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A framework for sustainable port planning in inland ports: a multistakeholder approach.

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Abstract

In the European Union, all levels of government are convinced that an accelerated development of a modal shift from road towards inland navigation is one of the key requirements for reducing congestion and environmental externalities. It is expected that inland ports can play a crucial role in achieving such a modal shift. However, many inland ports are confronted with important spatial, socio-economic and regulatory constraints as, historically, they have been located in the centre of large (capital) cities and other high density urban regions. As a result, they face constant pressure from a variety of stakeholders (urban residents, leisure industry, ecological movement, …) and they must continuously defend their right of existence.

The aim of this paper is to present a conceptual framework for inland port planning that builds upon a multistakeholder – multicriteria approach, which takes into account all the short-term and long-term stakeholder preferences and objectives, in order to realize sustainable port development. This framework will also deal with the complexity of the port function in urban regions, as these ports/activities are in most cases dispersed over the urban region, whereby each port 'zone' has its own specific spatial, socio-economic, and regulatory characteristics. The combination of existing literature in the fields of (urban) port development, stakeholder theory and multicriteria-analysis, and empirical evidence, gathered during the development of a strategic masterplan for the inland Port of Brussels, will permit the formulation of a new approach to inland port development.

1. Introduction

The European Commission, in its White Paper on transport policy (European Commission, 2001), admits that the projected growth of road transport demand could seriously penalise the economy in the long term, and therefore wants to stimulate alternative 'green' modes such as rail, short-sea shipping and inland waterway transport in order to reduce congestion and pollution, thereby contributing to the general objective to achieve a more sustainable economic development. An ambitious action plan, which consists of several concrete projects, was adopted for these purposes. One of the main means to attain a modal shift in freight transport, is the promotion of short-sea shipping and inland waterway transport as energy-efficient, less polluting and thus more environmental friendly transport modes. The European Commission has also proposed a new programme (Marco Polo) to support (intermodal) investment projects offering alternatives to road transport in the early years before they become economically viable, in particular projects in the container and short sea-shipping sector with cross-border impacts.

This modal shift from road transport to short-sea and inland waterway transport implies that a network of multimodal logistical nodes is established in the hinterland of seaports, which are the main gateways to the European hinterland. Inland ports can play a key role as logistical centres in this network of multimodal logistical nodes by concentrating the infra- and supra-structure needed to support the growth of short-sea and inland waterway transport. Surprisingly, the European Commission confirmed this only very recently, when 210 European inland ports where formally included in the Trans-European Networks (TEN) (European Commission, 2001), and specific guidelines where adopted with regard to infrastructure projects of common interest. It is expected that the role of inland ports will become of key importance, as inland waterway traffic will almost double by 2020 (European Commission, 2003). If inland ports want to strengthen and maintain their role as important logistical nodes in the multimodal network, they will have to establish strategic plans that formulate answers for the important future challenges ahead.

This paper will therefore focus on the strategic planning process for inland port authorities, taking into account the specific environment where most of these ports are operating in. In most cases this geographical environment will be the centre of large urban regions, or other dense populated regions. It is argued in this paper that long-term strategic planning has to take into account all stakeholders' perspectives and preferences, in order to realize sustainable port development. Empirical evidence, under the form of a framework, adopted during the development of a strategic masterplan (horizon 2015) for the inland port of Brussels' authority, will illustrate this stakeholder-based strategic planning process.

The paper is built around five sections. Section 2 gives a brief overview of the literature on strategic port planning, and the role of stakeholder management applied to ports and transport infrastructure. Section 3 focuses on the role of inland ports in an urban region, and discusses the important issues faced by inland port authorities when further developing their activities. Section 4 describes the framework that was applied during the strategic planning process for the inland port of Brussels. Section 5 concludes with a critical assessment of the proposed framework, and with directions and suggestions for further research.

