The development of the airport area Brussels-Zaventem

This article focuses on the development of the largest international airport of Belgium, Brussels-Zaventem (fig.1). The airport is situated 12 km from the centre of Brussels and less than 2 km from the boundary of the Brussels Capital Region. The airport is operated by the Brussels International Airport Company (BIAC) and functions as one of the largest regional point-to-point airports of Europe and handled 15.2 million passengers in 2003. The amount of air cargo loaded or unloaded at Brussels-Zaventem was in 2003 about 600,000 tonnes, which ranks it as the 5th largest airport in Europe (www.aci-europe.org). During the last ten years the airport has faced enormous ups and downs. The tremendous growth of the '90's was abruptly put to an end in 2001, when the home carrier Sabena went bankrupt and plunged the airport into a major crisis. As a result the network position of the airport deteriorated and this, in it's turn, had a negative influence on the opportunities for the spatial and economical development of the entire area. In the search for new ways to cope with the crisis, especially the complex institutional embeddeness has proved to be a major obstacle.

By Menno Huys

Figure 1. Layout of the airport Brussels-Zaventem
Source: www.biac.be

In this article I shall first give you a brief overview of the airside development (network position) of Brussels-Zaventem during the last ten years (1993-2003). Secondly, I shall identify the major problems on the landside of the airport and it's surrounding areas. After that, I will identify the major tasks for an optimal economical and spatial development of the entire airport area in the future. I will start with the analysis of the airport area Brussels-Zaventem and introduce a few theoretical ideas about the notions airport site and airport area that are important for a thorough understanding of the rest of this article.

Airport site and airport area

Spatial planners have a growing interest in the study of airports. This is due to the fact that the context, in which airports have to operate, has changed dramatically over the last 15 years. Traditionally airports were seen as public utilities with a public service obligation. Their only function was providing air services. As a consequence of the enormous growth in passenger numbers and the globalisation of the world trade, airports became the gateways to the major centres of the network economy. Especially the larger airports evolved into attractive pools for urban and economical development. Nowadays international airports have become important motors or pull-factors for their respective regional economies. More particularly, businesses with an international focus preferably seek a location in the vicinity of such airports. However, the developments are not restricted to the airport site anymore; the surrounding areas can also reap the benefits of the growth. But, on the other hand, they now also have to deal with the negative effects of this growth, like the negative environmental impacts (e.g. noise) and congestion. There seems to be a complex relationship of mutual dependence between the airport site and the surrounding areas. The sum of the airport site and the surrounding areas can be called the airport area.

Nowadays it's getting more and more accepted that for an adequate spatial planning of an airport it's important to take both the development of the airside and the landside into account. Understanding reasons for and drivers of growth on the airside are indispensable for the creation of effective planning and policy options. That's one of the main reasons why spatial planners of airport areas are getting interested in the development of the network position of the airport. This position has a great influence on the opportunities for the spatial and economical development of the entire area. In the end it's al about

recognizing and implementing the best and most flexible strategies for an integral development of the airport area in the future. Now the distinction between the airport site and the airport area is clear, I shall turn to the case Brussels-Zaventem.

The network position of Brussels-Zaventem

In this part I shall only analyse the development of the passengers' network, despite the fact that the airport also serves as an European hub for –amongst others - the freight carrier DHL. Offering air services can still be seen as the main function of an airport. The number of destinations and the geographical structure of destinations mainly determine its position in the European aviation network. In the development of the network configuration of Brussels-Zaventem for passengers during the period 1993-2003, three phases can be identified. The first period (1993-2000) is characterised by a tremendous growth, especially in comparison to the surrounding major airports (see fig.2).

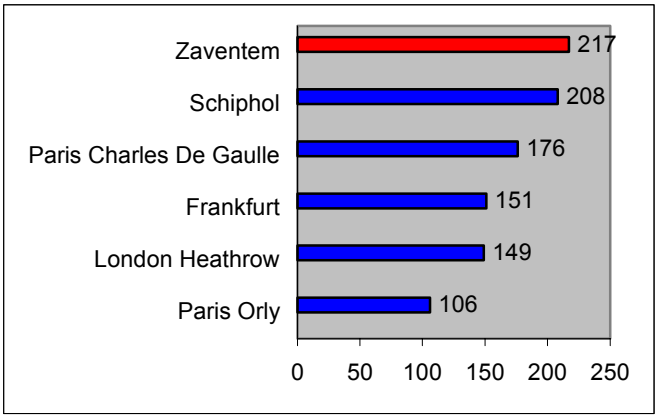

Figure 2. Comparison growth passenger volumes of the major European airports 1991-1998 with 1991 = 100
Source: VEV, 1999

