (Belgium, the Netherlands and Germany) to the Rhine valley and to Northern Italy. This relative peripheral situation at the European scale explains also the limited development of Le Havre that is not well connected to the rich hinterland of the Rhine regions.

3.2. The fragmented mode of governance of logistics sprawl

From the 1990s onwards, warehouses have been set up in increasingly remote suburbs of the Paris region, especially in the eastern outer-suburbia according to the process of logistics sprawl (Dablanc & Frémont, 2013). The logistics sprawl is strongly linked to the emergence of a global and financialised market dedicated to logistics real estate (Raimbault, 2016). The logistics real estate market is dominated by international firms, which specialise in logistics and manage global investment funds². These companies take themselves in charge the development of the warehouses they buy as investment fund managers. In order to lessen their dependence on negotiations with local public authorities, which traditionally publicly developed directly the business zones, they also tend to be the land developers of the logistics zones in which they invest. In other words, instead of building warehouses scattered around different business zones, the industry leaders develop private logistics zones containing several warehouses. These "logistics parks" are entirely owned and operated by the same investment fund manager responsible for property management. Managing

¹ Source: Insee, 2015.

² The market leaders are Prologis (United States), Global Logistic Properties (Singapore), Goodman (Australia) and Segro (United-Kingdom).

the relations with the firms that rent the warehouses becomes the task of the property manager alone (Raimbault, 2017).

However, such private logistics parks must be authorised and supported by local governments, which are responsible for issuing spatial planning documents and building permits. Logistics property investors, in this way, form coalitions with small municipalities of the outer-suburbia, which do not have the resources or the desire to develop logistics zones with traditional public land development tools. These coalitions dominated by the logistics real estate industry govern the logistics sprawl of the Paris region (Raimbault et al, 2019).

At the regional scale, the financialisation of the production of logistics zones directly challenges planning policies. As this real estate product is particularly attractive for outer-suburban areas, the financialisation of logistics real estate has therefore intensified logistics sprawl since the 1990s.

3.3. Ports of Paris as a public mode of governance of the logistics development

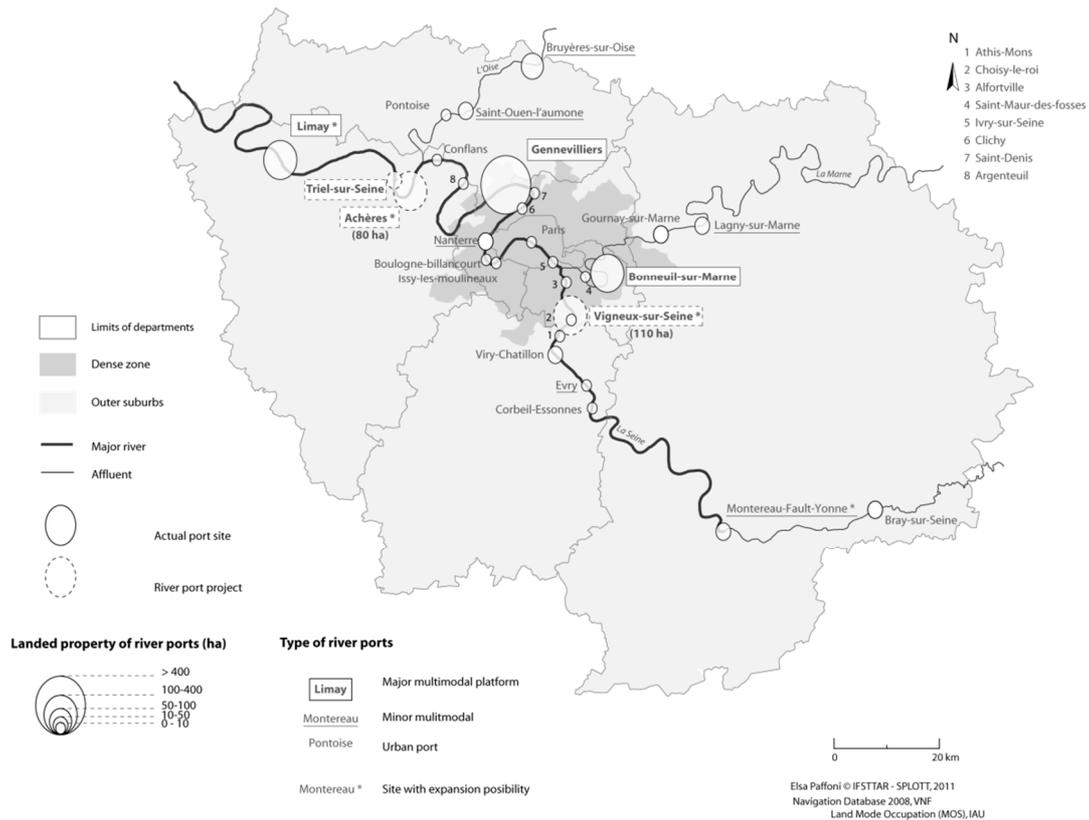
The river port spaces of the Paris region are managed by a public port authority founded in 1968: *Ports of Paris*. It manages 1000 ha of port infrastructures along the Seine River in the Paris region. The port authority is directly accountable to the central government (Ministry of Environment). A national law has defined its public service mission, which consists in "*exploiting and managing the spaces entrusted to it or acquired by it in order to enable the development of river transport*"³. The mission of *Ports of Paris* is thus to develop terminals and land plots in order to attract companies using the waterways. *Ports of Paris* governance corresponds to the landlord port governance model.

