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Multimodal city-hubs and their impact on local economy and land use

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Abstract

Within the framework of the “City-Hub” European research project numerous interchanges have been studied in nine countries in Europe. We examine their role in local, regional, national or international transport networks. This article seeks to show the links between transport policies aiming at developing interchanges and urban policies creating development around these stations. We show that urban changes can occur in the context of integrated transport and land planning linking commercial development, new business offices and new housing.

Keywords: City-Hubs ; transport policy ; economic impacts ; land use impacts ; interchange multimodal poles.

Résumé

Dans le cadre d'un projet de recherche européen « City-Hub » de nombreux pôles d'échanges ont été analysés dans neuf pays en Europe. Nous examinons leur rôle dans les réseaux locaux, régionaux, nationaux voire internationaux de transport. Cet article cherche à montrer les liens entre les politiques de transport visant à développer ces grands pôles d'échanges et les politiques urbaines de développement autour de ces stations. Nous montrons que cette transformation urbaine peut se réaliser par une planification intégrée de l'amélioration des fonctions de transport avec celles liées au développement commercial, à l'implantation de nouveaux bureaux et de nouveaux logements.

Mots-clé: .City-Hubs ; politique de transport ; impacts économiques ; impact urbains, pôles d'échanges multimodaux.

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1. Introduction

Public transport hubs in many European cities are often designed for different scale functions. They can provide new functions and determine new roles for national rail and road network accessibility, creating new hierarchies within cities well connected by high speed trains or motorways. They can have a very important function within the regional planning context providing new centralities for cities. For instance the Lille metropolis, that was previously at the end of the French networks, is now placed at the crossroads of the Northern high speed train network has changed its role, becoming more central within the French transport network, with connections between different sub-regional areas with access to regional trains, intercity buses and even access to international services. These multimodal poles are also integrated into urban and local land-use planning. Interchanges can induce urban regeneration or centralisation and be developed within transport oriented development (TOD) policy. Their role is often described in urban travel plans.

This paper is based on work undertaken in the City-Hub European project of the 7th framework programme research. It will present the results from various case studies. It first analyses the place, and the importance, of multimodal city-hubs in town and country planning at different scales. This depends on their transport function, the number of transport modes and the number of transport services present in the hub, including both private and public modes, and the combination and ease of use of soft modes, such as walking and cycling. Their quality of integration and the possibility of different stakeholders' cooperation is then observed. The efficiency of multimodal transport poles also depends on the urban and economic environment in which the multimodal station has been or is being implemented. This paper observes urban development linked to the realisation of multimodal poles, such as retail and commercial centres, the construction of additional housing, new office space, employment and job attractions around these hubs.

2. Methodology

As part of the work undertaken in the City-HUB European project, various transport and/or planning practitioners have been asked their views on interchanges and their role in nine different European countries. Harmer et al. (2013) report the findings from sixteen practitioner interviews. These practitioners were either transport planners from transport authorities, transport operators or in charge of business development. They were questioned about the role of interchanges in local economies and their potential impact. As part of these interviews the following interchanges were discussed: Leppävaara Station in Espoo in Finland; Lillestrøm station and bus terminal in Lillestrøm and the Bekkestua Interchange in the Bærum Municipality in Norway; the Plaza Castilla Interchange and the Mendez Alvaro (South Bus Station) in Madrid, Spain; New Street Station in Birmingham, Reading Station and the Kings Cross/St Pancras Underground Station in London for the United Kingdom; the Main Train Station in Leiden, Netherlands; and the Main Train Station in Den Bosch in the Netherlands; the Érd Intermodal Terminal in Érd in Hungary; the Lille Europe and Lille Flandres Railway Stations in Lille in France; the Praha-Dejvická interchange in the Czech Republic; the Intercity coaches of Magnesia in the city of Volos, the Macedonia Coach Terminal in Thessaloniki and the KTEL Kifisou bus and coach station in Athens in Greece.

In addition, five pilot case studies were studied in depth to provide a model for the city-Hub project. They represent major interchanges such as Moncloa in Madrid, in Spain; Ilford Railway Station, in London in the United Kingdom; the Railway Station in Thessaloniki in Greece; Kamppi, in Helsinki in Finland; and Köbánya-Kispest, in Budapest in Hungary. These five interchanges are fully described by Christiansen and Andersen (2013).

