

## **TRANSPORT BY INLAND WATERWAYS: STRATEGIC REPOSITIONING OF THE BELGIAN SEA-CANAL CORPORATION**

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### **Abstract**

In the past decades the importance of the canal Brussels-Scheldt decreased. To break with the negative trend, a strategic repositioning process for the Sea-Canal Corporation has been developed. In this paper the *theoretical framework* and the key elements of this strategic plan are described. From an economic point of view the required future development of the canal region was stipulated. Furthermore a coherent development plan for the canal region was worked out. The new strategy is a first but important step towards an increased use of environmentally friendly transport alternatives like shortsea and inland shipping. For these reasons, this 'pilot' project deserves utmost attention from all parties concerned.

## INTRODUCTION

This paper synthesises and discusses the main findings from two studies commissioned by the Sea-Canal Corporation (N.V. Zeekanaal en Watergebonden Grondbeheer Vlaanderen). The *Policy Research Corporation N.V.* has conducted a comprehensive marketing study whereas Studiegroep Omgeving has worked out a coherent development perspective for the canal region. The Sea-Canal Corporation has the exploitation authority of the canal Brussels-Scheldt and is responsible for the supervision on land-use along the waterside in Flanders. Currently this canal is only of moderate significance for the transport of goods via Belgian inland waterways. In terms of tonnage the traffic on the sea-canal decreased from over 14 million tonnes in the early seventies to 8.5 million tonnes in 1995. From a socio-economic point of view, a sharp increase in economic activity is required to compensate for the huge investments made in the past in infrastructure on the sea-canal Brussels-Scheldt. A traffic forecast for the canal shows that, without additional efforts, only a minor increase in traffic is to be expected. However, in case appropriate actions are taken, a strong increase in future economic activity and traffic is possible. The marketing plan developed by *Policy Research* provides a clear vision of why and how the multi-functionality of the waterway should be strengthened. In this plan, a micro-economic approach is developed to stimulate the environmentally friendly transport via (inland) waterways. The sea-canal area is therefore presented as a pilot-region in Belgium for the development of multi-modal transport, based on the waterways.

In order to yield an acceptable socio-economic return on the investments in infrastructure, a 100% increase of the current traffic is needed. This means that traffic levels should come back to those recorded in the early seventies. A traffic increase necessarily requires the re-use of derelict industrial plants and contaminated grounds as well as the use of some additional land for the related economic activities. Because of the restricted availability of industrial grounds alongside the canal, priority has to be given to companies that effectively use the waterway. In line with the socio-economic requirements, a spatial structure plan has been developed for the canal area with two areas of economic concentration. One of these areas is accessible to sea-going vessels of up to 10 000 dwt tonnes, and is therefore of the highest strategic importance. The other area can only be reached by smaller sea-ships up to 4 500 dwt tonnes but it is located near Brussels and the airport of Zaventem. Consequently, also this area has a premium value. The other parts of the sea-canal area further develop as urban concentrations, as green areas or as open spaces for passive recreation and agriculture.

Nowadays, decision makers in the public sector are more than ever confronted with the fact that they have to make explicit choices about respective functions to be put into effect in the different regions. The various possibilities of land-use should be carefully weighed and weighted, certainly with respect to boundary areas and the spatial environment. A harmonic development of the whole area and its different functions, each optimally located, is the aim. This creates important responsibilities for the Sea-Canal Corporation. It is their task to promote their vision and to support decision makers with knowledge and know-how about decisions to be taken. Of course, this requires important organisational and financial sacrifices, but these are negligible compared to the past investment in infrastructure of approximately 52 billion BEF (1.3 billion ECU). With such sacrifices, an important step towards the increased use of an environmentally friendly and congestion free transport alternative can be taken (*Policy Research Corporation N.V.*, 1997). Clearly, this requires the involvement of local and higher authorities, industrial and commercial organisations as well as environmental protection groups. Given the various interests, the aim of the planning process is to reach consensus on a balanced development of the area as a whole (and agreements on specific actions), resulting in a 'collective urban pact' between partners. To achieve these 'urban pacts' much attention should be devoted to enhancing communication during the process (*Studiegroep Omgeving*, 1997).

The body of the paper is organised as follows. Section 1 discusses the current position of the sea-canal. Section 2 presents the arguments in favour of a refocusing of the canal's role. Section 3 covers the main elements of the strategic and operational marketing plan. Section 4 analyses the impact of the sea-canal on the surrounding region and on the Belgian economy as a whole. A coherent development perspective for land-use is the subject of Section 5. In Section 6 the effects of the marketing plan are assessed. Section 7 draws conclusions and summarises the main findings.

## THE CURRENT POSITION OF THE SEA-CANAL

Currently the sea-canal Brussels-Scheldt is of moderate significance for the transport of goods via Belgian inland waterways. In terms of tonnage the traffic on the sea-canal decreased from more than 14 million tonnes in the early seventies to 8.5 million tonnes in 1995. Also the relative share of the sea-canal in the total inland waterway transport decreased. In 1992 it amounted to merely 6% of the total tonne-kilometres recorded on Belgian waterways.