To improve the interconnectivity and broaden the catchment area, the home carrier Sabena implemented a hub-and-spoke strategy in 1993. This means that Sabena concentrated her traffic in both space and time at the airport of Brussels-Zaventem. The temporal concentration has resulted in the adoption of a wave-system structure (see fig. 3). The aim of such a structure is to optimise the number and quality of connections offered by an airline. It's all about achieving certain demand and cost side advantages, as well as creating entry deterrence (Burghouwt & De Wit, 2003). To increase revenues and exploit density economies, Sabena formed an alliance with SwissAir in 1995. SwissAir purchased 49% of the shares of Sabena. Ultimately this resulted in the formation of the Qualiflyer Group in 1998 (Suen, 2002). Thanks to Sabena the airport of Brussels-Zaventem achieved a position of secondary hub in this alliance and as a consequence the passenger volumes thrived.

The growth was abruptly put to an end after the terrorist attacks on the World Trade Centre in New York on 11 September 2001, which marked the second period. The attacks had major consequences for the

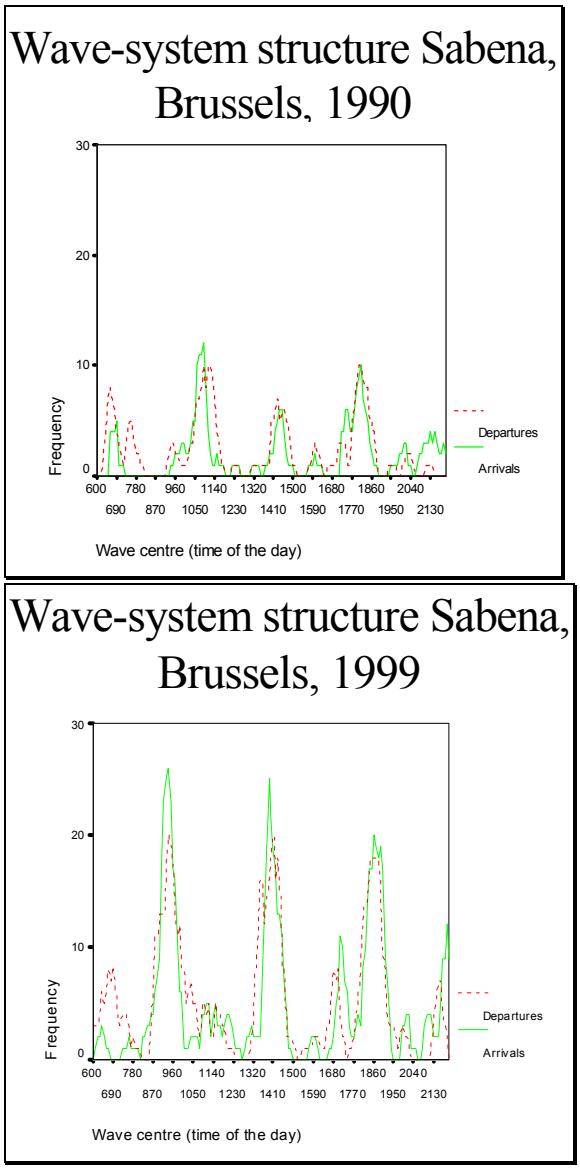

Figure 3. Wave-system structure Sabena, Brussels-Zaventem 1990 and 1999
Source: Burghouwt & De Wit, 2003

aviation sector in general and for some European airlines and the airports that served as their home base in particular. The consequences for the traffic numbers of the major European airports are presented in table 1. The table shows that the airport Brussels-Zaventem lost much more passengers than the primary hubs of Europe. On first sight it seems rather peculiar that a carrier with a mainly European and African network orientation like Sabena has gone bankrupt as one of the first major European flag carriers. It would be more logical when a carrier with a focus on North America went bankrupt. The irony was that the attacks were not the main cause of the Sabena bankruptcy. From the beginning of the Qualiflyer alliance the financial results were very poor and when SwissAir went bankrupt in October 2001, she dragged Sabena along. Because Sabena has had a history of financial malaise, there wasn't a financial buffer available. From this perspective September 11th only accelerated an inevitable process. More than 7500 people lost their job and the airport of Brussels-Zaventem lost its dominant carrier (Sabena had a market share of 47,8%

considering passengers in 2000) (BIAC, 2003, Federaal Planbureau, 2002). Besides the enormous drop in passenger numbers, especially in transferring passengers, the airport lost a lot of destinations and her role as secondary hub in an international alliance. The airport nowadays functions as one of the major regional point-to-point airports in Europe.