2. Strategic port planning and stakeholder management

2.1. Strategic port planning

As most firms and organisations, which are influenced by a complex, uncertain and highly competitive environment, port authorities have become aware of the need for strategic planning in order to respond to the challenges they are faced with. This complex environment is driven by technological, economic, social and political developments, which results in a multidisciplinary approach to strategic port planning. The future challenges faced by port authority managers imply choosing between different development alternatives, which make the port authority able to seize the opportunities and control the risk and uncertainty tied to their environment. The interest of academics in strategic

planning applied to ports (where 'ports' refered implicitly to seaports) has risen only recently, and has left open a very interesting research agenda.

Until the early nineties, there were few adapted strategic planning frameworks that port authority managers could use in order to formulate their strategy and assess or evaluate their long-term planning objectives, except general foundations (Frankel, 1987). In recent years, the increased complexity of the environment has stimulated the introduction of more traditional strategic management frameworks in the port sector to serve purposes of strategic planning. In particular the resource-based approach, suited to formulate and assess planning within complex organisations, has been applied and adapted to serve strategic port planning purposes (Coeck et al., 1996). This resource-based view has since then been further elaborated, with the creation of adapted frameworks and tools which contribute to the in-depth analysis of seaport strategies (Haezendonck, 2001). In support of the resource-based view applied to port strategic planning, other conceptual frameworks have been applied to the port sector, more specifically the 'Porter Diamond', presenting the determinants of port competitiveness (Coeck et al., 1997). Furthermore, a 'Port Strategy Matrix' was developed, which was an application of the 'Corporate Strategy Matrix' (Rugman and Verbeke, 1990), presenting four generic strategies that ports could choose to gain and sustain their competitive advantage. It was argued that several dimensions (micro- and macro-economic, and public and private sector) are intimately linked as determinants of port competitiveness, this linkage expressing the need for an integrated approach to strategic port planning.

Planning: a task for the port authority

There have been earlier discussions about the necessity of port authorities as a public sector organisation (Goss, 1990b and 1990c). A number of arguments for and against were presented, whereby an important argument for having a port authority was the need for planning of port facilities (among other arguments were the provision and regulation of property rights, the provision of public goods and the containment of externalities resulting from port activities). The main disadvantage of not having a port authority would then be

the lack of co-ordination and organisation of the planning process, as the planning role would be in the hands of different organisations, each showing diverse interests and possessing specific capabilities (government agencies, private organisations). The argument of co-ordination is very convincing, as it seems that nowadays there is general acceptance that strategic port planning is a task and a responsibility of the port authority.

Different port authority 'models' exist and have been described extensively, and are applied throughout the world. Generally, port authorities are public sector bodies responsible to (a) certain level(s) of government (national, regional, local, municipality). The main determinant of a port authority model is the degree in which the port authority assumes a role in the diverse port activities (Goss, 1990d). Two extreme models were presented: the 'comprehensive' port model, where a port performs all the port services, and the 'landlord' port, which leases or rents infra- and supra-structure to private firms, who perform almost all other port services (cargo handling, etc.).

It is assumed in this paper that the port authority is organized under the form of a 'landlord' model, and that it takes responsibility for the strategic planning process.

The time horizon of port planning

When starting a strategic planning process, the time horizon is an important parameter to define different types of port planning. In the case of port authorities, three different types of planning exist (see Coeck et al., 1997 who summarized World Bank, 1993a), which can be considered independent of the nature of the port (seaport or inland port):

(i) Short-term planning serves the purpose of solving current practical problems on the operational level, whereby the time horizon varies from one (also considered as 'operational' planning) to three (also considered as 'tactical' planning) years.

(ii) Medium-term planning, with a time horizon from three to five years, is characterised by the development of strategic plans in which 'management by

objectives', in particular on the marketing and financial level, plays an important role.

(iii) Long term planning is aimed at the development of port masterplans, whereby a time horizon of 10 to 25 years is considered. This requires a visionary approach on the development of port infrastructure for the whole port area.

This paper focuses entirely on the third type of long-term planning, and more specifically the development of strategic masterplans for inland ports.

