Sea Transports in the Baltic Sea

Trends and consequences for urban structure and regional development in the Baltic Sea region

Förord

Under åren 1999 och fram till hösten år 2000 har ett större Interreg IIC projekt rörande stadsregionernas utveckling och samarbete i Östersjöområdet varit aktivt. Projektet går under beteckningen Urbana system och nätverksbyggande i Östersjöregionen *(USUN/Urban Systems and Urban Networkings in the Baltic Sea Region)* och har letts av det danska miljöministeriet genom *Institutet för skogs- och landskapsforskning*. Det har finansierats av EU-kommissionen och staterna kring Östersjön (inkl. Norge). Projektet är nära anknutet till det pågående internationella samarbetet kring uppföljningen av det s.k. VASAB 2010 (*Vision and Strategies around the Baltic Sea 2010*).

Projektets övergripande syfte är att bidra till ett fungerande samarbete i Östersjöregionen genom att utveckla kunskap om förutsättningarna för att samordna den regionala planeringen av bl a den transnationella infrastrukturen i området. Det är särskilt inriktat på städernas och de urbana aktörernas (politiker, tjänstemän, företag, intresseorganisationer etc) roll i utvecklingen av ett ekonomiskt, miljömässigt och politiskt bättre integrerat och mer hållbart framtida Östersjörum.

De samlade resultaten från hela USUN-projektet kommer att avrapporteras på en stor konferens i Rostock den 20-21 november 2000 med ett hundratal inbjudan politiker från hela Östersjöområdet.

Inom ramen för USUN-projektet har det producerats ett omfattande faktaunderlag rörande Östersjöregionens urbana strukturer, industriella samarbete, utveckling av turismen, universitetsnätverk m.m. Huvuddelen av de hittills framkomna resultaten från dessa substudier finns publicerade på USUNs hemsida <u>www.fsl.dk/usun</u>. I detta arbete har Ålands statistik och utredningsbyrå (ÅSUB) engagerats som koordinator och huvudansvarig för framtagningen av nödvändigt underlagsmaterial och analyser av sjörtransportinfrastrukturen i Östersjön. Analysen av sjötransportfrågorna har kunnat koordineras med ett annat närbesläktat Interreg IIC-projekt vars huvudsakliga fokus är att främja ett internationellt samarbete kring planeringen av den maritima infrastrukturen i Östersjön, nämligen MATROS (Development of Spatial Planning and Transport Infrastructure Planning Methods for an Integrated Maritime Transport System in the Baltic Sea Region). Koordineringen har inneburit att arbetet - liksom finansieringen - skett i samarbete med MATROS.

Arbetet har skett i tre olika steg. I en första fas togs en s.k. *base line-data* rapport fram i syfte att på ett mera översiktligt plan beskriva och analysera viktiga karaktäristika gällande dagsläget inom sjötransportsektorn i Östersjöområdet. Rapporten från detta arbete publicerades under titeln *Sea Tranport in the Baltic Sea* i ÅSUBs rapportserie (Rapport 1999:15) i slutet av förra året.

Därefter genomfördes ett internationellt seminarium med representanter för de viktigaste aktörsgrupperna (hamnmyndighter, hamnbolag, transportköpare, rederier etc) för att mera i detalj analysera dessa nyckelgruppers syn på den framtida sjötransportplaneringen i regionen. Resultatet av detta seminarium avrapporterades för en tid sedan i form av ytterligare en ÅSUB-rapport (2000:4) med titeln *Understanding the Synergy between Spatial Planning, Public Investments and Private Business*.

I föreliggande rapport, som är en avrapportering av projektets tredje och avslutande arbetsfas, tas ett mera samlat grepp på hela sjötransportssituationen i Östersjöregionen. Det inom projektet tidigare framtagna underlagsmaterialet förs här samman i en analys av de viktigaste utvecklingstrenderna inom sektorn och vad dessa kan komma att innebära i termer av utmaningar för infrastrukturpolitiken i berörda delarna av regionen. Rapporten avslutas med en framtidsinriktad diskussion kring policyoptions=på olika politiska nivåer - från lokala hamnmyndigheter till EU-kommissionen i Bryssel.

Det huvudsakliga ansvaret för att ta fram underlagsmaterialet har åvilat en forskargrupp inom *Centret för maritima studier (CMS)* i Åbo, *Sjöfartens analysinstitut (SAI)* i Göteborg, *Transportforschung GmbH* i Hamburg och *Inregia ab* i Stockholm. Huvudansvaret för sammanställningen slutrapporten har legat hos Transportforschungs *Lars Källström* och Inregias *Susanne Ingo*. Rapporten fungerar även som projektavrapportering till MATROS.