First, we describe and examine the role of each interchange within the city and the region, and we see if it has a national or international function within the transport network. This can be seen by the importance of the transport modes present at the interchange. Then we analyse the interchange to see if it was part of a wider urban integrated planning program that links the transport function to land uses, such as urban development or regeneration. Finally, we consider if there were other developments associated with it, such as local economy and commercial development or housing construction.



3. Description of the interchanges and their importance in the transport network

The description of the sixteen interchanges case studies and their role in the transport network, is based on Harmer and al. (2013), as part of the City-Hub D3.1 deliverable. The description of the five pilot case studies is based on Christiansen and Andersen (2013), as part of the deliverable D2.3 of this European project.

3.1. Description of the sixteen case studies

The Leppävaara station is located in the most populous districts of Espoo, the second largest city in Finland. It is located at an intersection of the ring road around Helsinki, and a railway. The original station was replaced in 1999 by a new railway station and terminal. In February 2003, the first part of the Sello Shopping Centre, located next to the station, was opened. In October 2005, the rest of the shopping centre opened, providing over 160 shops and services. The interchange, the housing development and the shopping centre were planned together as an integrated development.

Lillestrøm Railway Station and Bus Terminal are located close to the centre of the city. It is the third largest interchange of Norway. Lillestrøm is a growing city within the Oslo conurbation. The first bus terminal opened in 1924, with the existing one opening in 1998 having been developed as part of an infrastructure upgrade when Oslo airport was moved to the North of Oslo. The interchange is designed for transport purposes.

The Bekkestua local interchange is found in the Bærum Municipality south west of Oslo, Norway. Originally the station opened in 1924, with redevelopment occurring in 1990 and it was refurbished in 2011. There is a political agreement and a plan covering the period of 2008-2027 for investment in Oslo enhancing public transport. It is financed by state grant and the main funding source is via the toll road around Oslo.

The Plaza Castilla Interchange is part of the transport interchange plan in the city of Madrid. It has two terminals. The underground terminal receives the metropolitan bus lines using the A-1 motorway and the M-607, while the surface terminal is for the urban bus lines that service the new urban development in the North of Madrid. The interchange station also has a public car park with capacity for 450 vehicles. A new underground terminal opened in 2008. Buses enter and exit the terminal through tunnels, whose entrances were located approximately 1km from the plaza. It is divided into three main levels, the levels -1 and -3 for buses with a total of 30 bus bays and level -2 for interchange with underground lines 1, 9 and 10. The surface terminal, opened in 2009 has been remodelled for urban bus use with terminals presently located in the Plaza.

The Praha Dejvická terminal, Prague, Czech Republic had its original development (1978) coordinated with the entire area redevelopment and it opened along with the opening of the new green metro line A. After the political change in the year 1989, some shops were built inside the metro passage which gives its current shape. In the future an extension of the metro line (currently in development) is planned and after that the bus operation will be moved into another location.

The Mendez Alvaro (South Bus Station) interchange in Madrid was opened in 1997 and is the biggest coach station in Spain. Its main function is to provide for long distance bus services, covering services from/to Madrid to most Spanish cities and also some international bus-lines. It also provides links with suburban trains, the metro and urban buses. The interchange is located in the southeast of Madrid at a strategic area with direct access to the M30 motorway ring road, which facilitates the entry and exit of all vehicles, with minimal impact on the city's traffic. It has a surface area of 30,000 m² and is divided into five levels in which there are 64 bus bays and a connection with the metro and suburban trains. There is also a public car park with capacity for 292 vehicles and a nearby commercial area.

Birmingham New Street Station is located in Birmingham city centre, the second biggest city in the UK. The new station had sold its air rights, leading to the construction of the Pallasades Shopping Centre above the station between 1968 and 1970. Also above the station was a nine-storey office block called Ladywood House and a multi-storey car park dating from the 1970s. In 2009, a second major re-build of the station commenced. Phase 1, completed in April 2013, involved the development of a new concourse and some refurbished platforms. Phase 2 will be completed by summer 2015 and will involve the re-development of the old concourse. New Street station will also become the terminus of the Midland Metro extension through the city centre, to be completed by 2015. The new tram stop will be alongside the new main station entrance on Stephenson Street.

Reading Railway Station is located in Reading town centre, within five minutes of the main retail and commercial centre. The station is currently being redeveloped with the main work completed in Easter 2013.