2.2. Corporate social responsibility, Stakeholders management and the port sector

Management literature has been focusing its attention intensively to stakeholder theory in recent years, as more firms became aware of the need for implementing corporate social responsibility (CSR) aspects in their planning activities. Although there have been no empirical results showing that adopting CSR-related behaviour leads to superior financial performance, it is argued that CSR contributes substantially to the overall performance of a firm and to the objectives of the firm's stakeholders, including society (Burke and Logsdon, 1996). These authors also argued that superior CSR performance can lead to the creation of strategic business-orientated benefits. Therefore, organisations have to take into account CSR objectives in the planning process, and more specifically they should (i) identify the critical stakeholders who contribute to the achievement the mission and strategic objectives of the organisation and (ii) identify the policies that can contribute to the objectives of these critical stakeholders.

The most important problem that arises is the identification of these critical stakeholders. There exist many definitions about the concept of the 'stakeholder', and no universally accepted definition has been accepted until now, which leads to diverse foundations of the 'stakeholder theory' and 'stakeholder management' (an in-depth discussion is found in Donaldson and Preston, 1995). The broadest definition of the concept is found in the work of Freeman (1984) where a *"stakeholder is by definition any individual or group of individuals that can influence or are influenced by the achievement of the organisation's*

objectives". Attempts to further specify categories of stakeholders are very difficult for several reasons, mostly in relation to the relative importance or equality of the different stakeholders (or the 'value' and the 'stake' of each stakeholder), and the measurement of performance with regard to the objectives of different stakeholders. Furthermore, the objectives of the stakeholders are in most cases very diverse, and even conflicting. Even inside a stakeholder group, there may be conflict between individual entities with regard to the objectives of the group which poses problems with regard to the legitimacy of the particular stakeholder group, more specifically when the performance or the strategy of the organisation in which the group has a 'stake' has to be evaluated (see Hill and Jones, 1992).

In order to define and classify stakeholders, it has been argued for the above reasons that the number of stakeholders is, in fact, infinite (Argenti, 1997). Nevertheless, other views have arisen and pose that because of the vagueness of the general concept, the types or classes of stakeholders depend on the organisation's purpose (Campbell, 1997). In our view, this second approach seems very appropriate, as the stakeholder concept has initially been developed for firms, whereas other particular organisations were not included in the discussion (public bodies, not-for-profit organisations). Furthermore, it has been argued that extension to other kinds of organisation leads to confusion, as the environment and situations confronted by these organisations are profoundly different (Donaldson and Preston, 1995). The objectives of a port authority clearly differ from those of conventional firms (Frankel, 1989), hence the need for a case-by-case approach, depending on the nature of the organisation and its mission and objectives.

Stakeholder theory applied to the port sector has appeared only recently in the academic discussion, as port activities and port development (mostly driven by port extension programmes) experience growing resistance, in particular by local community groups who oppose to the (perceived) negative externalities of port activities. Notteboom and Winkelmans (2002) described the port environment and identified different categories of stakeholders: internal stakeholders (part of the port authority organisation), and three groups of external stakeholders i.e. economic/contractual external stakeholders (e.g. port companies or their representative bodies), public policy stakeholders (e.g. government

bodies) and community stakeholders. Furthermore, a classification of stakeholders was presented, on the basis of their involvement in the process, and their impact on the process. It was argued that in order to accomplish sustainable port development, the stakeholder approach will become an important determinant of port competitiveness, given the ever increasing complexity of the port environment.

3. The inland port environment

The preceding sections gave a brief overview on strategic port planning and the role of stakeholder theory in the port sector. It was implicitly assumed in most of these findings that a port is a 'seaport', making no distinction between inland ports and seaports. However, although there are many parallels between both port 'types', we have to consider some differences when developing a strategic port planning framework for inland ports.

First, there are differences on the level of the hinterland dimension. The hinterland of most seaports stretches beyond national borders (e.g. the Hamburg – Le Havre range), whereas most inland ports only have a local or a very regional hinterland, as they are in most cases the end-points of the logistic chain. In fact, most inland terminals are a part of the hinterland network of seaports, as they can be considered as important inland hubs for collection and distribution of traffic flows, taking potential congestion away from seaports (Notteboom and Winkelmans (1999). As a consequence, where seaports have a clear national and even supra-national functionality, inland ports are merely considered of local importance. This has important institutional consequences, as the need and existence for seaports is less contested than the need and existence for inland ports in urban regions from a public policy perspective (assuming that transport policy is in most countries a national or regional competence) as it is proven that the presence (and scale) of seaports contributes substantially to the competitiveness of the national or regional economies.