Ports of Paris manages diverse transshipment facilities spread over 70 sites, including numerous ports dedicated to construction materials. Six river container terminals and one rail container terminal take charge of 527,785 TEU, including 161,887 river TEU. Moreover, 1 million m² of warehouses are established in the port spaces, which represent more than 6% of the total warehousing surface of the region. Four port sites concentrate most of warehousing spaces and container terminals. These places constitute proper multimodal logistics zones. They are labelled as "multimodal platforms" by the port authority. The larger ones are located in the inner suburbs: Gennevilliers (400 ha) in the West and Bonneuil-sur-Marne (200 ha) in the East. The other two are in the outer-suburbia: Limay (125 ha) in the West and Bruyères-sur-Oise (60 ha) in the North (Figure 1).

Eventually, *Ports of Paris* is one of the three members of the port union *Haropa Ports*, which has gathered since 2012 the three ports of the Seine Valley: the seaports of Le Havre and Rouen and the river port of Paris. Haropa and the three port authorities are directly accountable to the central government and are largely independent from the city governments of Paris, Rouen and Le Havre. In 2018, they together represent 117 Mt (95 Mt of seaborne traffic and 22 Mt of river traffic), 3 million TEU and 2.7 million m² of warehouses.

Figure 1. The river port infrastructures of the Paris Region

³ Law n°68-917 of 24 October 1968 relating to Ports of Paris, our translation.



Credits: Raimbault et al, 2012

Compared to the local coalitions resulting from logistics sprawl, port issues are governed by more institutionalised public policy tools. The river port mode of governance is characterized by two main aspects.

First, it is based on a public mode of space production. *Ports of Paris* is indeed a public land developer, on the one hand, of terminals and, on the other hand, of land plots that enable logistics or manufacturing firms to establish industrial sites in the port domain. Moreover, after the establishment of a firm, the land remains owned and controlled by the port authority. The port spaces are indeed in the public domain and thus cannot be sold to private investors. Instead, property investors or direct users aiming to establish in the port must negotiate (generally long-term) administrative leases with the port authority. They rent this way the lots where they can construct and own their buildings. *Ports of Paris* also owns about 300 000 m² of warehouses directly let to companies. Furthermore, the public mission of the port authority, as defined by the law of 1968, legally obliges *Ports of Paris* to dedicate its land to uses directly linked to freight. In this context, attracting warehouses is highly strategic for the port authority. They indeed generate flows for transshipment facilities as well as strong real estate revenues. Land and real estate rents correspond to 83% of the total revenues of *Ports of Paris* (95 M€ in 2018). Along with the public logistics real estate investor Sogaris owned by the city of Paris (see section 4.3), *Ports of Paris* is the only public land developer and manager of logistics zones in the Paris Region.