Some work is still on-going in the station and in the surrounding area, which is due to be completed in 2015. The re-development will provide five new platforms, new entrances to the north and the south, a new subway under the station, a new passenger footbridge with escalators and lifts.

Kings Cross/St Pancras Station Underground Station is located in central London,. It is a very busy station, with two main line railway termini (King's Cross and St Pancras International) above. The latest underground redevelopment has been phased over 12 years in response to the arrival of the Channel Tunnel Rail Link terminal at St Pancras International, the redevelopment of King's Cross mainline terminal and the re-development of King's Cross Central (271,134 m² of former railway land). In the underground station this has involved two new ticket hall, new interchange passageways and new entrances to street level including to a new public square due to be completed in September 2013.

The Main Train Station in Leiden in The Netherlands is located near the city centre and connects with regional buses. The station is important in the busy Randstad area, being located between Amsterdam and the Hague/Rotterdam. The station first opened in 1842 and was last renovated in 1996. It is considered an important walking route between the city centre and Western areas.

The main train station in Den Bosch is located in the city centre and connects with regional buses. It has an important location in the city and connects the western parts with the city centre. The station was originally opened in 1868. The most recent redevelopments took place in 1998, which saw the construction of a walkway connecting the western parts of the city and the city centre and the platforms (the so called Passerelle) and in 2011 that saw the construction of double tracks with a flyover and new platforms.

The Érd Intermodal Terminal is located in the city of Érd in Hungary, that has 65,000 inhabitants, to the Southwest of Budapest. It is linked to the capital by rail, road and bus links. The construction of the intermodal terminal interchange was part of the restructuring of the town centre. The intermodal terminal was built as a joint investment between the state owned regional bus company and a private investor (Stop Shop) next to a railway station (state owned). It was the first of these types of projects in Hungary, hence it is considered to be the first modern intermodal interchange in the country. Construction of the shopping centre and the new bus terminal was completed in 2005. The shopping mall has 500 parking places which are free of charge and they can be used for Park and Ride. The connection to the railway station was completed in 2007.

The two interchange railway stations of Lille Europe and Lille Flandres, are located at the northern end of the French TGV network, in the Metropolitan area of Lille known as the Paris-London-Brussels triangle, with around 1.2 million inhabitants. They are very close to one another, being just 500 metres apart and are well connected to the urban public transport network with underground lines 1 and 2, two tramway lines and regular bus routes. Lille Flandres is an old station inside the city of Lille. It serves the regional towns with regional trains named TER (Express Regional Trains), while also linking Lille to Paris with direct TGV trains. It also offers free access bikes named V'Lille and a bike garage, which is free for public transport passengers. The Lille Europe Railway Station is a modern railway station constructed to host the Northern TGV trains on the high-speed railway network. It opened in 1994 and connects Lille Brussels and London with the Eurostar trains. It also serves the other French regions to the south, east and west by TGV. Lille Europe is part of the new Eurailille neighbourhood.

The Intercity Coaches of Magnesia interchange is located in a suburb of Volos, which is the capital of the county of Magnesia. The interchange is very close to the local bus terminal (50 metres away) and the campuses of the City's university (100 metres), while the railway station and port are also fairly close at 1-1.5 and 1.5-2.0 km respectively. The interchange first opened in the 1970s, with a full redevelopment occurring in the 1990s.

The Macedonia Coach Terminal is one of the largest coach terminals in Greece. The terminal opened in September 2002 and is located in a suburban area of the city of Thessaloniki, 5km West of the city centre. It is at a strategic location between three main arterial roads.

KTEL Kifisou is located in Athens and is one of the largest coach terminals in Greece for interurban transportation of passengers and goods. The terminal opened in 1971 and underwent some general refurbishment in 2003. This included replacing of the roof covering the buses, repainting the building, some interior design work and providing facilities for people with mobility issues and special needs.



3.2. Description of the five City-Hub pilot cases studies

Moncloa Transport Interchange Station is situated at the northern edge of Madrid and was built in 1995. At the same time authorities expanded Metro line 6 to Moncloa, making it the busiest Metro station on the network. Opening of the Bus-HOV (High Occupancy Vehicle) and the bus-only lane for the A-6 motorway, resulted in a significant reduction in the total number of car journeys and a resulting increase in the demand for interurban bus journeys. Passengers do not have to travel to stations in the outskirts of the city to use interurban bus services, as it is located in the centre of the city and connects directly to Metro line 3 and 6 which link to all of the key points on the Metro network. There are 56 interurban bus lines, 3 urban bus lines, 2 metro lines (line 3 and line 6) and 1 long distance bus line. No private car parking is provided.

