Improving areas around railway stations to promote changes in the mode of transportation

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ABSTRACT: The renewal of rail transport brings railway station districts back in the spotlight and raises the question about their (re)development. Whereas the strategies to be implemented must be geared chiefly to transport mode shift, they also provide an opportunity to revitalise these areas and to rebuilt the city around a bolstered central core. These strategies vary depending on the type of station. Sixty (60) Walloon stations have been described according to three criteria: passenger flow (departure/arrivals, people going to and from work/school …), land occupation in the district (including available land reserves), and access by the various modes of transport. On this basis, general guidelines for improvement have been established.

Keywords: railway station district – passenger flow – land occupation – town planning – transport mode shift

1. INTRODUCTION

Until recently, both in cities and in rural areas, the immediate surroundings of railway stations were normally not paid attention to when promoting urban development. However, over the recent years, a number of changes in people's transportation patters seem to underpin development and progress in the railway transportation system.

In the late eighties, the railway sector was subject to many innovations and offered the public a modern image and user-friendly mode of transportation. Furthermore, the introduction of high speed trains, undoubtedly contributed to an increased use of the railway over medium distances. During the nineties, the increased use of trains, led to the construction of new stations and railway lines. Today, a number of railway modernization projects are ongoing, especially in connection with the development of the regional express network around Brussels. This renewed focus and investments in the railway sector, are caused by multiple factors. The two most apparent reasons being (i) changes in transport policies driven by international requirements (for instance the Kyoto Protocol) and the excess numbers of users of the road networks (causing traffic congestion), and (ii) an increased cost associated with the use of private vehicles, both with respect to higher fuel prices, and increased costs associated with accessing cities (parking fees, toll fees, etc.).

The current policy in Wallonia seems to support establishment of parking areas around the main stations of departure, and a concentration of offices around the main stations of arrivals. To determine how relevant this policy is, and see how it can be incorporated in more comprehensive urban and rural development plans, a study was accomplished. The study was conducted as part of the "Standing Conference on Territorial Development (CPDT) – cpdt.wallonie.be" in collaboration with the Ministry of Land Management and Urban Planning, the Ministry of Equipment and transport, the Walloon Regional Transport Company, the National Society of Belgian Railways and the Federal Ministry of Finance (Cadastre unit). The research identified changes in people's travelling patterns and illustrated the characteristics and potential of railway stations in the Walloon region of Belgium. Based on the first assessment, a list of concrete proposals for the development of areas directly surrounding various types of railway stations was established.

2. DIVERSITY OF PRACTICES, FLOWS AND PLACES

2.1. Understanding changes in people's travelling pattern

Studies on mobility and travelling patterns clearly indicate an increase in the average distance that people travel on a daily basis. They also point out that the travelling patterns are becoming increasingly complex as places of residence, offices/businesses, education, shopping and recreation are increasingly fragmented over a larger area. With this background, two changes should be evident among commuters: (i) More and more people have a car and the use of personal vehicles increases, and (ii) People are trying to establish chains of movement to connect their residences, workplaces, and social infrastructure including shopping, recreation, and education facilities. However traffic jams and new incentives for public transport encourage the use of different transport modes.

The predominance of private cars is also supported by spatial transformations in metropolitan areas, causing new travelling patterns other than those traditionally observed between city center and the suburbs. In fact, the city center is no longer necessarily an area where all activities are based, and equally, the suburbs are not only a location for residences and daily services.

2.2. Understanding the flow of railway users in Wallonia

In the Wallon region, the railway covers about 9% of all daily trips, whereas private cars represent 80%, the bus 4% and other modes of transport (e.g. walking, cycling, etc.) represent more or less 7%.

Thanks to the commercial services of the national railway, the mentioned study was able to use and refer to a significant database showing passengers' travels in Wallonia. This database allowed us to identify points of origin and destination, as well as type of passengers and their residential locations. By selecting 60 stations, a daily movement of 102.500 commuters was analyzed, representing nearly two thirds of the total market share of railway passengers. The remaining third was composed of occasional trips (one-way tickets) and special tickets (e.g. multiple cards travels).

From this database, the analysis could conclude the following:

Walloons working in Wallonia are hardly using the railways.

Most of the working commuters go to Brussels.

The internal movements in Wallonia are mainly related to school, while the departures are made up by mostly workers. However, the smaller the station, the more equal is the number of people departing for school and for work, while the number of people arriving is predominantly composed of workers.

The daily travel related to schools is shorter than the daily travel of workers. Consequently departures for reasons of work are less dominant if the station is near a major hub.

3. BEYOND THE MAIN TRENDS, THE PARTICULARITIES OF WALLOON RAILWAY STATIONS

To address issues related to development of rural and urban areas with regards to the railway stations, it is necessary to develop specific strategies depending on what type of station it is, - whether it is a major destination station, a mixed station with an equal number of departures and arrivals, or one of the many small stations with mainly departures. These specific strategies should take into account the particularities of the stations, their surroundings and their accessibility for the people who use the services from the station.