### Traffic evolution

In Figure 1 the traffic evolution for the period 1966-1996 is depicted. One of the main reasons for the drop in tonnage is the overall deterioration of industrial activity which particularly affected the canal-region. Especially many heavy industries have left since then. Together with the change from a production oriented economy towards a distribution oriented economy, also the need for transport by waterway diminished. It is evident that the shift from bulk to non-bulk transport strongly favoured the road haulage sector. In 1995 the traffic on the (Flemish) part of the sea-canal consisted for 5.1 million tonnes of transit traffic and for about 3.4 million tonnes of local traffic. This local traffic is mainly made up of import flows from the Belgian and Dutch ports (such as oil products, raw materials and chemical products).

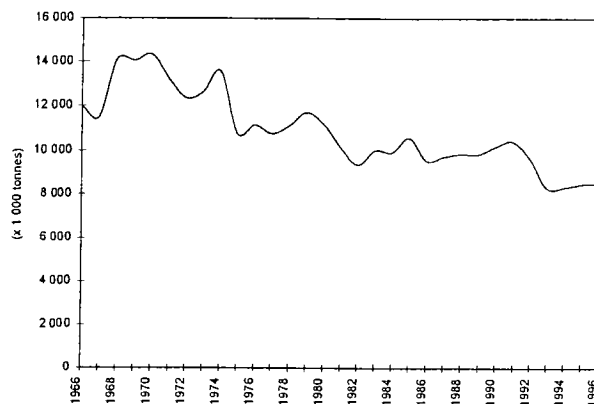
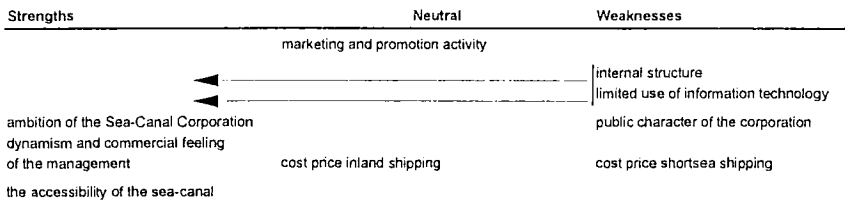


Figure 1 - Traffic evolution on the (Flemish part) of the sea-canal, 1966-1996

### Competitive position

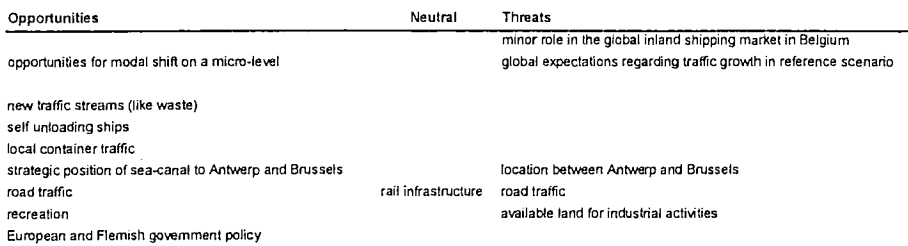
The competitive position of the Sea-Canal Corporation has been determined by SWOT-analysis, i.e. the screening of strengths, weaknesses, opportunities and threats. Figures 2 and 3 summarise the main *internal* strengths and weaknesses and *external* opportunities and threats. The key strengths at the moment of study were the dynamism and commercial feeling of the management and the accessibility of the canal for vessels up to 10 000 tonnes. The main weaknesses are the public character of the Sea-Canal Corporation (with its complex decision making processes), the price to be paid for u-

sing the canal for shortsea shipping, the internal structure and organisation, and the limited use of information technology. These last two aspects, however, may be turned relatively easy into strengths when they are properly developed and appropriately used.



**Figure 2 - Most important strengths and weaknesses**

The opportunities that were identified are a modal shift on a per firm basis, new traffic flows like waste and manure disposals, new technology (self-unloading ships), the strategic position of the canal, the presence of a good road infrastructure, and the European and Flemish government policies regarding the promotion of inland waterway transport. The main threats noted were the weak position of the sea-canal in the overall Belgian inland transport market, the low expected traffic growth in the reference scenario, and the shortage of land for developing economic activity. The strategic position between the ports of Antwerp and Brussels and the competition from the road haulage sector might also negatively influence the position of the canal. For the firms located directly along the canal, rail is not an option because of the relatively poor connections between rail and road.



**Figure 3 - Most important opportunities and threats**

The SWOT-analysis revealed that the Sea-Canal Corporation has several intrinsic strengths, which at the moment are not (fully) exploited. Improving the quality of the organisation, and making it more market-conform will lead to an increased attractiveness of the sea-canal for present and potential users. The further improvement of the dialogue between the Sea-Canal Corporation and the users of the waterway is no doubt an important tool to effectively attract new traffic.