Secondly, whereas most seaports have realised important extensions and have withdrawn most of their port activities from the centre of the urban region (see e.g. developments in Antwerp and Rotterdam), inland port activities are in most cases still located in the centre

of highly dense populated regions or cities, as they play an important role in metropolitan logistics and urban goods distribution. Moreover, the presence of an inland port is an important asset for sustainable urban development, as the presence of the waterway for the transportation of goods can contribute to the reduction of negative transport externalities (CO2-emissions, noise, etc.) in urban regions. Nevertheless, port activities in the centre of urban regions inevitably are posing environmental pressure on other urban functions, which puts them in a weak position against local community stakeholders and sometimes even local or municipal government, as these stakeholders experience in a direct way the negative environmental pressure of port activities, but do not directly perceive the positive effects of the modal shift these activities provide. As a result, available sites in the centre (and even the periphery) of urban regions are considered too high in land value to justify further port development.

Moreover, this scarcity of land almost imposes a stakeholder approach to port development, as potential and even actual sites[1] reserved for port activities, are under immense pressure of waterfront developments aimed at housing, recreation and more noble economic functions under the form of office spaces for the service sector or commercial developments (e.g. large shopping centres). The redevelopment to other land uses as housing and recreation is clearly more attractive to local community stakeholders and political movements, but this puts enormous pressure on the remaining, often adjacent port activities and represents therefore a serious threat, see e.g. the experience of the Port of London Authority (Pellegram, 2001). As a result, inland ports have to defend their existence continuously against the pressure of these stakeholder groups, hence the need of a collaborative stakeholder approach in order to maintain a broad social basis for having port activities in the urban region, and safeguarding land in order to meet future port extension requirements. Furthermore, when we consider sustainable inland port development as a part of sustainable urban development, it has already been argued that a multitude of actors has to be involved in order to create a broad basis for policy objectives and measures aimed at sustainable urban development (Priemus, 1999).

Thirdly, there are differences in the degree of awareness of port activities between inland ports and seaports. The scale of seaport activities could be considered as an advantage, as local community groups and public bodies are entirely aware of the existence of a port, in visual terms as the port activities have a clear dominance, but more importantly in economic terms as a large part of employment on the regional level is directly or indirectly generated by port activities. On the contrary, inland ports possess less economic scale, and their activities are not omnipresent in visual terms, nor in economical terms, although in some cities they account for a relative large share of regional employment and regional value-added. This lack of awareness of a successful port authority has a negative influence on the perceived legitimacy of port activities. Here again, inland port authorities have a much more difficult task vis-à-vis external stakeholders, not only in terms of dissemination of information regarding port activities, but simply in making the general public aware that they exist.

In the next section, we will present a framework that allows sustainable inland port development, taking into account the specific characteristics of port activities and stakeholders objectives in an urban region.

4. A framework for long-term strategic planning for inland ports

4.1. Assumptions and guidelines

The preceding sections lead to the assumptions and guidelines of the framework on inland port planning, which will be presented in this section. The main assumptions are:

- We assume that the port authority is organized under the form of 'landlord' model, i.e. it controls the land use by leasing and renting infra- and supra-structure to private firms, who perform all other port services (cargo-handling, storage, etc.). In some cases, the 'landlord' port also supplies general services as security, pilotage, etc. to the private sector.

- We assume that the port authority has planning responsibility. Is has indeed been argued that strategic planning should be a task of the port authority, and should not be left over to individual firms, public bodies or governmental agencies.
- The time horizon of strategic port planning in our framework is 10 to 25 years, and aimed at the development of a port masterplan.