Ilford Railway Station is located in the centre of Ilford in East London. The existing station is to be re-configured to serve Crossrail trains from 2019. This will provide more than twice the current frequency of trains from Ilford to central London. The station improvements will provide a new ticket hall layout with greater gate line capacity, longer platforms and a realigned station entrance and elevation to the street. The interchange is situated on the Great Eastern Main line and has regular local train services (from Essex) to Liverpool Street station in central London. More than 10 bus stops are located within walking distance of the station, with the town being a hub of the London Buses network, providing buses to central London and various suburbs. The station is considered to be a major public transport interchange by Transport for London (TfL).

The New Railway Station Thessaloniki is the central passenger railway station in Thessaloniki, which is the second biggest city in Greece and the capital of the periphery of Central Macedonia with a population of approximately 1,000,000 residents. The station is situated close to the city business district, allowing the movement of travelers all around the city. The station is also close to the port of Thessaloniki, enhancing the attractiveness of the interchange. A bus line connects the railway station to the International Airport of Thessaloniki "Macedonia". A metro station is under construction and will enhance the connection between urban and interurban travelers and will provide a modernised integrated bus railway station.

The Kamppi terminal interchange is located in central Helsinki. It was developed as part of a town planning including the construction of the interchange and of a large shopping centre. The area of the interchange/shopping centre is approximately 4 hectares. In addition to the shopping centre there are also offices and flats in the same complex. The main modes of transport at the interchange involve local, regional, national and international buses, metro and tram. The Kamppi interchange is also well connected to the central railway station which is located 500 meters away.

The interchange at Kőbánya-Kispest was created as part of the construction of the southern sector of Metro line M3 of Budapest and linked the mainline railways. During the second part of the 2000s, the local district council decided to refurbish the area around interchange. The plans involved the refurbishment of the metro terminal, the bus terminal and the Park and Ride and a brand new shopping mall. In 2011 the new interchange was totally renewed and its functions were extended with a wide range of shopping and services. Building a new footbridge connecting the metro terminal, the bus terminal and the shopping mall enhanced intermodality between the transport modes. The bus terminal was relocated to be closer to the metro station. Pedestrian routes were simplified and all transfer facilities were covered.

4. The interchange transport functions at different scales

The transport modes at the interchanges described include: walking, cycling (with cycle parking), cycle hire, motor cyclists (also scooters and mopeds), buses, long distance coaches, metro, light rail/ tram, heavy rail, private cars (with car parking), private cars (with drop off or Park and Ride), taxis, other such as airport shuttles and international coaches. We report the number of transport modes that characterise the different interchanges studied; the number of transport modes at each interchange was between 4 and 13 (see Table 1).

- For all of the interchanges, walking is cited as an important transport mode for accessing or traveling to the interchange, connecting the different transport modes.
- 14 interchanges offer cycling facilities, either by providing cycle parking or cycle hire like V'Lille in Lille.
- 11 interchanges are on heavy rail networks and are important nodes on the regional, national and even the international railway network.



- 10 interchanges offer long distance coaches.
- 7 interchanges connect with a metro station and two of them have a metro station under construction (Érd Intermodal Terminal in Budapest and New Rail Station Thessaloniki.)

All the interchanges play an important role at the local and regional level. They all represent important nodes on the regional network and, for 18 cases of 21, on the national network. They all link urban buses and interurban or regional buses and give good access between them. Most of them correspond to a national hub on the transport network and have national links by train or long distance coaches. Eight of them are on international transport networks by long distance international coaches such as Mendez Alvaro (South Bus Station) and the Moncloa station in Madrid, Macedonia Coach Terminal in Thessaloniki, Kamppi in Helsinki with the link to St. Petersburg, Russia and the Kőbánya-Kispest in Budapest with the link to Romania. This international role can also be provided by heavy rail international links such as Kings Cross St Pancras Underground Station in London with Eurostar trains, the Lille Europe and Lille Flandres Railway Stations in Lille with Eurostar trains, Belgium trains and international coach lines as Eurolines.