## The sea-canal region

The 27 kilometres long sea-canal area is situated between Antwerp to the North, the capital city of Brussels and the national airport of Zaventem to the South. In this economically important region of Flanders, many complex social and physical processes are taking place. Currently, the canal area forms a patchwork of structure-compounding spatial elements of different kinds and levels. The entire area from North to South can be divided into seven different subsystems which determine both the area as a whole and its internal workings. The Northern part functioned until ten years ago as an area for clay extraction, with brickyards and other derived industrial activities mixed with housing. Nowadays this area is searching for a new public profile with clean industries and proper housing on the waterfront of the river Rupel. The complex of valleys of the rivers Scheldt, Rupel, Nete and

Zenne intrinsically forms a strong natural system. However, it is severely weakened in its connection to the Rupel valley, partly due to the development of the sea-canal and the surrounding industries.

The sea-canal system comprises an array of activities, bridges, roads, locks and quays which are directly linked to the canal. Up until a century ago this was the most determining element in the whole area. With the arrival of the railway and especially road traffic, the functional links between the canal and its surrounding areas started to diminish, a process that continues up to this day. The municipality of Willebroek (22 000 inhabitants) is both a junction-point for infrastructure and a centre for urban and economic activities. A part of its (mostly heavy) industries has been phased out during the last decades, leaving behind hectares of derelict and contaminated grounds. The entire area between Willebroek and Vilvoorde is part of a larger open space that stretches far to the East and West. Though essentially an agricultural district where nature and residential living spaces within small villages take pride of place, there is also room for a number of isolated industrial plants. The urban area of Vilvoorde-Zaventem is part of the Flemish urban area surrounding Brussels. It constitutes both the main junction for infrastructure in the country and a dynamic focal point for urban and economic activities. The port of Brussels is also linked with this system but comes under the authority of the Brussels Region. Nevertheless, the connection of the canal to the highly dynamic development area near Zaventem seems very weak. Vilvoorde, particularly its canal banks, has the outlook of an old industrial area. The city of Mechelen, finally, is characterised by a more peripheral character and therefore its influence differs from that of the urban areas situated along the canal.

At this time, about 770 hectares situated within the seven canal municipalities are designated for industrial use. In addition, in theory a large reserve of grounds for the deployment of economic activities is available: the seven canal municipalities together have a reserve of about 485 hectares of unused industrial grounds and buildings. Near the canal, and with direct access to it, about 190 ha of disused grounds are set aside for the development of industrial activities and distribution purposes. This reserve can in future be used for waterbound activities. About 120 ha are situated in the northern part of the canal area, that can be reached by sea-going vessels of up to 10 000 dwt tonnes. Only half of this reserve is ready for development in the near future. The other half consists of contaminated grounds and abandoned old industrial buildings (with huge cleanup bills attached), cut up private grounds and grounds in need of rather extensive investments in infrastructure in order to secure decent access. Currently, only 15 ha are really available for companies wanting to invest, all of which are situated in the southern part of the area, and only 3 ha fall under the control of the (local) public authorities. These figures indicate that the local authorities and the canal exploitation authority have few instruments at their disposal to influence the allocation of land in the area. Only a resolute land-use policy, combining the public property of strategic industrial grounds designated for development with long-term concessions for private investors, can guarantee a rational and water-linked use of theoretically available grounds, the re-use of old industrial buildings and the cleanup of contaminated grounds, all of them necessary elements for a proper economic development of the area.

## **THE NECESSITY OF REFOCUSING THE ROLE OF THE SEA-CANAL**

From a socio-economic point of view, the huge investments in infrastructure from the past require a large economic activity. It is the return in terms of value added, employment and backflow to the government that compensates for these investments. The current level of economic activity related to the sea-canal is, however, far too limited in this respect. A forecast for the canal shows that, without additional efforts, traffic will not increase much. Nevertheless, in case appropriate actions are taken, a strong increase in economic activity and traffic may result. The marketing plan being developed enhances the multi-functionality of the waterway and positions the sea-canal area as a pilot-region in Belgium for multi-modal transport, based on waterway. In the plan, a micro-economic approach is

seen as the key to stimulate the environmentally friendly transport via (inland) waterways. Later it will be shown that, in order to yield an acceptable socio-economic return on the investments in infrastructure, a 100% increase of the current traffic is needed. This means a return to the levels recorded in the early seventies. To optimally exploit the sea-canal and to create additional value added for the region, the economic activity along the waterway should be stimulated. A traffic increase will necessarily require the re-use of derelict industrial plants and contaminated grounds as well as the use of some additional land for the related economic activities such as production and distribution.

The marketing plan, summarised in the next section, deals with the opportunities for and required initiatives by the Sea-Canal Corporation in order to achieve an actual increase in traffic and to improve the macro-economic performance. The most important opportunity is the growing importance of the inland shipping sector, whilst the opening of the new sea-lock of Wintam, making the sea-canal accessible for 10 000 dwt tonnes ships, offers a unique chance for a strong revival of the canal.

