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# Geographical constraints as an incentive for actors to develop logistics pooling

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**Abstract.** The logistic pooling is not just a standard solution. It can take many forms and is a solution adopted by some players to reduce problems in the goods flow optimization on some territories, especially in towns [2] under constraints. This research analyses the role played by geographic constraints in the logistic pooling implementation on a certain territory. The geographic constraints impacts territory accessibility to individuals and goods and create different levels of pressure. Depending on how each actor evaluates such a pressure, they develop different strategies with varying levels of collaboration and different types of logistics pooling.

## 1 Introduction

The logistic pooling is not just a standard solution. It can take many forms: from a complex logistic pooling (multiple actors, variety of shared resources, strategic goals) to a simple logistic pooling just sharing some logistics resources between different actors [1]. Logistic pooling is a solution adopted by some players to reduce problems in the goods flow optimization on some territories, especially in towns [2]. The logistic pooling can be described as the process, for a group of shippers, of sharing logistic resources and sharing information in order to create value or at least to reduce logistic costs [3; 2]. Many researches emphasized on the point that pooling helps finding solutions to optimize logistical flows under constraints [4], such as environmental, economical, regulatory and geographical lead players to look for a kind of pooling, while constraints are often perceived as barriers [5]. Moreover geographic constraints are essential to understand the territory structuration. Geographers include this variable systemically, while managers tend to forget about it. In this research, the

geographical constraint appears mainly as a structural and external constraint faced by the players and is perceived in different way depending on actors and their sociology. Its role in the logistic pooling implementation on a certain territory should be analyzed. Especially, in order to identify what kind of incentive toward cooperation and pooling implementation it could be.

## 2 Geographical constraints

The geographical constraint relies to some territorial physical constraints: climate, topography, natural resources, cultivated/ living area, communication networks... For some geographers, constraints (as physical, economical, social) are not obstacles. They interact to create the geographic area [6] with a certain "weight" on it. In this research, we are studying the territory pressure as a result of the geographic constraint on flow of goods on this territory. Moreover, geographic constraints are impacting territory accessibility by individuals and goods. A high pressure, or high constraint, produces

different types of territory: outlying territory, difficult to reach territory because of a lack or an inadequacy of infrastructures (close to the concept of enclave) and congested territory (flow overload). Corridors are, for example, constraints territory as Benner Corridor (a link between Munich and Verona), the “cloverleaf” corridor (a link between Calais and Dover) [7] or at last the Seine corridor between Le Havre and Paris. Likewise peninsulas are landlocked with clogged networks. At last, because of their closeness and their congestion, downtowns may be difficult to access, even impossible under regulation. We will study these three specific cases.

### 3 Actors perception of the constraint

Literature on logistic pooling relies on understanding relationships between players and reasons why they cooperate on logistic pooling activities. In logistics and urban logistics, several stakeholders, frequently independent [8], can be divided in several categories. However, our cases focus on primary stakeholders of pooling activities: producers and shop keepers (main creators of flows), Logistics Service Providers and local government. Each actor has a different perception of the geographical constraint (degree and impact of that one). This leads to different strategic behaviors. At last, when it deals with logistic pooling, players have more or less a common perception of constraints weighting on themselves and on logistic activities [9-10].

### 4 Pooling as a adaptive collaborative strategy to constraint.

Depending on their perception, players develop adaptive strategies, which are leading to respond to an external constraint enforced by the environment [11]. They perceive the constraint, either as anticipated and in this case, they may react upstream with a new organization. Or the constraint is sudden and in this case, the strategy is emergent, on the way, following the new conditions, in an adaptive way [12]. Those strategies are always accompanied by two learning processes: 1) becoming aware of the change’s necessity and 2) acquiring of new resources and competences. The intercompany cooperation is an essential lever for the new resources and/or competences acquisition [13]. More the constraint perception is common to a high number of actors more the collaboration will be based on shared common objectives.

## 5 Methodology

Our research is based on cases studies comparisons of multiple logistic pooling solutions characterized by a geographical constraint in France but the panel is not exhaustive: the GIE *Chargeurs Pointe de Bretagne* (outlying territory), a LSP in Le Havre (road infrastructures limited due to geographical configuration), Urban logistic base of Aix-en-Provence (restrained and restricted downtown). The qualitative analysis is based on two objectives: identify the players’ perceptions of the geographical constraints, of its pressure and understand how each player is trying to adapt to these.

## 6 Results and Discussion

LSPs, public authorities and suppliers develop specific adaptive strategic behaviors. The studied territory cases are described in Table 1.