Airport	Sept. 2001	Oct. 2001	Nov. 2001	Dec. 2001
London HRW	-13,0%	-20,10%	-13,5%	-6,8%
Paris CDG	-8,98%	-15,07%	-12,8%	-8,9%
Frankfurt	-7,2%	-13,9%	-10,9%	-7,9%
Schiphol	-5,19%	-12,14%	-9,05%	-4,6%
Zaventem	-9,05%	-19,29%	-36,16%	-34,18%
Average Europe	-1,06%	-9,94%	-11,22%	-10,15%

Table 1. Consequences for passenger numbers at major European airports after the attacks of 11 September 2001
Source: ACI Europe, 2002

The third period can be seen as a phase of recovery. The airport authority (Brussels International Airport Company) immediately started marketing campaigns to improve her network position by actively approaching potential carriers. BIAC also helped to start up the successor of Sabena, SN Brussels Airlines. Unfortunately the economic malaise in the aviation sector still continues until today. As a consequence the recovery takes place on a very gradual pace. The development of passenger volumes of Brussels-Zaventem during the period 1993-2003 is presented in figure 4. From figure 5 it can be concluded that this drop is mainly caused by the loss of transferring passengers. Thanks to the favoured location of the airport, 12 km North-east of Europe's capital Brussels, the stream of origin and destination passengers (of which 60% is business traveller) remained surprisingly stable.

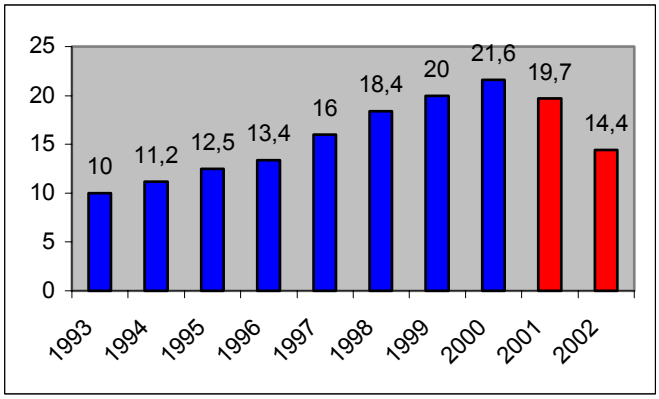

Figure 4. Evolution pax in mln. 1993-2002, Brussels-Zaventem
Source: BRUtrends, 2002; BIAC, 2003

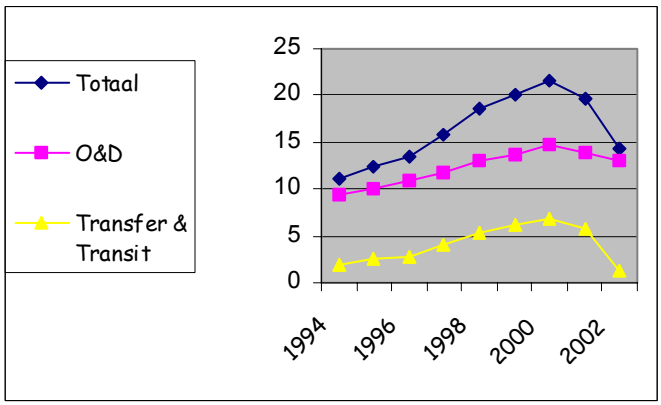

Figure 5. Evolution O&D traffic and transfer and transit traffic in mln. pax, Brussels-Zaventem 1994-2002
Source: BRUstats 1995 - 1997; BRUtrends, 1998 – 2002

Problems of the landside development of Brussels-Zaventem

It's already said that the network position of an airport is of great importance for the opportunities of the landside development. E.g. an airport like Schiphol is more attractive for foreign investments than a regional airport.