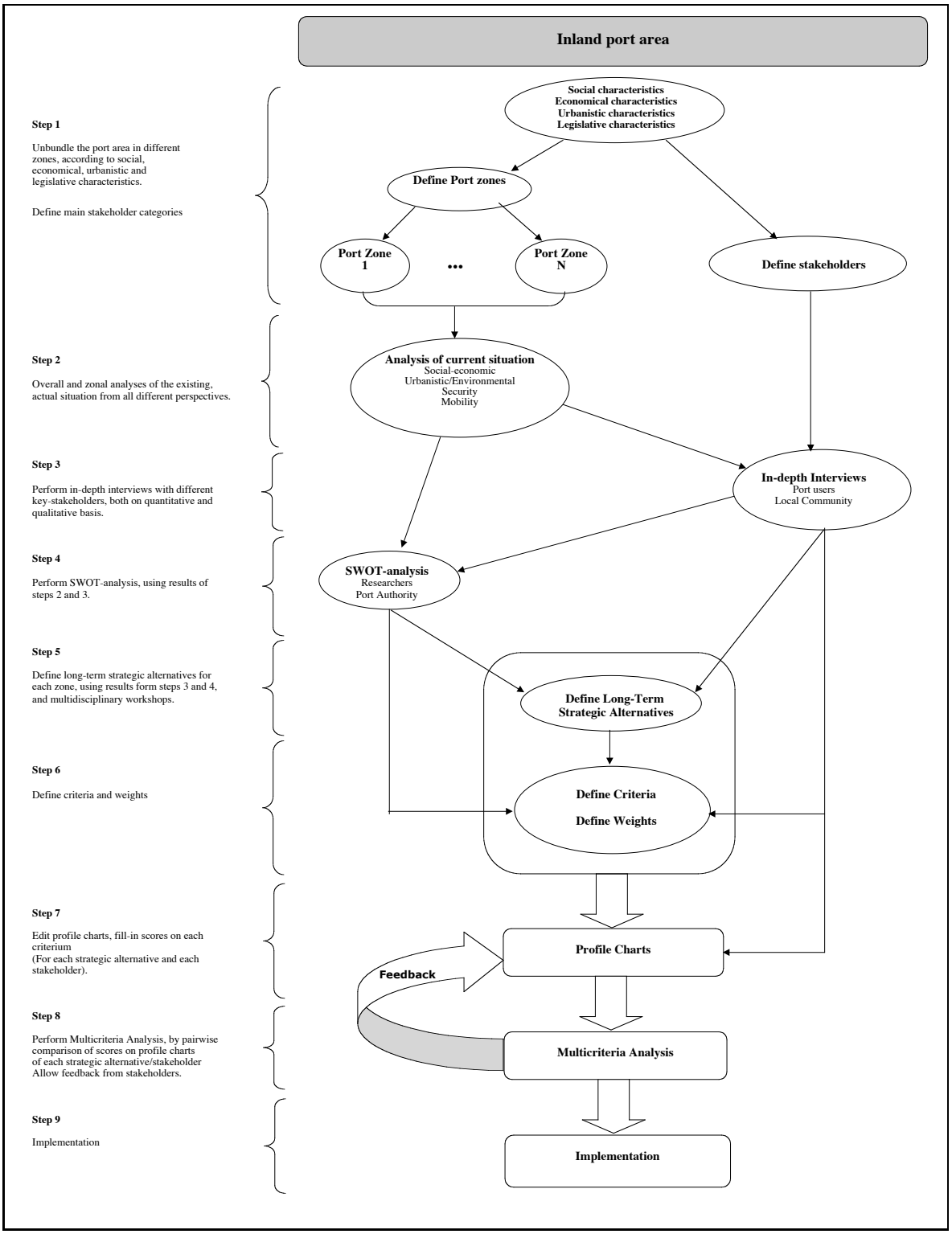
The main guidelines are:

- A stakeholder based approach is very appropriate for long-term port planning, given the (increasingly) complex environment in which ports operate.
- Stakeholders (and their different objectives or criteria) should be defined and classified following the purpose and/or objectives of the organisation, in this case the port authority.
- Inland ports differ on several issues of seaports. This demands another approach to inland port planning. More particularly, sustainable inland port planning in an urban region should be a part of sustainable urban planning, given the dominance of local functionality of an inland port