## **THE STRATEGIC AND OPERATIONAL MARKETING PLAN**

The concept of strategic planning was introduced in the mid-sixties. Strategic planning may be described as a *systematic and continuing process by which an organisation determines its mission, direction and activities* (citation from UNCTAD, 1993). All these three steps were analysed in detail for the Sea-Canal Corporation. The mission of the Corporation has been formulated as: *The working, management and lasting development of the canal Brussels-Scheldt consisting of the sea-canal Brussels-Scheldt, its junction from the South of Brussels towards Charleroi and the canal Leuven-Dijle, as well as the supervision and deliberation on land-use along the waterside in Flanders.*

The strategic marketing plan describes the main elements of the future structural position of the Sea-Canal Corporation, whereas the operational marketing plan describes how to reach the future position from the current one. In contrast to many other marketing plans, this one does not only contain qualitative objectives, but also a number of quantitative objectives to be monitored over time.

### **Strategic plan**

From the mission statement the strategic objectives can be described along the following lines:

- increase the use of the sustainable waterway transport alternative;
- improve the quality of the land-use, as well as economic performance and employment via active land-use management (attract new waterbound firms and market niches);
- modernise the infrastructure;
- improve the 'transhipment' function of the canal to support local economic activities and international distribution activities;
- stimulate a harmonic development of the whole area and of its different functions;
- strengthen the multi-functionality of the canal (coherence and sustainability);
- implement a rational employment and financial policy (optimise net result);
- co-operate and deliberate with other public and private instances;
- play an active and innovative role (as an 'island of excellence').

### **Operational plan**

In order to meet the objectives put forward in the strategic plan, the following operational policy issues were identified:

- developing of a niche-market approach;
- promoting shortsea and inland shipping as environmentally friendly transport alternatives;

- working out a coherent development perspective for the canal region;
- making certain tariff adjustments;
- improving the quality of infrastructures and services;
- changing the organisational structure of the Sea-Canal Corporation.

The first operational policy issue, *the development of a niche-market approach*, concentrates on four specific targets, namely concrete initiatives on a per firm level to realise a modal shift, development of one or several regional container terminals, the creation of a distribution platform, and the design of a strategy to attract new traffic streams. Such niche-market approach is seen as the only way to actually achieve a strong traffic increase. The second policy issue, *promotional activities*, is strongly related to the previous one. Because firms mostly are unfamiliar with all the possibilities of transport over water, active promotion is necessary to realise a strong increase in traffic. The operational plan contains many promotional activities, ranging from personal contacts to providing specific information and public relations. *The spatial development of the canal region* is the third policy issue. Two important subjects in this respect are the development and implementation of a coherent perspective for land-use, and the operational follow-up of the plan (acquisition and fitting out of sites). Especially in order to secure traffic growth in the long run, an optimal land-use is necessary. *Tariff adjustments* are to be considered as fourth policy issue. The sea-canal has a 30% higher tariff per tonne-kilometre than any other waterway in Belgium. A lowering of the tariff might help to increase the attractiveness of the sea-canal and boost its image. The fifth policy issue, *improving the quality of infrastructure and service*, also deserves great attention. Numerous concrete actions were proposed for the different groups of users. These range from a broader circulation of information, maintenance of and investment in infrastructure, to deliberation with users and other interested parties. The sixth and last policy issue concerns *the organisational restructuring of the Sea-Canal Corporation*. In order to fully realise the business development activities, a business development department should be established headed by a highly qualified 'sales' manager, and being assisted by at least one person.

It goes without saying that in order to meet the objectives, a full and integrated implementation of the marketing plan is needed. To guarantee the success of the strategy in the long run, however, not only a full and efficient implementation but also regular evaluation and actualisation are necessary. For this purpose a complete checklist was worked out, to serve as a basis for updating the strategic plan (every five years) and the operational plan (yearly).

## **ANALYSIS OF THE MACRO-ECONOMIC EFFECTS**

In order to evaluate the macro-economic effects of the proposed marketing strategy, the methodology of the Economic Impact Study (EIS<sup>®</sup>), developed by *Policy Research*, was applied. The EIS<sup>®</sup> is a powerful instrument to evaluate public investment projects in *economic* terms such as value added, employment, backflow to the government (see for example Peeters *et al.*, 1994; Peeters *et al.*, 1997). In order to evaluate public decisions in terms of *welfare*, for example by also evaluating the environmental impact, a monetary evaluation of the environmental factors under concern is another prerequisite. The use of such evaluation tools provides the decision makers with a clearer and better understanding of the expected magnitude of the effects from public investment projects.

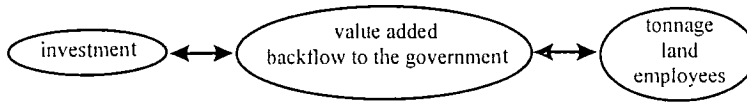
### **The EIS<sup>®</sup> methodology**

The EIS<sup>®</sup> which has been performed for the Sea-Canal Corporation is a *short-cut* EIS<sup>®</sup> in which information on certain parameters is collected from other sources (see Appendix for a short review of the approach followed). Although such type of EIS<sup>®</sup> provides less detailed information than a full *bottom-up* EIS<sup>®</sup>, it is very helpful to get a first understanding of the underlying mechanisms at

work. Clearly the numbers in this section should be interpreted accordingly. By using the EIS<sup>®</sup>-methodology as described in the Appendix, an answer may be given to the following two questions:

- what is the required tonnage, use of land, employment to justify a certain investment project?
- what is the required investment to achieve a certain tonnage, use of land, employment?