Second, the river port mode of governance is not only concerned with the production of spaces but also with the flows and logistics services issues. The negotiations on the leases are a tool enabling the port authority to choose companies that will generate river or rail traffics. Then, *Ports of Paris* has developed strong relationships with the companies established in the port domain. The port authority provides advices and can sell business research services. In parallel, companies have created associations in larger multimodal platforms (Gennevilliers, Bonneuil-sur-Marne), which reveals the existence of proper port communities. Following the concept of “port cluster”, the river

port spaces constitute in this way “logistics clusters”, which are characterised by “various forms of coordination and resource sharing as a consequence” of the cluster of firms in the port (de Langen & Haezendonck, 2012: 638). In this context, the port authority acts as a “cluster manager” (de Langen & Haezendonck, 2012: 642).

The management of the river port infrastructures corresponds to a specific mode of governance in the Paris region. The public control on the production of logistics spaces and the involvement of the port authority in flows and logistics services issues clearly contrast with the privatized production of logistics parks and the indifference of local governments over logistics issues. Two parallel modes of governance of the logistics development are thus at work in the Paris region.

The next section analyses the evolving role played by the inland port authority within the metropolitan logistics strategies.

4. The inland port and the metropolitan political agendas

The Inland port mode of governance has been included in three successive and competing metropolitan policy agendas: first within the regional planning policies aiming to guide the logistics development, then within the “Greater Paris” political agenda looking for a more competitive metropolis and more recently within municipal policies aiming to develop more sustainable urban logistics in the dense area.

4.1. Ports of Paris as a public tool for implementing a logistics regional planning policy

Since the 2000s, the regional authority *Île-de-France Region* has been in charge of the regional spatial planning document. It used to be the responsibility of the central State. Nowadays, the master plan for the Ile-de-France region (SDRIF) sets the main guidelines in terms of localization of residential areas, economic activities, and infrastructures. For local urban planning policies, it is a binding document concerning the distinction between areas that can be urbanized and areas that are protected from urbanization. While writing the SDRIF of 2008 (finally adopted in 2013 because of the opposition of the central State: see section 4.2), the regional authority has then defined a first metropolitan agenda focused on logistics issues. It aims at planning the logistics development at the regional scale (Raimbault et al, 2019).

The regional authority has framed the public problem raised by the logistics development as being mainly an issue of sustainability. The regional planning policies must limit the logistics sprawl, in order to reduce the urbanization of new spaces. The logistics sprawl is also framed as being at odds with the goal of modal shift of freight flows from road to river and rail modes. Instead, the master plan aims to concentrate the development of logistics sites around the main rail and river terminals.

A governance issue is pointed at by the regional authority. Most logistics zones are produced by fragmented suburban coalitions, which is in contradiction with the regional policy objectives. There is thus a need for public policies in order to better govern the allocation of logistics spaces at the regional scale. The considered solution is to perform a regional planning of multimodal logistics zones and urban logistics facilities. The existing multimodal terminals are preserved by the SDRIF “general destination map”, which is legally binding for the municipal land use zoning plans. The SDRIF can however not preserve warehousing zones, which are essential for the multimodal terminals and which can be redeveloped into other kinds of urban spaces on the base of municipal land use zoning plan. It also cannot plan new multimodal logistics zones that would concentrate the future logistics development instead of current logistics sprawl dynamics.

The only way for the regional authority to implement the regional policy goals consists in working with the already existing public authorities dealing with logistics zones. *Ports of Paris*, even if it is not directly institutionally linked to the *Île-de-France Region*, appears as the main public enabling tool. It

is recognized as the only public land developer of logistics zones in the region able to implement the regional plan. It can preserve and develop multimodal terminals in the center of Paris as well as logistics zones in the inner suburbs (Gennevilliers and Bonneuil-sur-Marne). The river port authority can also develop new multimodal logistics zones in the outer suburbs, especially in the western part which is lacking logistics spaces compared to the eastern one (Frémont, 2012). Indeed, most of the projects of new multimodal sites presented in the text of the SDRIF, but not in the legally binding map, correspond to projects of new river sites.