In this section I shall give a brief overview of the main problems for the development of the landside of Brussels-Zaventem. The main problem for the development of the landside is that the responsibilities are spread over different political levels and territories. The Federal state is responsible for the general exploitation rules, and the Brussels International Airport Company (BIAC), a public owned company by the federal state, is responsible for the daily operations of the airport. Although there are problems with decision making on the federal level, primarily due to the rivalries between the different state regions, the main problem can be found within the regional level. Matters of spatial planning, infrastructure and environment fall within the competence of the regional states (http://binnenland.vlaanderen.be/kerntakendebat). The fact that the airport lies on the boundary between two regions, makes this problem even worse. The airport is located on the territory of the Flemish Region, and lies less than 2 km away from the boundary of the Brussels Capital Region. As the outbound and inbound flight routes are situated over both state regions, they're both mandated to take measures against or effecting the airport's operations. This has resulted in a lack of coherence in spatial development strategies and policies. The ongoing discussion about noise regulations can illustrate this.

The discussion about noise regulations has dominated (and still dominates) the political debate the past three years. The regions of Brussels Capital and Flanders have adopted their own noise regulations, with different limits. The consequence of this fragmented situation is the loss of political and social acceptability due to the lack of environmental acceptability. The inhabitants of the surrounding municipalities are in a constant struggle with BIAC and the public authorities, because of the noise problems with especially the night flights from

Zaventem. There's still no widely accepted solution, and even the evenly spreading of the noise annoyance seems to trigger new protest for the years to come. Therefore, the most important objective of the authorities concerned with airport policy, is to find a solution for the noise abatement as soon as possible.

On the level of the airport area there's another institutional problem. There seems to be a dividing line between the airport site and the airport area. BIAC is responsible for the development of the airport site and the (regional) public authorities are responsible for the development of the surrounding areas but there's little or no collaboration between those authorities. On federal, regional and local level new structures for coordination and cooperation are desperately needed to reconcile the conflicting approaches and values. Only than it's possible to jointly prepare and lay down policies in a flexible way.

Besides the noise annoyance and the fragmented institutional embeddedness, the airport area has to face two other urgent problems. The first, the road congestion in the vicinity of the airport, is caused by the proximity of Brussels and by the poor public transportation offered. This is partly due to the fact that the airport is not situated on the mainline of the railroad. Only 14% of the passengers and only 11% of the employees use the train or bus to get to the airport (Tritel, 2002). This is extremely low in comparison to the other major airports of Europe (table 2.).

Airport	% pax	% employees
London Heathrow	33%	20%
Paris Charles de Gaulle	27%	20%
Frankfurt	37%	22%
Schiphol	26%	21%
Zaventem	14%	11%

Table 2. Shares in public transportation major European airports for employees and pax, 1998
Bron: Cofar 2.0, 2000

The only solution for improving the landside accessibility is achieving a massive modal shift towards public transport. Fortunately, there is a shift potential of more than 25% from car to public transportation (Cofar, 2001). Thus the main prerequisite is to improve the public transportation system. For that, the airport should be integrated in the regional, national and High Speed Train network (HST network) and eventually become a multimodal interchange (Jarach, 2001). Especially a direct connection to the HST network is important to enlarge the catchment area of the airport. The problem is that the surrounding major hubs, like Paris Charles de Gaulle, Schiphol and Frankfurt are already integrated in the network and are, therefore, miles ahead. These airports can 'catch' the potential passengers of Brussels-Zaventem, by moving them directly, comfortably and fast, into their own hubs.
Besides the improvement of the train connections, the airport should become an integrated part of the subway system and bus network, that serves the nearby situated city centre of Brussels and other focal points within the airport region (Tritel, 2001). There are numerous plans waiting to be implemented, but since recent policy attention has predominantly been focused on one element, namely noise regulations, they mainly only catch dust.