Figure 4 depicts the relationship between investment, value added, and backflow to the government.



**Figure 4 - Relationship between investment and tonnage, land-use and employees**

The annual value added consists of a direct component, generated by waterbound firms along the canal, and an indirect component, being generated by its subcontractors. The relation between direct and indirect value added is measured by the output multiplier. The average value for the sectors relevant for the sea-canal gives a multiplier-value of 1.4. Each money unit of direct value added, thus yields 0.4 unit of indirect value added. Consequently, also the backflow to the government consists of both a direct and indirect part. This backflow on average amounts annually to 38% of the initial investment and consists mainly of social contributions and income taxes. The total backflow for the duration of the infrastructure project is calculated by discounting the yearly backflow to date. In order to be able to calculate the socio-economic justifiable investment amount, additional information is needed regarding:

- the economic life of infrastructure projects;
- the discounting rate;
- the EIS<sup>®</sup>-ratio.

Based on expert information and previous studies the calculations are based on a duration of infrastructure projects of 30 years, a discounting rate free of inflation of 4% and an EIS<sup>®</sup>-ratio of 10.

### **Socio-economic evaluation of the sea-canal**

The actual value of the investments in infrastructure in the (Flemish part of the) sea-canal amount to about 52 billion BEF (1.3 billion ECU). Because part of the traffic on the canal concerns transit traffic (which creates value added elsewhere), only part of the actual investment value is accounted to the Sea-Canal Corporation itself. Two different scenarios have been distinguished:

- the local requirements, being related to the share of the local traffic in the total traffic (39%), representing an investment value of 20.1 billion BEF;
- the Flemish requirements, being related to the share of the Flemish traffic in the total traffic (58%), representing an investment value of 30.0 billion BEF.

Inquiries and interviews amongst the users of the sea-canal have provided insights in the relation between annual value added and backflow on the one hand and tonnage, employment and land-use on the other hand. On average the value added per metres square, per tonne and per employee were determined to be 2 400 BEF (60 ECU), 247 BEF (6.2 ECU) and 3 060 000 BEF (76 500 ECU). From these numbers it is easy to calculate the socio-economic required metres square of sites, tonnage and number of employees required from a socio-economic point of view to justify the investments in each of the two scenarios (Table 1).

A comparison of the socio-economic requirements with the current situation reveals that the current EIS<sup>®</sup>-ratio equals 2. In other words, the current economic activity amounts to only 20% of the required socio-economic activity. In order to achieve an EIS<sup>®</sup>-ratio of 10 (about the average for all

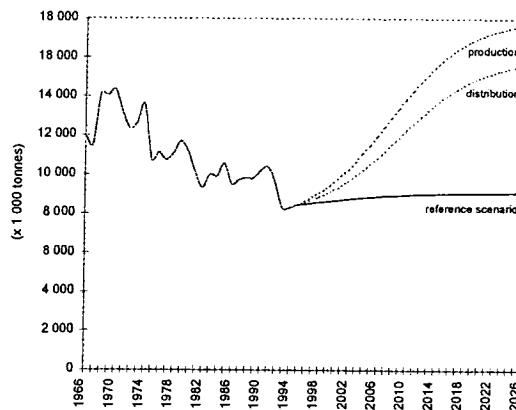


public investment projects in Belgium), a traffic increase of about 20 million tonnes is necessary, of which about 13.5 million tonnes of local traffic. This would require the additional land-use of 250 ha for economic waterbound activities and yield additional employment for more than 2 000 people.

**Table 1 : Annual socio-economic requirements for the sea-canal (in 1 000 tonnes)**

Activity	local (water)	transit (Flemish) (water)	total (water)
distribution with relatively high value added	5 990	2 980	8 965
production with relatively high value added	4 715	2 350	7 065
<i>Average values for the sea-canal</i>	13 500	6 700	20 200

In case high value added activities can be generated, the required traffic *increase* amounts to 8 million tonnes. Hence, in order to yield the required socio-economic return on the investments in infrastructure on the canals, at least a doubling of the waterborne traffic is required compared to the current situation. This is comparable to the situation in the early seventies. Such increase is projected for the upcoming period of thirty years. In order to meet this projection, towards the year 2005 an increase of tonnage of about 2 to 3 million tonnes to a level of about 10.5 to 11.5 million tonnes is required. In Figure 5 the required socio-economic growth is projected for the period to 2025. A distinction has been made between production and distribution activities because of the highly different value added per tonne, varying from more than 700 BEF to only 35 BEF per tonne (in this area). In order to meet the long-term socio-economic projection, an increased land-use for industrial activities is certainly required. In the next section, the structural development plan for the canal region is described in more detail (see also N.V. Zeekanaal en Watergebonden Grondbeheer Vlaanderen, 1995).