4.2. The “Greater Paris” metropolitan agenda: the emergence of a new metropolitan mode of governance aiming at port regionalization

In 2009, the central government designed a new metropolitan political agenda, known as the “Greater Paris” strategy. Directly opposing the sustainability-oriented regional planning policy and rejecting the first version of the SDRIF, the State proposed a metropolitan strategy in order to strengthen the economic competitiveness of the Paris region (Enright, 2016). Sustainability, even if it does not disappear, is no longer the main paradigm for the metropolitan logistics agenda. Concerning logistics activities, which is only one aspect of the “Greater Paris” policy, the agenda is dominated by a strategy of port regionalization, which redefines the role of the inland port.

The agenda has framed the performance of the seaport of Le Havre as a key element of the metropolitan economic competitiveness. In particular, emphasis is put on the connection between Le Havre and Paris. Within the hinterland of Le Havre, the Paris region is indeed its main market. This market is however contested by the port of Antwerp, which manages to attract almost 50% of the hinterland flows generated by the Paris region (Frémont, 2012). To improve the competitive position of Le Havre vis-à-vis Antwerp and to increase its traffics, the strategy is to strengthen both the institutional and the physical (rail and river) connections between the three ports of the Seine River: Paris, Rouen and Le Havre. The concept consists in developing this way a competitive port corridor based on the network between the gateways in Normandy (Le Havre and Rouen), the inland terminals of *Ports of Paris* and several distribution centres located in the domain of the river port.

The first output of this strategy is the union of the three port authorities of the Seine River into a new port institution: *Haropa Ports*. The three port authorities were already directly accountable to the central State. With Haropa, the State can coordinate its three infrastructures in order to implement an outside-in port regionalization. Five functions are now common to the three ports: strategy, commercial action, international action, development of transport networks and communication. The negotiation with a company looking forward an establishment in one of the port sites is now the responsibility of Haropa. This organization enables the port union to strategically manage its services at the scale of the port corridor and thus to strengthen the port regionalization of Le Havre. In November 2018, the national government decided to merge, before January the 1st of 2021, the three port authorities into a unique port authority at the scale of the Seine Valley.

The two other outputs are long term ones. A new railway between Paris, Rouen and Le Havre is planned for 2030 as well as a new river port of 420 ha comprising a container terminal and large land plots for distribution centres. The first phase (100ha) of the port is planned by *Ports of Paris* for 2040. A dedicate administration, directly accountable to central government, is in charge of the coordination between national and local governments for the different projects implemented all along the Seine River.

4.3. Inland ports and local initiatives for logistics sites in the dense area

In the meantime, the river port authority continues to act as a public logistics land and real estate developer in the Paris region, both in the framework of the evolution of its port spaces and in the framework of municipal logistics policies, consisting in developing new formats of urban logistics

sites, that arise in Paris and the inner suburbs. However, the scale of this action is most of all local and is not directly articulated to regional planning perspectives.

For the last years, *Ports of Paris* has clearly specialized its main multimodal logistics platforms, Gennevilliers and Bonneuil-sur-Marne, in urban distribution logistics, such as e-commerce, retailing and parcel services. New trends in commerce, such as ‘instant deliveries’ (Dablanc, et al. 2017), may increase the need for new buildings close to the city centre. The river port authority elaborates this strategy on the statement that the two multimodal logistics platforms are unique opportunities to locate logistics sites in close proximity to the heart of Paris. For this purpose, it accepts non water-based logistics activities. An example of this strategy is the 2017 opening of an Amazon parcel sorting centre in Bonneuil-sur-Marne even if Amazon does not intend to use the port terminals (Heitz, 2017). In order to attract these logistics sites, *Ports of Paris* negotiates with property investors the building of denser warehouses. For instance, Segro (UK-based logistics property investor) has developed a two-storey warehouse in the port of Gennevilliers used by Ikea in order to deliver the city of Paris and the western suburbs.