Another major problem is the lack of space for the development of an AirportCity- like concept on the airport site. The concept was originally introduced by the Schiphol Group, which states that it is in the business of creating AirportCities (Schaafsma, 2001). The functioning of an airport as an AirportCity largely depends on the overall design of the entire airport area. The only true AirportCity functions as a hub on the airside and the landside (Burghouwt, 2002; Güller & Güller, 2001). Another feature of an AirportCity is the presence of urban functions at the airport, like office buildings, shopping malls, casinos, hotels, conference halls etc. (Cofar, 2001; Worthington & Briggs, 2000). The airport Brussels-Zaventem lacks the space for the development of large office buildings and business sites (Vlaams Brabant, 2003). Fortunately, there is still space available for the development of large projects in the surrounding area. The main problem is that there is no clarity about the responsibilities of all the actors involved. It's already said that the collaboration between BIAC and the public authorities (Province of Vlaams-Brabant, Vlaams Gewest) is absent. And for an AirportCity to be successful, it's essential that it becomes an integral part of the whole region (Güller & Güller, 2001)

In short it can be said that, besides the eroding position in the European aviation network, the airport Brussels-Zaventem has a lot of problems at the landside. The fragmented institutional context at all levels causes a lack of collaboration, and results in a low grade of political and social acceptability. Besides this, the political debate is only focused on the noise regulation, while there are also large problems with the landside accessibility, and the lack of space on the airport site for further airport development. Al these problems have a devastating effect on the economical and spatial development of the entire airport area in the future. Fortunately a few solutions can be identified.

Opportunities for future development

Although there are many ways to Rome, I belief it's first of all necessary to make sure that the network position of the airport improves. Attracting a strong home carrier that is a member of one of the global alliances would be the perfect solution. The difficulty is that the behaviour of the airlines determines the network position. The airport authority can only play a stimulating and facilitating role. The airport has a relatively good starting position for attracting new carriers. The recently delivered new midfield terminal Pier A (2002) that was originally built to accommodate the hub strategy of Sabena, has a lot of leftover capacity and is one of the most modern midfield Piers of Europe. Such a midfield passenger building is the preferred form for transfer traffic, because they minimise walking distances between the gates in order to provide smooth transfers (De Neufville & Odoni, 2003). But if Brussels-Zaventem can attract a new hub carrier in these

volatile times remains to be seen. Moreover, the process of concentration and consolidation in the aviation industry may even reduce the opportunities for Brussels-Zaventem. In short, it seems more realistic to suggest that the airport can at best become a satellite airport for on of the primary European hubs. Of course the airport has always the possibility to further expand the pure freight operations, if they are subjected to well-defined noise limits.

Contrary to the airside development, the airport authorities and the public authorities can directly influence the future development of the landside. An agreement about the noise regulations must be reached as soon as possible, so the policy attention can focus on matters of spatial planning and infrastructure. Here it's absolutely necessary that a development company is founded. At least the two main actors involved for the development of the airport area, the airport authority and the public authorities should be represented in such a company. Other actors, like private investors, must be consulted in the design of strategies. The foundation of such a company is the only way to stop the noticed lack of coherence in spatial development strategies and policies. Of course the airport authority and the public authorities have often divergent or even conflicting interests. By establishing structures for coordination and cooperation these conflicting values can be reconciled. In the end a widely accepted and integrated policy for the future development of the entire airport area can be the result.

A good example of such a consensus building partnership between the main players of the airport site and the airport area can be found in the Netherlands. The development of Schiphol and the surrounding areas takes place in a wide range of partnerships. The Schiphol Airport Development Company (SADC) develops, promotes and sells land to logistic companies and offices in the Schiphol Zone. The main public authorities like the municipality of Haarlemmermeer, the province of North Holland and the city of Amsterdam are working together with the Schiphol Group within the SADC. The regional authorities and the local communities play a pivotal role in the process of cooperation. When such a development company could be established in the airport area Brussels-Zaventem it shall be much easier to develop adequate strategies for matters of spatial planning and infrastructure.
In the end it's all about the co-preparation and co-production of policies in a flexible, proactive and interactive manner (Burghouwt & Huys, 2003, Caves & Gosling, 1999; Hakfoort & Kreukels, 1998; Goetz & Szyliowics, 1997).

In conclusion it can be said that the future development of the airside can't be predicted. There are some possibilities, but if the network position can really be improved remains the question. For the development of the landside there's more clarity. It's important to broaden the policy focus to the other aspects that determine the development of the airport area. I've identified a few opportunities for an adequate spatial and economical development in the future. How bright this future exactly will be depends on the question if the political visions can be reconciled and if institutional fragmentations can be solved. The time has come to undertake constructive action. Who dares to take the lead?

The author has written a thesis called 'De luchthavenzone Zaventem: opmaat naar een geïntegreerde visie' (in Dutch) on which this article is based. A version of this thesis is available upon request.

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