Table 1: Number of transport modes, daily passengers and role within the network

| Interchange Case Study Covering Role | Local | Regional | National | International | Number of transport modes | Daily passengers |
|---|-------|----------|----------|---------------|---------------------------|------------------|
| Leppävaara Station, Espoo, Finland | Yes | Yes | Yes | No | 8 | 25,600 (0) |
| Lillestrøm station and bus terminal, Lillestrøm, Norway | Yes | Yes | Yes | No | 7 | - |
| Bekkestua Interchange, Bærum Municipality, Norway | Yes | Yes | No | No | 7 | 4,600 |
| Plaza Castilla Interchange, Madrid, Spain | Yes | Yes | No | No | 5 | 199,544 (1) |
| Mendez Alvaro (South Bus Station), Madrid, Spain | Yes | Yes | Yes | Yes | 7 | 180,238 (2) |
| New Street Station, Birmingham United Kingdom | Yes | Yes | Yes | No | 9 | 140,000 |
| Reading Station, Reading, United Kingdom | Yes | Yes | Yes | No | 9 | 52,000 |
| Kings Cross St. Pancras Underground Station, London, United Kingdom | Yes | Yes | Yes | Yes | 10 | 80,000 (3), |
| Main Train Station, Leiden, Netherlands | Yes | Yes | Yes | No | 10 | 60,000 |
| Main Train Station, Den Bosch, Netherlands | Yes | Yes | Yes | Yes | 9 | 59,000 |
| Érd Intermodal Terminal, Érd, Hungary | Yes | Yes | Yes | No | 7 | 18,600 (9) |
| Lille Europe & Lille Flandres Railway Stations, Lille, France | Yes | Yes | Yes | Yes | 13 | 88,600 (4) |
| Intercity coaches of Magnesia, Volos, Greece | Yes | Yes | Yes | No | 8 | (5) |
| Macedonia Coach Terminal, Thessaloniki, Greece | Yes | Yes | Yes | Yes | 4 | 25,000 |
| KTEL Kifisou, Athens, Greece | Yes | Yes | Yes | No | 5 | 27,000 |
| Praha – Dejvická, Prague, Czech Republic | Yes | Yes | Yes | No | 7 | 175,000 (6) |
| Moncloa, Madrid, Spain | Yes | Yes | Yes | Yes | 8 | 582,000 (7) |
| Ilford Railway Station, London, United Kingdom | Yes | Yes | No | No | 6 | (8) |
| Railway Station Thessaloniki, Greece | Yes | Yes | Yes | No | 6 | 160,601 (9) |
| Kamppi in Helsinki, Finland | Yes | Yes | Yes | Yes | 8 | 84,000 (10) |
| Kőbánya-Kispest, in Budapest, Hungary. | Yes | Yes | Yes | Yes | 7 | 80,000 (11) |

(0) Train + Buses, (1) Buses + Metro, (2) Buses + Metro + Coaches, (3) at 3 peak hours, (4) only train passengers, (5) a total of 309,359 passengers in 2012, (6) Metro + Bus + Tram + Regiobus, (7) Metro + Buses + Coaches, (8) 6,721,486 passengers in 2012, (9) Buses and Train, (10) Metro + Buses + Tram, (11) Train + Buses + Metro

Source: City-Hub European Project, Harmer et al (2013), Christiansen and Andersen (2013), European Community (2009), Cole (2010)

The number of passengers that use an interchange can also measure its importance. Nevertheless, the data concerning passengers necessitate them being more precisely defined (see Table 1). Indeed, the number of passengers is expressed either in daily passengers or annual passengers (Ilford Railway station, Intercity coaches



of Magnesia, Volos). In some places the number of passengers is given for a period at peak hours (Kings Cross/St Pancras). Moreover it covers either the total number of passengers passing through the city-Hub and using different transport modes, such as train, metro, tramway coaches and buses or the data only report the number of rail passengers, as in the Lille stations. The busiest are the three Spanish interchanges (Moncloa, Plaza de Castilla and Mendez Alvaro interchange) in Madrid and the King's Cross St Pancras station in London and the New Street Station in Birmingham. In all of the cases the interchanges are located at strategic nodes on the transport network. Effectively, they are either at main road and rail crossroads or are well connected by transport networks places into city centres. Filion and Kramer (2012) have stressed the importance of realising transport investments at particular nodes linking the planning principles and transportation projects and land-use proposals in order to achieve sustainability and smart growth objectives. The main reason for developing interchanges on these nodes is to reduce car dependency, improve accessibility and increase public transport use. It also can increase urban density, as was the case for the Kamppi terminal area and King's Cross St Pancras. Interchange development can also even create completely new neighbourhoods, like in the Lille intermodal transport node inside the Euralille development project.