At the same time as the evolution of the metropolitan logistics agenda, the City of Paris (2,2 million inhabitants, 105 km²) has, for several years, integrated logistics issues into city planning documents in order to develop logistics facilities dedicated to the dense area. The Paris land use plan includes the development of urban multimodal logistics facilities in order to reduce road freight transportation. However, the city of Paris depends on specialized land developers to implement this policy. The city-owned logistics real estate investor *Sogaris* is the main stakeholder in the development of these urban logistics facilities. *Sogaris* is a public land and real estate developer and investor specialized in logistics. It defines itself as the “public developer of urban logistics facilities for the Greater Paris”. It has developed several urban logistics sites in Paris.

The more emblematic one, *Chapelle Internationale*, was developed by a joint-venture between *Sogaris*, *Ports of Paris* and the public bank *Caisse des dépôts*. It is located in the north of the municipality (18th arrondissement) and consists in a multi-storey urban building hosting an urban rail terminal, several small storage facilities, a public school, a farm (urban agriculture), sport and leisure facilities and a datacentre. The example shows that the implementation of such urban logistics projects is only possible with specific policy tools, as these complex buildings are not proposed by the logistics real estate industry. In the Parisian logistics landscape, *Ports of Paris* is one of the few available tools.

5. Governing the logistics development through State port infrastructures: a path dependence between spatial planning, public land development and port strategy

In the Paris region, the inland port spaces and institutions take part in every metropolitan logistics policies. They represent crucial financial, land and political resources for conceiving and implementing logistics strategies at metropolitan and municipal scales. As public infrastructures, *Ports of Paris* constitutes one of the few policy tools for implementing both regional planning and developing urban logistics sites in order to spatially (re)organize logistics facilities and activities. In this perspective, inland port institutions contribute indeed to the metropolitan governability (Lorrain, 2014) vis-à-vis logistics issues, which confirms the first hypothesis. At the same time, inland port infrastructures have been framed as strategic assets for the metropolitan agenda focused on economic competitiveness, leading to a “rescaling of the Statehood” (Brenner, 2004) materializing in the ongoing merger of the Seine Valley port authorities, which corresponds to the second hypothesis. The two dynamics reveal actually two current aspects of the specific path dependence of the State port policy in the Paris region.

5.1. A limited tool to improve the spatial planning of the regional logistics development

The role of the river port in the regional spatial planning policies confirms that this mode of governance constitutes a tool to improve the spatial planning of the regional logistics development (first hypothesis). Existing multimodal port sites represent the main attempts to implement a regional planning of multimodal logistics zones. However, from the 2000s, the port authority has faced huge difficulties to develop the new multimodal logistics zones planned with the region (compared to the numerous logistics parks implemented by private property investors and developers). Its projects of new river and rail terminals over the next 20-40 years seem to be far too distant and uncertain to be able to guide the future logistics development of the region. Only a progressive legally binding regional planning of logistics sites will be able to deal with the issue of the fragmentation of logistics land use regulations.

In parallel, the river port contributes more intensely to the densification of existing logistics spaces in the metropolitan core area. It is an actor of the urban logistics policies of the City of Paris. Above all, the dependence of the port authority on rental revenues is a strong stimulus towards the development of new distribution centres in its two main multimodal logistics platforms localized in the dense suburbs. This strategy limits this way logistics sprawl even if it does not automatically increase the waterborne transport. As such, port spaces and institutions represent crucial financial, land and political resources for local logistics policies. More than a strong metropolitan governability, *Ports of Paris* finally contributes to a more modest local public capacity to develop and maintain (sub-)urban logistics sites. Thus, as the implementation of regional planning policies remains minimal in the outer suburbs, the result of the contribution of the river port to local logistics policies is a dualisation of logistics geography, between dense urban logistics facilities and outer-suburban logistics sprawl (Heitz, 2017).