4.2. The inland port planning process

Figure 1 gives an overview of the planning process, which was applied during the development of the masterplan. This framework offers an insight into the planning process that was applied for each distinct port zone. Further techniques will be developed in order to make an aggregation of each zonal planning process, to come to a global consistent masterplan, but this exceeds the range and subject of this paper and needs a separate discussion. The framework consists of eight planning process steps, which will be discussed separately in order to explain their contribution to the planning process.

Figure 1: The inland port zone planning process



Source: authors

Step 1: Divide the port area in different zones, according to social, economical, urbanistic and legislative characteristics and define the main stakeholder categories.

This first step of the planning process is very multidisciplinary in nature, as the heterogeneous port area has to be divided in separate zones, which are of homogeneous nature on the economical, urbanistic or legislative dimension. Therefore, an overview of the port area is created following these separate dimensions, after which the resulting separate maps are confronted and different port zones are described. This first step contributes to the consistency (and sustainability) of the planning process as this zonal division takes into account the specific but sometimes very diverse characteristics of the port area, assuring that no important characteristic is forgotten in the basis of the planning process. It has to be mentioned that there are no minimum requirements of the 'port zone' concept in terms of cargo traffic volume, employment or other parameters. In some cases, there can even be no port activity in order to be considered as a separate port zone. Generally, it is preferred, in case of doubt, to define more separate zones, which can easily be merged in a next step (under the condition that they are adjacent and have very similar characteristics as pointed out by step 2).

As was pointed out earlier, the classification and definition of the stakeholders depends on the purpose of the organisation. We decided to consider four main stakeholders: government, local community, the port authority and the (potential) port user. A main stakeholder can be unbundled in several sub-categories with their own specific criteria (e.g. local community can be unbundled in tourists, residents, adjacent non-port firms and organisations) if the characteristics of a zone necessitate this approach. The applied multi-criteria analysis method (see step 8) allows this unbundling of a main stakeholder category. The definition of the main stakeholder categories provides an important input for the questionnaire of the in-depth survey, as questions can be more oriented towards general stakeholder sensitive objectives.

Step 2: Overall and zonal analysis of the current situation from all different perspectives.

In this step information is gathered for each zone and for the global port area. This allows a detailed description of the current situation on the level of each perspective (social, economic, urbanistic, security, mobility, …). These descriptive analyses provide are an important input for the in-depth interviews (Step 3), as they give major directions for the content of the questionnaire. This step also contributes to the development of the SWOT-matrix (Step 4) as strengths, weaknesses, opportunities and threats are identified for each perspective.

Step 3: Perform in-depth interviews with different key-stakeholders, both on a quantitative and a qualitative basis.

This next step builds upon the previous steps as it incorporates conclusions of the analysis of the current situation, thus providing a complementary source of information when conceptualizing the questions of the survey. The survey is primarily aimed at port companies, but can also partly serve to consult local community stakeholders. The questions are aimed to determine overall satisfaction of the port companies and local community stakeholders, and therefore questions are answered on a -2 to +2 scale (where +2 represents the highest level of satisfaction), providing quantitative information of the port competitiveness. Interviews are held face-to-face, allowing respondents to argue their scores on different criteria. These argumentations, complemented by open-ended questions, provide an important source of qualitative information.

Step 4: Perform a SWOT-analysis (Strengths, Weaknesses, Opportunities, Threats)

In this step, a SWOT-analysis for each zone is conducted with two important inputs:

- The results of step 2 (analysis of the existing situation).
- The results of step 3 (analysis of the in-depth interviews), which represent strengths and weaknesses primarily derived from quantitative questions and opportunities and threats provided primarily by qualitative information.