**Figure 5 - Comparison of autonomous growth with socio-economic required growth**

## THE DEVELOPMENT PERSPECTIVE FOR LAND-USE

Working out and putting into effect a development perspective for the Brussels-Scheldt canal area is rather difficult. This is especially true since the Sea-Canal Corporation has no real authority regarding the designation of land. A host of public administrations and authorities (seven municipalities, two provinces and the Flemish Region) are involved in the planning process. Because of new planning laws, most of them are simultaneously working on 'structure plans' for their own specific areas. These structure plans will, in a few years time, receive official acknowledgement and will take effect for each of the respective territories, and subsequently for each different part of the canal area as

well. A structure plan for the Flemish Region already exists. On the other hand, the development perspective offers a coherent view for the canal area as a whole. The current communication process with all the administrations and authorities involved, is meant to connect this overall view (which on particular points can deviate from interests on the local or higher levels) with each of these planning processes. The underlying idea is that the global view, worked out together, will be accepted for implementation in the different official structural development and action plans.

### **Pursued positioning of the canal area**

The keyword for the future development of the canal area is quality. Both in the features of the landscape, the proper organisation of connecting waterways and infrastructures with respect to the type of future activities. Only in this way the negative and damaged public image of the area can be reversed. This is achieved through the development of a clear intended spatial structure for the area. In future, the canal area will have a specific mission on four different levels.

On the *international level*, its mission is to safeguard the function of the canal as a connecting waterway within a European transport network for inland waterways (connection to the ports of Rotterdam and Antwerp, Brussels, Walloon, France) and North-Sea shipping. Therefore a careful approach is needed regarding the reserve capacity of the canal, the number of junctions and their organisation, as the joint use of the water (recreation, house boats). On the level of the '*Flemish diamond*' (comprising the cities of Antwerp, Gent, Louvain and Brussels) the canal area has to take on the responsibility of providing a proper organisation of economic activity, attractive housing, water recreation, interesting sites for wildlife in and around the water's edge, as well as open spaces in the centre of this urban network. A specific mission is to hold up an example to Flanders for moving towards inter-modal transport and to effectively shift the transport of goods towards waterways. On the level of the *compounding elements of the 'Flemish diamond'* the network Willebroek-Vilvoorde has to develop as a support-gate for Antwerp, Brussels (and Zaventem). Its function is to organise all the new economic activities in the canal area in such a way that the activities, most of which are water-bound, are complementary with those provided by the mainports. It also includes the development of attractive housing and water recreation facilities. Furthermore, the central junction of waterways offers opportunities for recreational boating activities and the development of a yacht-basin in each of the two urban areas. The central open space situated between Willebroek and Vilvoorde forms an important corridor between Antwerp and Brussels. Agriculture, sites of natural beauty, housing in villages and passive recreation are its main features and low-dynamic functions. On the *local level*, finally, the parts of the area have different missions set out by the local communities and authorities.

### **Pursued positioning of economic activities**

The main economic activities in the canal area are manufacturing and distribution. Especially for the distribution of goods, a specific profile as support-gate is the best and most realistic option to aim for. This includes a focus on international distribution to and from 'the Flemish diamond', as well as a focus on the means of transport on an adequate scale. This new water-oriented distribution activity has to be organised through a number of container terminals, with one regional transshipment centre for non-containerised goods and one or two distribution platforms. During the development of these economic activities special attention has to be paid to the vicinity to and use of the waterway. On land with direct access to the canal, no new firm should be allowed to start business if it does not make use of the water. Existing firms have to be stimulated, by supporting individual solutions, to make greater use of the water. Some roads on the canal banks will have to be moved in order to make room for the creation of additional industrial grounds near the waterside. Also the optimisation of the use of the existing and former industrial sites deserves special attention. Concentration of activities, re-use or replacement of abandoned industrial buildings, and the cleaning-up of contaminated

grounds must receive high priority in the redevelopment programme. This demands strong leadership from the (local) authorities in the decision-making process, and a huge financial injection from the Flemish authorities. Thereby it is necessary to aim at a renewal of economic activities and the continued availability of grounds for new investments. Calculations have shown that this is possible. Near the canal, and within direct access to it, some 130 ha of unused land are available for industrial development in the near future (until 2007). In the medium run (up until 2025) about 60 ha may be added, after the necessary investments in infrastructure and sanitation of grounds. For the long term an additional 34 ha of new industrial zones can be designated and developed for waterbound industrial activities. Clearly, to guarantee good relations with the surrounding villages, neighbourhoods and nature sites, each of the industrial developments has to pay due attention to the nature of its activities and to the design and landscaping of its adjoining areas.