5.2. The impacts of the State neoliberal strategy of port regionalization

With the “Greater Paris” metropolitan agenda, the national State has initiated an outside-in strategy of port regionalization. The connection between the seaport of Le Havre and the river port of Paris has been framed as a key factor of economic competitiveness (second hypothesis). The establishment of a union of the port authorities of the Seine Valley and the perspective of their merger rearranged the different existing port modes of governance as the metropolitan mode of governance of the logistics development of the Seine Valley. It creates an institutional capacity to implement a strategy of port regionalization in the Paris region for directing more hinterland flows to Le Havre. Conversely, the more comprehensive spatial planning approach of the *Île-de-France Region* and the subsequent collaboration between the regional government and *Ports of Paris* have lost their momentum. In this sense, the “Greater Paris” logistics metropolitan strategy is perfectly in line with the concept of the “rescaling of Statehood” (Brenner, 2004). The State is the central actor in this policy from agenda setting and framing process to implementation through the rescaling of the port institutions, which are accountable to the central government. This “*spatial selectivity*” of the State aims to increase the competitiveness of the metropolitan and national economies.

The policy therefore differentiates between strategic and non-strategic logistics activities, framing as strategic for metropolitan competitiveness only port logistics, international and hinterland flows. As a result, a large proportion of logistics activities and spaces of the Paris region, responsible for the logistics sprawl, remains outside the scope of metropolitan rhetoric or is framed as non-strategic. In this way, this strategy of port regionalization also contributes to the dualisation of logistics geography as it does not address the weakness of planning policies in the outer suburbs.

5.3. The path dependence of the State port policy

Furthermore, the two dynamics of strengthening public capacity to guide logistics development and of rescaling port institutions to strengthen the port regionalization are both at stakes. These partially

contradictory trends reveal the path dependence of the State port policy in the Paris region. The rescaling of the Statehood is indeed subject to strong path dependencies (Brenner, 2009). The merger of the port authorities and the political emphasis put on port regionalization have not stopped the contribution of Port of Paris to specific planning policies, which nuances the rupture that the Greater Paris policy would represent.

This path dependence dialectic articulates the so-called “outside-in” and “inside-out” dynamics (Monios and Wilmsmeier, 2012) of inland port development. In the Paris region, the central State is the main actor of both directions. On the one hand, as landlord of multimodal logistics zones, the State agency *Ports of Paris* develops its inland port in partnership with the local and regional land use policies and according to the demand for logistics spaces in the Paris region. This “inside-out” dynamic leads to the emergence of a specific mode of governance of logistics spaces within the regional context. On the other hand, the State has decided to merge the three port authorities of the Seine Valley in order to strengthen the development and the regionalization of the seaport of Le Havre towards its Parisian market. This “outside-in” strategy modifies the regional governance system as it limits the contribution of *Ports of Paris* to the regional planning objectives.

The governance of inland port eventually takes up this way some challenges of the logistics development of the Paris region and shapes the regionalisation process. Inland ports, thanks to their public mode of logistics space production, preserve multimodal logistics sites in the inner suburbs and even develop new ones in accordance with regional and municipal policies. In the context of port regionalization, they also connect more efficiently Paris river sites to its maritime gateways in Normandy. However, they are finally not able to regulate the logistics sprawl towards the eastern outer-suburbia, whereas it is the main goal of the regional logistics planning policy. Moreover, this eastern development does not promote the attractiveness of the port of Le Havre.

6. Conclusions

River port spaces and institutions are crucial drivers of the Parisian governance arrangements concerning logistics development and port regionalization. When it comes to logistics issue, policy makers depend on the only existing public infrastructures in this domain: the (river) ports. This case study thus calls for systemic approaches of the co-evolution of the different modes of governance of logistics dynamics in urban regions. This research agenda links two main trends within transport geography: the analysis of port regionalization and inland port development on the one hand and the study of logistics sprawl and the subsequent governance mechanisms on the other hand.

A metropolitan governance perspective on inland port development clarifies the ways regional planning and competing metropolitan policies constrain or support the development of inland ports in the context of port regionalization (Flämig & Hesse, 2011). Evolutions of spatial planning policies and of logistics metropolitan politics explain the forms of political involvement in inland ports development. Indeed, an attention to these policies helps to understand the articulation of “outside-in” and “inside-out” developments of inland ports that can be at play at the same time (Raimbault et al, 2016; Witte et al, 2016).

Besides, conceptualizing the governance of inland ports as one of the mode of governance of logistics development in urban regions reveals some public capacities that can slow down logistics sprawl and redevelop logistics sites in dense area (Raimbault et al, 2019).