**Table 1.** Territory description and geographical constraints by case studies.

<b>Case study Aix-en-Provence</b>	<ul style="list-style-type: none"> <li>• Downtown center with a high density of stores located in narrow streets.</li> <li>• A touristic dynamic to maintain.</li> <li>• A high population density.</li> <li>• Due to pedestrian area spreading, goods deliveries are regulated in some sectors.</li> </ul>
<b>Case study Le Havre</b>	<ul style="list-style-type: none"> <li>• Hemmed zone with limited and clogged transportation routes</li> <li>• Road to Port du Havre (second harbor of France)</li> <li>• Territory at this end of HAROPA Corridor (Paris-Rouen-Le Havre)</li> </ul>
<b>Case study GIE Bretagne</b>	<ul style="list-style-type: none"> <li>• Peninsular Territory</li> <li>• Heavy Brittany culture</li> <li>• High density of Small and medium firms in agribusiness.</li> </ul>

The context of each case is different (Table 2). For Aix-en-Provence case, the city council launched a call for tenders in 2015 to establish clean urban deliveries with a logistic hub. The Labatut group, the winner, invested in clean vehicles, to pool downtown deliveries through an urban logistic base. In 2017, the results are mixed: the regulation is far from being coercive enough and traders keep mostly their classical schemes deliveries.

In Le Havre case, a LSP identified a need from other LSPs linked to the cost due to the lost time inside Le Havre and the harbor because of the few ways of penetration and their congestion. This pooling is mainly a LSP’s deal.

**Table 2.** Perception of geographical constraints by actors -Producers and Shop keepers (P&S), Logistic Service Providers (LSP) and Local Government (LG)-.

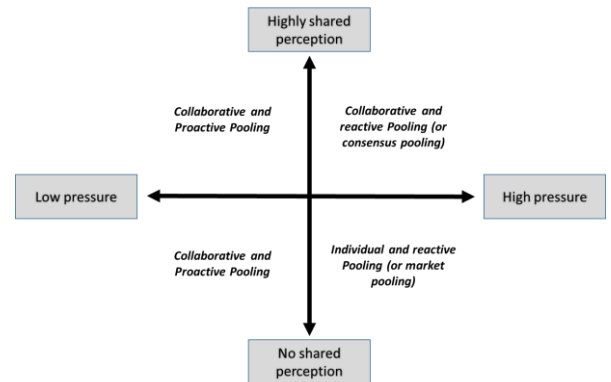
	Case study Aix-en-Provence	Case study Le Havre	Case Study Bretagne
<b>P&amp;S</b>	Producers : no particular perception. / Traders: the territory as a rare resource, difficult to share	No particular perception	Peninsular territory with high cost Common territory shared by Brittany agribusiness firms
<b>LSP</b>	Time constraint linked to congestion, perceived as manageable.	Constraint perceived as a source of service proposition.	Technical perception of constraints to adapt to suppliers needs
<b>LG</b>	The constraint reduces the territory attractiveness	No intervention	The constraint is perceived as a territory specification that has to be promoted.

In the case of « GIE Pointe de Bretagne », pooling was implemented through a consulting company. Many suppliers use this kind of pooling to deliver their goods outside of Brittany. The suppliers are entering all of the distribution networks thanks of this logistic organization, with controlled logistic costs. This helps opening up the territory and reduce, for shippers, which are part of this logistic organization, the geographical constraint, even if this constraint is valued by the production of goods that could not be produced elsewhere (fish principally).

**Table 3.** Strategies in reaction to geographical constraints by actors.

<b>Producers/shop keepers</b>	<b>Reaction</b> to face a geographical constraint, that prevent suppliers to develop their business → to avoid a sluggish growth.
<b>LSP</b>	<b>Anticipation</b> of customers' needs: the geographical constraint helps finding innovations, creating value for the customer and for the consumer (decreasing of cost for the LSP customer and a positive impact on price) → value creation
<b>Local government</b>	<b>Control willingness by reaction and anticipation</b> to face a high level constraint and a willingness to develop a territorial attractiveness.

To conclude, we identified geographical constraint characteristics for the players, and then distinguish different types of logistic pooling depending on the shared or not shared perception of geographical constraints by players and on the perceived pressure degree (low or high) of these constraints (see Figure 1). The constraint is not expressed the same way depending on the actors and the type of actor. Furthermore, it may be expressed on a positive way. In the case of GIE Pointe de Bretagne, the geographical constraint is articulated in the speech of actors as a source of financial difficulty but also as a sense of pride through a common view of a territory to value. This will lead to changes to do so. In the case of Le Havre, the constraint helps finding a need to create a service and then value. In the case of Aix-en-Provence, the common perception of downtown's constraint is not shared by all actors (traders, transporters, territorial authorities). Therefore, only high level coercion could oblige traders to use the pooling tool and the urban logistic hub.



**Figure 1.** Types of pooling depending on geographic constraints perception

Our research aims to promote understanding of the geographical constraint, which incite players to mutualize and therefore to acquire or increase potentially their environmental, social and economic benefits. The public authorities can seize the idea that creating a shared perception of the geographical constraints represents an efficient way to develop collaborative projects.

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