### **Decisions: towards an urban pact**

The essential objective of the planning process (started at the end of 1995) is to achieve an agreement between the different partners regarding the development of the region, with the final aim of translating the results of these negotiations into 'appropriate' instruments for practical undertakings. It is not easy to realise these objectives, because:

- partners have to be selected and tempted into co-operation;
- it requires an agreement between the different partners from the public and private sector;
- the content and structure of the different master, ecological and strategic plans should be linked.

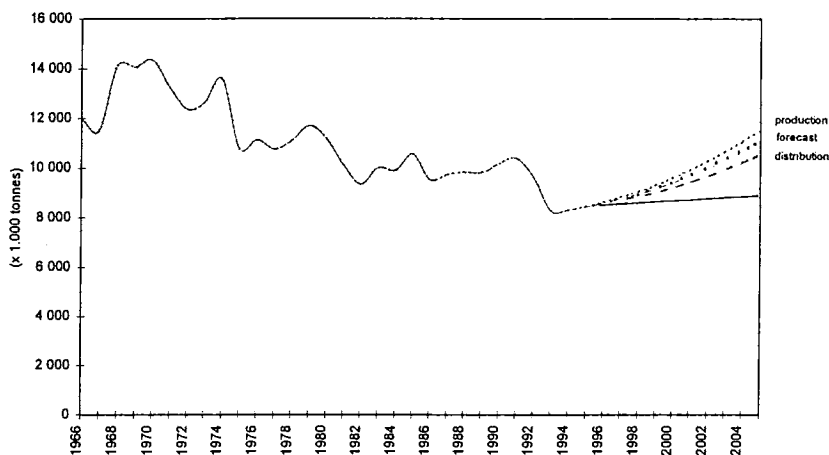
Probably the most important but certainly the most ambitious objective of the project is to reach agreement on a collective urban pact. Such pact is perceived as the result of an agreement between partners of equal standing with often conflicting interests at heart. This agreement will come into effect at a certain time and for a certain period, regarding a limited number of very specific urban matters of which the cost can be estimated, and for the implementation and sanctioning of which funds will be allocated. These agreements do not substitute existing planning patterns, but build a strategic complement to them. Finally, they will have to be incorporated into different laws and decrees which deal with this matter. The possibility of negotiating such a binding agreement within the framework of the project for the 'sea-canal area Brussels-Scheldt' is being contemplated. No such agreement does as yet exist between the negotiating partners. It would be worthwhile to press ahead with such an experiment, even if it would not bring all the results hoped for. Within the rich culture of consultation in Belgium, this instrument might form an alternative to the often daunting 'policy plans'.

### **EFFECTIVENESS OF THE MARKETING PLAN**

The major issue in the marketing plan is the achievement of a traffic increase on the canals, preferably by attracting high value adding economic activities. Traffic increases will be evaluated in terms of *direct and indirect* value added creation. The total required value added and backflow to the government that socio-economically justify the investments can then be easily calculated.

#### **Forecast to 2005**

In Figure 6 the traffic forecast to the year 2005 is compared to the required socio-economic tonnage. In case of full implementation of the proposed marketing strategy, traffic is expected to increase by about 30%, i.e. 2.4 million tonnes. The reference scenario, a *laissez-faire* scenario, only projects a 5% increase. On the other hand, a partial implementation of the marketing plan will endanger the future development of the canal, especially in the long run. Only a *tailor-made* approach will lead to the attraction of the projected new traffic flows (like for example containers and waste disposals).



**Figure 6 - Forecast and socio-economic requirements for the period to 2005**

### Success factors

The success of the marketing plan, especially in the long-run, will largely depend on the constraints being imposed by the political environment. In this respect two important issues are worth noting. First, for political reasons on the Flemish, Belgian, and European level it will be necessary to take specific measures to promote environmentally friendly transport alternatives such as inland waterway transport and shortsea shipping. Secondly, additional means are needed for carrying out such a policy, in order to attract additional traffic flows. This has to be done on a micro-economic level.

The development of a coherent transport, mobility and infrastructure policy by the EC deserves absolute priority, as it would provide a framework in which the policies of the member states can further be developed. Nevertheless it should be kept in mind that it are precisely the demands of individual member states that shape the EU policy. Presently, a clear policy vision of the Belgian or Flemish government is lacking. Such policy should encompass explicit choices regarding the stimulation of certain modes of transport and the discouragement of others. The liberalisation of the inland shipping sector in the year 2000 (thereby putting aside the regulatory mechanism of chartering by rotation (*tour de rôle*)) provides a framework for taking actions to stimulate the use of this transport mode (see for example Peeters and Webers, 1997). Although the Flemish government formulated several measures to improve the competitive position of the inland shipping sector, the Belgian federal government has not yet been able to set a policy that prepares the sector for the changing market conditions. Due to this lack of political initiative, there is little room for stimulating transport alternatives. In the short run, however, already much can be done regarding the establishment of enabling conditions related to settling, development of infrastructure and procedural measures.