Eventually, these findings underline two avenues for future research. First, the case of the Paris region is strongly impacted by the heavy influence of the State, involved from Le Havre to Paris policies, which makes the Paris river port mode of governance very specific. Comparisons with urban regions where inland ports and seaports are managed by municipal or regional authorities or by private companies would be valued in order to better evaluate the role of inland port governance in the governance of logistics activities and sites. The impacts on the Parisian governance arrangements

and on regional planning policies of the complete merger of the river port of Paris with the two seaports of Normandy could be a second research perspective opening promising comparisons with other continental and maritime global cities.

References

- Barbier, C., Cuny, C., Raimbault, N. (2019). The production of logistics places in France and Germany: a comparison between Paris, Frankfurt-am-Main and Kassel. *Work Organisation Labor & Globalisation*, spring 2019, in press.
- Bevir, M. (Ed.) (2011). *The SAGE handbook of governance*. Sage Publications.
- Brenner N. (2004). *New State Spaces: Urban Governance and the Rescaling of Statehood*. Oxford, Oxford University Press.
- Brenner, N. (2009). Open questions on state rescaling. *Cambridge Journal of Regions, Economy and Society*, 2(1), 123-139.
- Cidell J. (2011). Distribution centers among the rooftops: the global logistics network meets the suburban spatial imaginary. *International Journal of Urban and Regional Research*, 35(4), 832–851.
- Dablanc L., Ross C. (2012). Atlanta: A Mega Logistics Center in the Piedmont Atlantic Megaregion (PAM). *Journal of Transport Geography*, 24, 432-442.
- Dablanc, L., Frémont, A. (2013). The Paris region. Operating and planning freight at multiple scales in a European city. In: P.V. Hall and M. Hesse (eds.), *Cities, Regions and Flows*, Oxon: Routledge, 95–113.
- Dablanc, L., Frémont, A. (2015). *La métropole logistique, Le transport de marchandises et le territoire des grandes villes*. Paris: Armand Collin.
- Dablanc, L., Morganti, E., Arvidsson, N., Woxenius, J., Browne, M. & Saidi, N. (2017). The Rise of On-Demand 'Instant Deliveries' in European Cities. *Supply Chain Forum: An International Journal*, 8 (4), 203-217.
- Dablanc, L., & Browne, M. (2019). Introduction to special section on logistics sprawl. *Journal of Transport Geography*. <https://doi.org/10.1016/j.jtrangeo.2019.01.010>
- de Langen, P. W., & Haezendonck, E. (2012). Ports as clusters of economic activity. *The Blackwell companion to maritime economics*, 638-655.
- Debie, J., & Raimbault, N. (2016). The port–city relationships in two European inland ports: A geographical perspective on urban governance. *Cities*, 50, 180-187.
- Enright, T. E. (2013). Mass transportation in the neoliberal city: the mobilizing myths of the Grand Paris Express. *Environment and Planning A*, 45(4), 797-813.
- Enright, T. (2016). *The making of Grand Paris: Metropolitan urbanism in the twenty-first century*. MIT Press.
- Flämig, H., & Hesse, M. (2011). Placing dryports. Port regionalization as a planning challenge—the case of Hamburg, Germany, and the Süderelbe. *Research in Transportation Economics*, 33(1), 42-50.
- Frémont, A. (2012). Quel rôle pour le fleuve dans le Grand Paris des marchandises?. *L'Espace géographique*, 41-3, 236-251.
- Gilli, F. (2014). *Grand Paris: l'émergence d'une métropole*. Presses de Sciences Po.
- Hall, P. V. (2012). Connecting, disconnecting and reconnecting: port logistics and Vancouver's Fraser River. *L'Espace géographique*, 41(3), 223-235.