5. City-hubs planned within urban and economic development policies or urban regeneration policies

The relationship between transport infrastructure investment and development has been studied for a long time. The direct causality is discussed and even rejected by Plassard (1977) and Offner (1993) has even criticized the "structuring effect" of transport investment. Nevertheless, the combination of different public policies as transport, urban and economic ones can coordinate and induce some development. As highlighted by Banister and Berechman (2001) three conditions must be present in order to induce economic development. Transport investment such as a new interchange must be of a significant size in order to provide new accessibility and new connections between transport modes. The economic context must reach a high quality labour force and present underlying dynamic economic externalities at the local, regional or national level. The third condition is the existence of political willingness to implement complementary policies in order to provide a better environment and to boost the transport investment to generate economic development. These complementary policies can be to implement a transport hub as the part of an overall larger integrated policy and/or plan aiming at (re)developing linked economic activities and urban function (re)development. Moreover they conclude that "policy design also has a crucial role in influencing and strengthening the potential impact of transport infrastructure investment on local economic development (Banister and Berechman, 2001)." In the case of only two paired conditions such as large-scale transport investment and complementary public policy but without a good economic context or large-scale transport investment without political complementary policies, economic development would not occur. Many interchanges described in the City-Hub project only enhance accessibility and connectivity between transport modes, without generating local economic development.

The development around interchanges described in our sample is the same type of development as described by Cervero et al. (1996) that around rail (heavy or light) nodes, plans are often concentrating offices, homes and shops to achieve more sustainable patterns of growth and travel. Cervero and Duncan (2002) and Ryan (1999) find that properties near heavy rail or light rail stations can raise land values; moreover, Cervero and Duncan (2002) add that living near services and public uses such as restaurants, pubs and child care centres also inflated commercial land values in Santa Clara County.

In the interchanges examined within the City-Hub project nine presented integrated development plans and strong willingness that aimed to link together the transport function with local economic and urban development policies and /or urban regeneration policies. That is to say they seem to fulfil the three conditions of Banister and Berechman (2001). Effectively, some of the interchanges are part of a bigger plan aimed at economic development with new shops, housing or offices being provided at the interchange. Planning with a metropolitan scope is a "condition to achieve measurable effects on the transport-land-use relationship" (Filion and Kramer, 2012). Nevertheless very few direct jobs or associated indirect jobs were reported except in the case of Mendez Alvaro and Kőbánya-Kispest. In addition, the Lille transport interchanges attribute all of the new jobs created in the new Euralille neighbourhood as an effect of the interchange presence but probably only a part of them are to be taken into account (see Table 2). Figure 1 shows that 12 city hubs that had no special economic and urban development policies register new shopping areas nearby or in the city-hub and new housing and or offices in their vicinity. It questions the effectiveness of these policies and their degree of integration. Many of the practitioners interviewed for example did not attribute changes in local economic development to the city-Hub implementation