To do this, the 60 stations that were studied were classified according to three factors: The flow of subscribers, the development of the land surrounding the station, and the accessibility for users.

3.1. Types of railway station according to the flow of passengers

In addition to the four major Walloon stations (Namur St., Liege St., Mons St. and Charleroi St.), other stations can be classified into four groups according to their relative importance, passenger flow (departure or arrival) and type of users (related to work, school or mixed).

The first group of stations is characterized by mainly being a point of departure for workers, mainly commuting to Brussels, and by the arrival of schoolchildren typically from neighboring towns.

A second group consists of stations mainly used by workers going in the direction of a major hub, along with arrival and departure of students and workers to nearby cities.

A third group consists of modest and small stations, mainly characterized by the departure of workers and normally having less than 250 arrivals (students and few workers).

The fourth group of stations includes those with very specific features, like stations with a large number of student departures and few arrivals.

3.2. Types of stations according to the land use

A second set of classification was developed, based on the land use in the neighborhood of the 60 stations studied. The neighborhood concept refers to the area within a radius of 800 meters surrounding the station. The social and urban aspects are not taken into consideration at this stage in the definition.

The 60 stations were classified into five major types, according to the development of the land surrounding the station.

A first group of stations consisted of those located in heavily urbanized areas, where unutilized plots represent less than 8% of the surrounding area.

Another group includes stations located in less developed/urbanized neighborhoods, where about 60% of the land is devoted to agriculture and forestry. The majority of the surrounding buildings are for residential purposes.

The largest group of stations is those located in residential neighborhoods. This group is further divided in two, depending on whether the neighborhood includes large reserves of land or whether it is more densely built.

The last two groups are characterized by the presence of industrial parks/areas within the surrounding of the station.