- Heitz A, Dablanc L (2015) Logistics spatial patterns in Paris: The rise of the Paris basin as a logistics megaregion. *Transportation Research Record: Journal of the Transportation Research Board* 2477: 76-84.
- Heitz, A. (2017). *La Métropole Logistique, structures métropolitaines et enjeux d'aménagement. La dualisation des espaces logistiques métropolitains*. PhD Thesis, Université Paris-Est.
- Hesse, M. (2008). *The City as a Terminal. The Urban Context of logistics and Freight Transport*. Aldershot, Ashgate.
- Insee (2015). 375 000 emplois salariés dans la logistique en Ile-de-France. *Insee Analyses Ile-de-France*, No 13.
- Kantor, P., Lefèvre, C., Saito, A., Savitch, H. V., & Thornley, A. (2012). *Struggling giants: city-region governance in London, New York, Paris, and Tokyo*. University of Minnesota Press.
- Le Galès, P. (2002). *European cities: social conflicts and governance*. OUP Oxford.
- Lorrain, D. (ed.). (2014). *Governing megacities in emerging countries*. Ashgate Publishing.
- Monios, J., & Wilmsmeier, G. (2012). Giving a direction to port regionalisation. *Transportation Research Part A: Policy and Practice*, 46(10), 1551-1561.
- Notteboom, T.E., Rodrigue, J.-P. (2005). Port regionalization: towards a new phase in port development. *Maritime Policy and Management* 32 (3), 297-313.
- Obeng-Odoom, F. (2012). On the origin, meaning, and evaluation of urban governance. *Norsk Geografisk Tidsskrift-Norwegian Journal of Geography*, 66(4), 204-212.
- Pierre, J. (2005). Comparative urban governance: Uncovering complex causalities. *Urban affairs review*, 40(4), 446-462.
- Raimbault, N (2014). *Gouverner le développement logistique de la métropole : périurbanisation, planification et compétition métropolitaine. Le cas du Bassin parisien et éclairages étrangers*. PhD in Geography and Spatial Planning, Paris-Est University.
- Raimbault, N. (2016). Ancrer le capital dans les flux logistiques : la financiarisation de l'immobilier logistique. *Revue d'Economie Régionale et Urbaine*, 1/2016, 131-154.
- Raimbault, N. (2017). Le développement logistique des grandes périphéries métropolitaines : régimes (péri-)urbains et privatisation silencieuse de la production des espaces logistiques. *Métropoles*, 21: <http://journals.openedition.org/metropoles/5564>
- Raimbault, N., Andriankaja, D., & Paffoni, E. (2012). Understanding the diversity of logistics facilities in the Paris region. *Procedia-Social and Behavioral Sciences*, 39, 543-555.
- Raimbault, N., Jacobs, W., & Van Dongen, F. (2016). Port regionalisation from a relational perspective: the rise of Venlo as Dutch international logistics hub. *Tijdschrift voor economische en sociale geografie*, 107(1), 16-32.
- Raimbault N., Heitz A., Dablanc L. (2019). Urban planning policies for logistics facilities. A comparison between US metropolitan areas and the Paris region. in: Browne M., Behrends S., Woxenius J., Giuliano G. Holguín-Veras J. (eds.), *Urban Logistics*, London, Kogan Page, 82-107.
- Rodrigue, J. P., & Notteboom, T. (2009). The terminalization of supply chains: reassessing the role of terminals in port/hinterland logistical relationships. *Maritime Policy & Management*, 36(2), 165-183.
- Rodrigue, J. P., Debie, J., Fremont, A., & Gouvernal, E. (2010). Functions and actors of inland ports: European and North American dynamics. *Journal of transport geography*, 18(4), 519-529.
- Teisman, G., van Buuren, A., & Gerrits, L. M. (Eds.). (2009). *Managing complex governance systems*. Routledge.

Witte, P., Wiegmans, B., van Oort, F., & Spit, T. (2014). Governing inland ports: a multi-dimensional approach to addressing inland port–city challenges in European transport corridors. *Journal of Transport Geography*, 36, 42-52.

Witte, P., Wiegmans, B., Braun, C., & Spit, T. (2016). Weakest link or strongest node? Comparing governance strategies for inland ports in transnational European corridors. *Research in Transportation Business & Management*, 19, 97-105.

Witte, P., Wiegmans, B., & Ng, A. K. (2019). A critical review on the evolution and development of inland port research. *Journal of Transport Geography*, 74, 53-61.