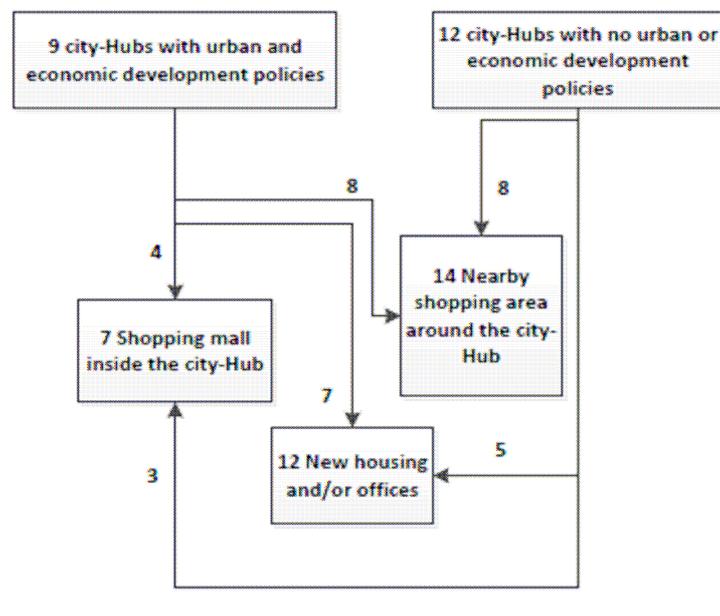


Figure 1: The city-Hubs and economic and urban development policies

For instance, while the international railway station of Lille Europe was planned, a political decision was taken to create a new neighbourhood named Euralille. Moulaert et al. (2001) report that it was seen as an important factor in the new social and economic policy for the Lille Metropolis. This new neighbourhood was firstly developed as a “complex of economic functions rather than a neighbourhood”. But different development phases have been realised providing this new neighbourhood with housing for local population, local culture, conviviality, etc. A shopping mall named Euralille was created between the two intermodal railway stations. New office buildings and new housing have been constructed in the vicinity of these interchanges. New coordinated planned actions are undertaken to make this development within the further development of Euralille within the CIAG (Centre International d’Affaires des Gares) international centre for businesses near the railway stations. To link transport and land-use planning, all of the planning stakeholders are involved in a Metropolitan development view (i.e. the regional council in charge of the regional planning and regional express trains development, the city of Lille, the Département, the LMCU - Lille Métropole Urban Community - that is the urban transport authority, the SNCF and Transpole the transport operators and Euralille SPL in charge of developing this area). This has provided 14,000 jobs and 2,400 homes for 4,000 inhabitants. It also has 20 hectares of green space, and major cultural and social attractions such as the exhibition centre, concert centre, and casino.

Leppävaara Station in Espoo, New Street Station, Reading station, Ilford Station, Érd Intermodal Terminal, Kamppi in Helsinki and Kőbánya-Kispest, in Budapest have integrated development plans aimed at developing economic and commercial activities, transport activities and in some case housing development. Effectively, some of them have a commercial centre or shopping mall as an integral part of the transport city-Hub. For example, Kamppi has a 43,000 m² shopping mall and even a 6,000 m² of housing above the interchange.

Plaza de Castilla Interchange and the Railway Station in Thessaloniki also have commercial centres inside or partly inside the interchange. A number of interviewees reported that new offices and new housing had been developed near the interchange but without being sure how to attribute this development to the presence of the transport city-hub. For instance, near Plaza de Castilla four skyscrapers were finished one year before the transport interchange. These house international and national business headquarters, high quality hotels but no housing.

Nevertheless, interviewees declared that it was difficult to attribute this new land use development to the new interchange existence. The practitioners interviewed did not provide much information on the evolution of the value of properties linked to the development of the interchange. They only provided the number of new developments in housing or commercial centres or new offices.



Table 2. New developments near City-Hub's 16 case studies and 5 pilot projects

| Interchange Case studies and pilot projects | Integrated development plan | Integrated shopping mall | Nearby shopping | New housing | New offices | Direct jobs | Indirect jobs |
|--|-----------------------------|---|-------------------------------------|-----------------------------|-------------------------------|-------------|---------------|
| Leppävaara Station, Espoo, Finland | Yes | - | 102,000 m ² 170 shops | Yes | - | - | - |
| Lillestrøm station and bus terminal, Lillestrøm, Norway | No | - | Yes | Yes | Yes | - | - |
| Bekkestua Interchange, Bærum Municipality, Norway | No | - | - | Yes | Yes | - | - |
| Plaza Castilla Interchange, Madrid, Spain | No | Yes | Yes | No | Yes | 74 | - |
| Mendez Alvaro (South Bus Station), Madrid, Spain | No | - | Yes | - | - | 350 | 1,000 |
| New Street Station, Birmingham United Kingdom | - | Yes 18,508 m ² | Yes 55 | No | - | - | - |
| Reading Station, Reading, United Kingdom | Yes | - | Yes | No | - | - | 1,000 |
| Kings Cross St Pancras Underground Station, London, United Kingdom | Yes | - | Yes 46,451 m ² | Yes | Yes 315,867 m ² | 100 | - |
| Main Train Station, Leiden, Netherlands | No | No | Yes | Yes | - | - | - |
| Main Train Station, Den Bosch, Netherlands | No | No | - | Yes | Yes | - | - |
| Érd Intermodal Terminal, Érd, Hungary | Yes | Yes 2,300 m ² | - | Yes | - | 57 | 70 |
| Lille Europe & Lille Flandres Railway Stations, Lille, France | Yes | No | 67,000 m ² 124 shops | Yes | Yes 357,000 m ² | - | 14,000 |
| Intercity coaches of Magnesia, Volos, Greece | No | No | Yes | No | No | 200 | - |
| Macedonia Coach Terminal, Thessaloniki, Greece | No | No | - | No | No | 100 | - |
| KTEL Kifisou, Athens, Greece | No | No | Yes 50,000 m ² | No | No | - | - |
| Praha – Dejvická, Prague, Czech Republic | Yes | Yes 2,000 m ² | - | No | No | - | - |
| Moncloa, Madrid, Spain | Yes | No | Yes | No | No | 69 | - |
| Ilford Railway Station, London, United Kingdom | Yes | No | Yes | Yes | Yes | 20 | - |
| Railway Station Thessaloniki, Greece | - | Yes 1,500 m ² | No | No | No | 48 | - |
| Kamppi in Helsinki, Finland | Yes | Yes 43,000 m ² 170 shops | - | Yes 6,000 m ² | Yes | - | - |
| Köbánya-Kispest, in Budapest, Hungary. | Yes | Yes | 47,000 m ² 150 shops | - | Yes 7,000 m ² | 68 | 1,000 |