In a first phase, SWOT-analyses are performed during multidisciplinary workshops between research teams. In a second phase, these SWOT-analyses are presented to the port authority, creating an iterative process, which provides a sustainable SWOT-analysis. This collaborative approach eliminates the weaknesses of this strategic analysis framework, which are the unclear definition of factors, the lack of prioritization of factors and subjectivity as factors are generated (see e.g. Pickton and Wright, 1998). This SWOT-analysis provides the basis for the definition of the long-term strategic alternatives.

Step 5: Define long-term strategic alternatives for each zone, using results of steps 3 and 4 and multidisciplinary workshops.

After defining the SWOT-analysis, multidisciplinary workshops are held in order to define long-term strategic alternatives for each zone. The results of these workshops are presented to the port authority in separate workshops, which makes it possible to further specify the content and the objectives of the strategic alternatives. This collaborative approach provides sustainable long-term strategic alternatives as qualitative contributions of stakeholders are taken into account, via the results provided by the in-depth interviews of step 3.

Step 6: Define criteria and weights

The definition of criteria for each stakeholder follows the approach followed for the definition of stakeholders: the criteria depend on the purpose, i.e. on the characteristics of each zone. This is very relevant for stakeholders, such as government and the local community, as their objectives often change throughout the port area. For example, in some port zones government objectives will be oriented towards the economic development, whereas other port zones will be considered suitable for the development of housing and recreation. The objectives of the port authority and the port companies are much more stable, although there can be adjustments depending on the port zone, but not as intense as for government or local community stakeholders. Another reason for this

difference is that the port authority can be considered as 'identical' or 'univocal' over the whole port area, whereas the identity of local community stakeholders and sometimes even government (e.g. municipalities) can change depending on the considered port zone.

The weights of each criterion are based on expert judgements, which are representing the importance that the stakeholder allocates to the considered criterion. However, the applied multicriteria-analysis method and software (see step 8) allow an interactive process with the stakeholders in order to perform sensitivity analysis.

Step 7: Edit profile charts for each stakeholder for each strategic alternative, fill in scores on each criterion, using inputs of steps 2 and 3.

This consists of an aggregation of the previous step, and provides the basic input for step 8 (Multicriteria-analysis). If the number of stakeholders is n, and the number of strategic alternatives is m, then m x n profile charts are edited. The criteria on each profile chart are rated on a (--) to (++) scale, whereby a neutral score (N) is given if a criterion is not relevant for a specific stakeholder (this depends on the content of the strategic alternative). The ratings represent the contribution of that specific criterion to the strategic alternative under consideration.

For the port authority, ratings are based on expert information, and can be modified during interactive meetings with representatives of the port authority. For government criteria, ratings are based on government policy documents, which provide insights to the strategic objectives of the government; in other words, ratings are based on the contribution that each criterion could represent in order to realise strategic government objectives, and are validated by government representatives. The ratings of the criteria of the port companies and local community stakeholders are based on the quantitative and qualitative results of the in-depth interviews taken from these stakeholders, complemented by expert information.

Step 8: Perform multicriteria-analysis, by pairwise comparison of ratings on profile charts.

The MCDA method used to assess the different strategic alternatives is the Analytical Hierarchical Process (AHP), described by Saaty (1982, 1988). The use of MCDA in the case of stakeholder based strategic port planning is almost imperative, as the ratings of the majority of the criteria can't be expressed in quantitative or monetary terms (given the long planning term of 10 to 25 years) and the heterogeneous nature of the criteria. The AHP-method also allows the development of a clear causal and hierarchical structure, transparent for decision makers. The software package that is used to perform the analysis (EXPERT CHOICE) supports this transparency, because excellent visualisations are made possible. For a more detailed and critical literature overview on the advantages of MCDA, and more specifically the AHP method and the use of EXPERT CHOICE, see e.g. De Brucker et al. (1998), Macharis (2000) and Vreeker et al. (2002), who successfully applied the method to a wide array of transport infrastructure planning problems.

The basis of the Saaty Method is the pairwise comparison of the strategic alternatives on the level of the criteria. The analysis of the separate strategic alternatives on the profile charts is translated into a multicriteria analysis where the several strategic alternatives are confronted with each other. This leads eventually to a classification of the proposed strategic alternatives.