As was argued earlier, the attraction of new traffic flows and new waterbound companies calls for an increased land-use for economic activities. Because of the restricted availability of industrial land alongside the canal, priority has to be given to companies that effectively use the waterway. Unfortunately, however, the supply of land for this purpose is relatively limited and the demand increasing. In the long term only up to 300 ha will be effectively available. In the short run, however, the availability of land is much lower. If this is compared with the socio-economic requirement of 250 ha, it is clear that all the land currently available should uniquely be devoted to economic activities.

## CONCLUSION

Currently, (public) decision makers are faced with the fact that they have to make explicit choices about the respective functions that are to be exercised in the different regions. The use of land for certain activities prevents the land to be used for other activities. The various interests should be carefully weighed, certainly with respect to boundary areas and the impact on the environment. A synthesised development of the whole area and its different functions, each optimally located, should be the aim. In other words, *choices have to be made*. Certainly, this requires the necessary vision and capacity to act, which creates important responsibilities for the Sea-Canal Corporation.

It is the task of the Sea-Canal Corporation to promote her vision and support decision makers with knowledge about decisions to be taken. Although this requires important organisational and financial sacrifices, these are negligible compared to the total past investment in infrastructure of approximately 52 billion BEF. Typical measures that are to be taken include the nomination of a business development manager as well as an assistant, the allocation of a yearly budget of 7 million BEF for promotional and marketing activities, the provision of financial means for co-financing feasibility studies, and conducting an active land management policy.

With such efforts, a first and important step towards the increased use of an environmentally friendly and congestion free transport alternative can be taken. Important to note in this respect is that the *pilot-function of the sea-canal* may also create strong spin-off effects towards other parts of the economy which in turn may yield considerable additional benefits. The Sea-Canal Corporation, however, cannot take actions on its own. Also local and higher authorities, industrial and commercial organisations as well as ecological groups are involved. The planning process therefore aims at reaching consensus on a balanced development of the area as a whole. To achieve these 'urban pacts' the Sea-Canal Corporation must strive to enhance communication among partners during the process.

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## APPENDIX

Let  $I$  be the investment amount. Then the total required value added  $VA_{tot}$  is determined from the equation

$$VA_{tot} = \alpha I$$

where the EIS<sup>®</sup>-ratio  $\alpha$  measures the proportion between value added and investment amount. In case of public investment projects, the ratio  $\alpha$  should be high enough in order to socio-economically justify an investment. Furthermore, due to the budget constraint of the government it is important to select only the 'best' investment projects. The higher  $\alpha$  is chosen, the greater the required total value added for certain investment projects is. In case the value added is assumed to be constant over the life of  $n$  years, then the yearly value added  $VA_{year}$  at a discounting rate  $r$  per year may be calculated as

$$VA_{year} = \beta^{-1} VA_{tot}$$

with  $\beta$  equal to  $r^{-1} [1-r-(1-r)^n]$ . Note that for relative low discounting factors  $r$ , the effective percentage is about the same, because then  $1-r$  is almost equal to  $(1+r)^{-1}$ .

The value added  $VA_{year}$  consists of a direct component  $DVA_{year}$  (inherent to the production process) and an indirect component  $IVA_{year}$ . With an adding-on percentage for indirect supply of  $\gamma$  it holds that the yearly and total direct value added equals  $(1+\gamma)^{-1} VA_{year}$  and  $(1+\gamma)^{-1} VA_{tot}$  respectively. By definition the indirect value added is found as the difference between the total value added and the direct value added. The ratio between direct and indirect value added thus equals  $1:\gamma$ .

It then follows that

$$DVA_{year} = \alpha (1+\gamma)^{-1} \beta^{-1} I.$$

From the numbers on (direct) value added per tonne, per metres square and per person one can deduce the yearly required tonnage, land, and employment. At an average value added of  $t$  BEF per tonne, of  $g$  BEF per metres square of land, and of  $p$  BEF per person (for the duration of the infrastructure project), the yearly required tonnage, land, and personnel is given by

$$\begin{aligned} \Delta T &= t^{-1} DTW_{year} \\ \Delta G &= g^{-1} DTW_{year} \\ \Delta P &= p^{-1} DTW_{year} \end{aligned}$$

The same type of analysis can be carried out in the opposite direction. In that case the required investments to achieve a certain traffic increase is then calculated.

At a backflow ratio  $\tau$ , the total respectively the yearly backflow to the government is given by

$$\begin{aligned} BFG_{tot} &= \tau VA_{tot} \\ BFG_{year} &= \beta^{-1} BFG_{tot} \end{aligned}$$

Here the implicit assumption is made that the backflow starts one year after the actual investment.

Unless mentioned otherwise, following assumptions underpin the calculations:

- an EIS<sup>®</sup>-ratio  $\alpha$  of 10;
- a discount rate of 4 percent ( $r=0.04$ );
- an (average) economic life of 30 years ( $n=30$ );
- a backflow percentage to the government of 38 percent ( $\tau=0.38$ ), based on EIS<sup>®</sup> data;
- an adding-on percentage for indirect supply of 40 percent ( $\gamma=0.40$ ), also based on EIS<sup>®</sup> data.