Source: City-Hub European Project, Harmer et al (2013), Christiansen and Andersen (2013)

6. Conclusion

We have seen that the link between multimodal interchanges and their impacts on land use is not direct if there is not a strong integrated development plan associated to policy makers' involvement (Banister and Berechman, 2001). Some cities have jointly developed housing and commercial and businesses to develop their transport interchange. Cervero and Murakami (2009) suggest that it could be interesting to use the selling of land properties to develop the transit intermodal hub as it is has in Hong Kong. Further research could try to analyse the integrated land-use plans offering new urban facilities commercial, housing or businesses and their related value due to the evolution of the transport city-hub.



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References

- Banister, D., & Berechman, Y., (2001). Transport investment and the promotion of economic growth. *Journal of Transport Geography*, 9(2001) 209-218.
- Cervero, R., Parsons Brinckerhoff Quade & Douglas, Inc., Howard/Stein-Hudson Associates, Inc., Zupan, J. (1996). *Commuter and light rail transit corridors: the land use connection* TCRP 16 volume 1 March
- Cervero, R., & Duncan, M., (2002). Transit's value-added effect: Light and commuter rail services and commercial land value, *Transportation Research Record* 1805:8-15
- Cervero, R., & Murakami, J., (2009). Rail and Property Development in Hong Kong: Experiences and extensions, *Urban Studies*, 46(10) 2019-2043, September 2009.
- Christiansen, P. & Andersen, J. (2013). Deliverable D2.3 Lessons from descriptive case studies – recommendations for the City-HUB model. City HUB Project
- Cole, M., (2010). King's Cross St Pancras: just the ticket for London, *New Civil Engineer*, 22.April 2010
- European Commission, (2009). Study of passenger transport by coach - Appendix C: Study of coach terminals, January, Steer Davies Gleave, 39 p.
- Filion, P. & Kramer, A. (2012). Transformative Metropolitan Development Models in Large Canadian Urban Areas: The Predominance of Nodes *Urban Studies*, 49(10) 2237–2264, August 2012
- Harmer, C. Millard, K. & Palmer, D. (2013). Design findings report. Deliverable D3.1, + Annex City-HUB Project
- <http://www.getreading.co.uk/news/local-news/passenger-numbers-growing-reading-station-4190146> (accessed September 2013)
- Moulaert, F., Salin, E., Werquin, T., (2001). Euralille: Large-Scale Urban Development and Social Polarization, *European Urban and Regional Studies*, 2002 8 :145
- Offner, J.M., (1993). Les effets structurants du transport : mythe politique, mystification scientifique, *L'espace géographique*, n°3, pp.233-242.
- Plassard, F., (1977). Les autoroutes et le developpement régional, *Economie appliqué*, n°1-pp. 225-244.
- Ryan, S., (1999). Property Values and Transportation Facilities: Finding the Transportation-Land Use Connection, *Journal of Planning Literature*, 1999 13: 412