The main advantage of this approach is that decision makers and research teams can make separate and more independent judgements on the profile charts, whereas a direct comparison between strategic alternatives on the level of the criteria in the multicriteria-analysis would be more difficult, given the broad and complex content of the different strategic alternatives. Furthermore, the applied method allows an iterative process, as feedback from different stakeholders can easily be introduced via modifications on the profile charts.

With regard to the evaluation method that is used, i.e. the AHP-method, it must be pointed out that the ranking of different alternatives must certainly not always be followed when decisions are taken. The multicriteria analysis allows to reveal the critical stakeholders and their critical criteria, but does not provide a fundamental assessment of the strategic alternatives (in terms of monetary or other quantifiable terms). Multicriteria analysis provides a comparison of different strategic alternatives, and supports the decision-maker in making his final decision by pointing out for each stakeholder which elements have a clearly positive or a clearly negative impact on the sustainability of the considered strategic alternatives.

Step 9: Implementation

After finishing the decision process, steps have to be taken to implement the chosen strategic alternative by creating implementation schemes for the considered zone. This implementation process can be complemented by cost-benefit analysis for well-defined projects, which can be implemented in early phases of the implementation scheme.

5. Critical assessment and directions for further research

The development of this framework is the result of research activities performed by a social-economic research team, part of a large multidisciplinary research team, assigned by the port authority of the Port of Brussels (the second largest Belgian inland port) to develop a strategic Masterplan (time horizon 2015). As this research project evolves, the framework will be further elaborated, taking into account a number of comments we have formulated concerning the proposed framework:

- The proposed framework proposed a planning process, which developed sustainable strategic alternatives for separate port zones. However, a final masterplan is the aggregation of all the zonal results and should be consistent on the bottom-line. More particularly, the proposed strategic alternatives for one zone should not harm the development of the chosen strategic alternative in another zone. This consistency

should be assessed in an integrating step, which is not included in this framework. Further research will be done in order to make it possible to evaluate this consistency, i.e. developing this integrating step.

- On the level of stakeholders, there exists a possible shortcoming in the long term as the importance of stakeholders and their relevant criteria are inevitably a reflection of the present, and can change over time. Stakeholders can become of less importance to the planning process, as some criteria may be eliminated over time as their relevance has decreased. However, sustainable strategic planning needs a periodical reassessment of the proposed strategic alternatives and the progress of the implementation scheme. This reassessment can partly be done ex ante, as the strategic alternatives for each zone can be tested on feasibility against a number of general development scenarios for the whole port area, which take into account very uncertain factors (like the economy's growth and the political situation) and can provide an insight to the changing importance of stakeholders and criteria over time. Here again, a collaborative stakeholder approach can be applied in order to determine global long-term scenarios. Depending on the situation in the long term, the port authority can easily reassess and make adjustments on the implementation of the proposed alternatives. Further research has to be done in order to consistently integrate these two planning 'levels' (i.e. the long-term planning level of the port zone, and the long term potential 'futures' or scenarios of the port area).
- Another point of shortcoming could be the concept of the 'port zone', as this is not a universally defined concept for inland ports, because their environment is in most cases more complex than seaports due to their situation in the centre of cities or large urban regions. The main problem is the lack of guidelines concerning to which extent an area is relevant in order to be taken into account for the planning process, and which characteristics dominate in the unbundling process of the port area. A further in-depth analysis during the application of the proposed planning process, should contribute to the development of a framework that makes this step in the process less critical and time-consuming.

Further research activities, resulting from the development of the Masterplan for the inland port of Brussels, should provide the basis to answer the comments that have been made.

FOOTNOTES

[1] This could be a another difference between seaports and inland ports, as inland ports face constant pressure due to this scarcity of land, even for actual activities, whereas seaports face these problems increasingly when there is a further need for port extension (e.g. the Left bank of the river Scheldt in Antwerp), their actual activities not being threatened. Moreover, some seaports have redeveloped a large part of old port sites situated in the historical centre of the urban region to other functions as housing and recreation, thus alleviating pressure from real estate and recreation developers.

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