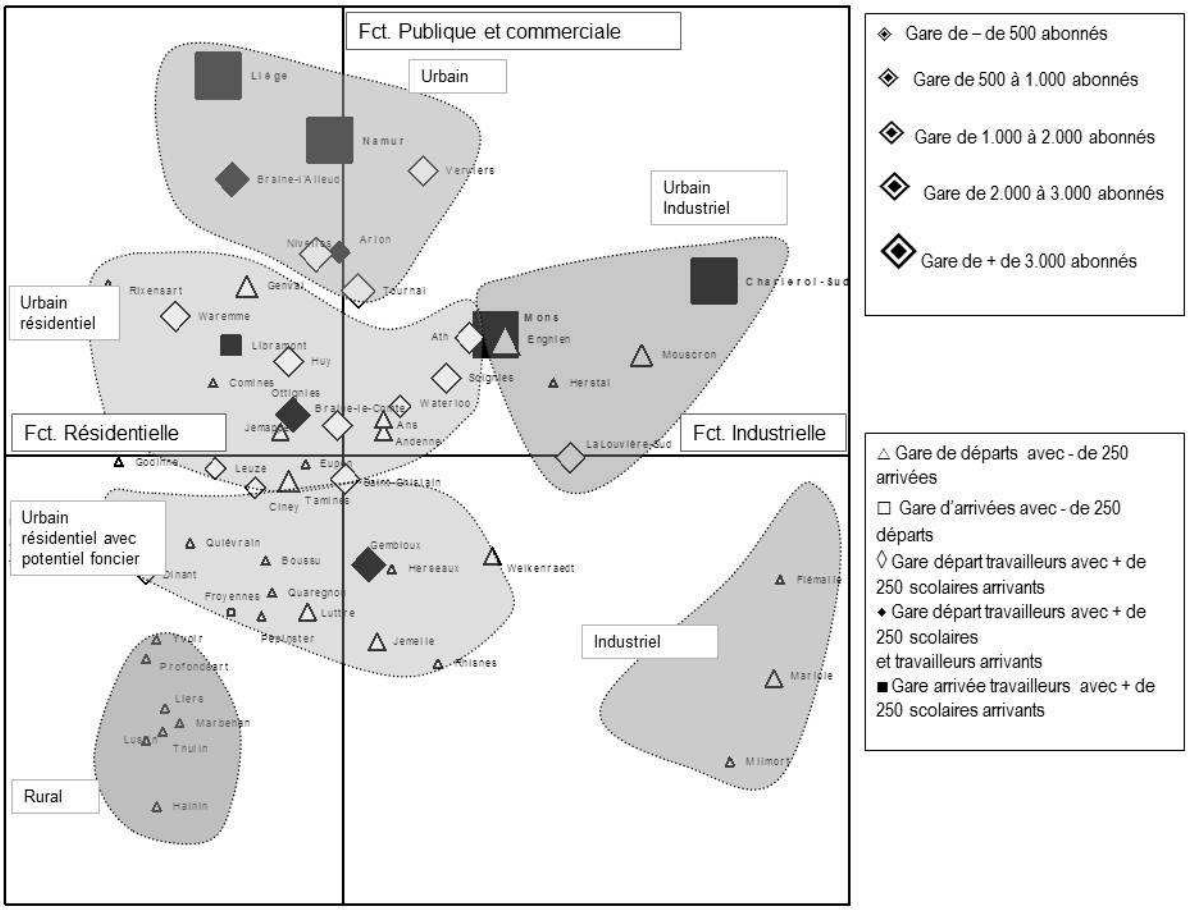

Figure 1: Types of station according to the flow of passengers and the land use

3.3. Types of stations in terms of accessibility

For each of the 60 stations, accessibility was determined by examining how the passengers reached the station, either by car ("park and ride" or "kiss and ride "), public transport, on bike or by foot. A general conclusion emerges from the study, which is that the accessibility of the station is closely correlated with the development and land use in the surrounding area.

Urban stations alone stand for 10,600 departures to Brussels, or a third of the total movement to the capital. Nearly 55% of these subscribers are going to their departure station by private car. The presence of a main road within 500 meters from the train station provides a convenient access when using private vehicles. However, thanks to public transportation being available within short distance to the urban railway stations, nearly 20% of the passengers use this in order to reach their departure station. Urban stations have the lowest number of users accessing the station by cycling and walking, compared to all the other types of stations.

The rate of car use, related to the access to stations in urban and industrial areas is very similar to the urban stations, but use of public transportation accounts for only 12%.

Of commuters located in a predominantly residential neighborhood, 60% go by car to the station, 35% walking and just 7% use public transportation. For the residential stations with large reserves of undeveloped land in the surrounding area, people access the station in a similar fashion as those using rural stations, mainly by cycling and walking. This can be explained by the proximity of people's residence to the railway station and the limited public transportation services.

4. DEVELOPMENT STRATEGIES AROUND STATIONS

The final objective of the study was to propose some strategies to be applied when developing areas around railway stations as a mean to promote a change in transportation patterns. The conclusions reached on the patterns of passengers, the use and development of the land around stations and the accessibility of the different types of stations allowed us to consider different strategies in developing these areas. The different strategies will not be explained in detail in this brief, but some general remarks follows.

We emphasize that the choices regarding land use and development of the areas around stations, especially with regards to accessibility issues and expansion of structural entities should be included in a charter involving railroad companies and both regional and local operators. This charter should express not only regional and local operators' willingness to upgrade stations to promote increased use, but also the potential of improving railway linkages and the frequencies of the trains.

We also believe that development and improvement of areas around railway stations requires strategic interventions at different scales. At the level of municipalities and cities, the proposed urban development interventions should not compete with the projects specifically planned around the railway station areas. The general structure around the station should be taken into consideration, and influences of new interventions need to be thoroughly assessed. A development plan covering a larger area should provide the guidelines that to be followed in designing the operational plans.

Improvements regarding means of access to the railway station will require establishment of road networks and expansion of public transportation within the area surrounding the station. Also, development of surrounding pathways should be enhanced in order to facilitate people cycling and walking.

These principles, set out according to the strategies related to the types of railway district should be included in the charter. The improvement should strategically strengthening three functions of the station: The modal centrality, and the destination- and departure functions.

The stations are central structures, to varying degrees, making up essential junction points for the population in an area. After losing some of their symbolic power in the 20th century, they have again become vital meeting points and centers for transportation.This can be further enhanced by improving the qualities of the space surrounding stations and by developing other type of infrastructure making the railway stations more convenient and attractive centers. The station should in other words be considered as a "development hub" – central in both local and regional dynamics.

Furthermore, the station has a double role as both a point of destination and departure. Depending on the weight of these two roles, activities and facilities must be provided and adapted. This will naturally depend on the station's place in the network.

5. CONCLUSIONS

The mentioned study attempts to lay out the groundwork for a new policy. Too often the railway is seen as a way of federal transportation and therefore does not take into consideration regional concerns. While there are projects focusing on regional issues, such as the RER (rapid transit system), the modernization of stations and railway lines, the urgency of a comprehensive strategy should be addressed.

Locally, the station and its surroundings have a negative perception among people. Few people wish to expand this infrastructure, even though it would increase the travelling convenience and opportunities. However, the station and its neighborhood should be valued as important assets of municipal- and urban development. A change to this perspective requires both a strong political will of regional authorities and transport operators to implementation an urban planning strategy addressing the problems linked to these facilities (noise and vibration of trains, arriving and departing flows from the station, insecurity, etc.)

It is therefore urgent to put Wallonia on track and to promote mobility of the inhabitants in the region. This collective challenge will directly impact the development of our region and the quality of life for its people.

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