På beställargruppens vägnar vill undertecknad tacka konsultgruppen för ett väl genomfört arbete.

Mariehamn i juni 2000

Bjarne Lindström

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I Introduction

Sea transports play an important role in the Baltic Sea region where around one hundred million people live around a common water basin. The region enjoys a proud sailing tradition. Throughout the centuries sailing has been the base for trade and contacts with new ideas and people. There have been long periods of fruitful maritime co-operation, e.g. during the Hansa period, but also periods of hard competition.

Even today the Baltic serves as a regional shipping market. Most of the ships are only calling at ports inside the Baltic Sea. Ports in northern Germany have been and continue to be important centres of trade.

The Baltic Sea connects and divides. Sweden, Norway and Finland are situated "on the other side of the Baltic Sea" in relation the European Continent. Sea transports in the Baltic Sea are also of crucial importance to Russia, the Baltic countries, Poland and northern Germany. Transport and travels to other countries often include the use of a sea transport link.

During the last decade many old sea routes have been rediscovered again as the neighbouring countries develop new contacts. Growing sea transports, especially the port services, result in new jobs and income. This brings improved social conditions and stimulates the economic growth in a region.

These changes occur in a period characterised by a rapid change also in the global economy, where the use and effects of new and improved technologies for communications represent a strong driving force. Production processes and transportation develop as networks supported by a rapid and precise exchange of information. Increased economic exchange calls for increased capacity, more efficient services and improved accessibility in the networks for communications.

However, the rapid growth of trade and transport also result in an increased constraint on the natural environment and local disturbances in densely populated urban areas.

There is a need for actions to facilitate the development of a sustainable transport system in the region, including the sea transports.

Political initiatives have stressed the importance of developed sea transport system, as part of a future multi-modal sustainable transport network in the Baltic Sea Region and in Europe. This is included in the initiatives from the ministers responsible for Spatial Planning and Development in the countries surrounding the Baltic Sea (VASAB) and in the EU initiatives ESDP and Interreg II C.

I.1 The major issues

The role and impact of sea transports for the spatial development in the Baltic Sea region is currently studied in two VASAB projects–Matros and Urban Systems & Urban Networks (USUN) - co-financed by the EU program Interreg II C.

MATROS focuses on

- which are the driving forces and major players governing the waterborne transport system
- which are the problems generated or reduced by waterborne transport
- which are the regional options for handling conflicts or synergies between waterborne transport and objectives regarding:

urban development

trade and commerce

promotion of sustainable transport solutions.

USUN focuses on the impact of waterborne transport on urban development and urban relations which means a more in depth analysis of some of the urban spatial policy aspects discussed by MATROS. USUN discusses the importance of waterborne transport:

- as an obstacle to or a promoter of urban growth
- as a means of linking urban centres
- as a means for affecting localisation of investments and development

Both projects seek to address issues of policy relevance to the regions in order to highlight measures which are possible to handle on a regional or even a local level within the context of a European and national political and regulatory frameworks.

What makes waterborne transport so special (particularly in the BSR) is that sea transport is both a commercial undertaking and, under some circumstances, also plays the role of a bridge bringing most of the structuring consequences of such an infrastructure. However, it is a bridge, which has to operate under commercial conditions, which means access to markets and stable investment conditions in at least a 10 years perspective.

I.2 This report

The objectives of this report are

- to outline the driving forces behind the development of the waterborne transport sector in general and in the Baltic Sea Region in particular,
- to describe problems and opportunities connected with this development from a commercial and a spatial policy viewpoint ,
- to discuss different policy options to handle conflicts of interest between spatial planning and commercial interests and how to encourage urban networking and urban cohesion across the Baltic.

The report attempts to summarise a very complex material on a few pages, hoping to provide a comprehensive overview of the main trends, the major players of the system and how these might affect the future development. The report makes use of several recently published reports and on input from a workshop arranged by the two INTERREG II C projects Matros and USUN in Stockholm in January 2000.

The approach is to give an overview of trends in waterborne transport and to structure the analysis with regard to how the trends affect the development in different market segments and geographical areas and what relevance this might imply for spatial policy in the BSR-region. It is argued that there are three major transport problems to be addressed:

- Transport of raw material or low value, semifinished products as bulk or general cargo
- Transport of high value cargo most of it packed in different types of transport units (containers, swapbodies, semitrailers)
- Ferry transport for passengers, buses and individual cars, lorries and even rail wagons

I.3 Main conclusions

Basically, the conclusion is that in all cases, the development of waterborne transport has consequences for land use and infrastructure while ferry transport also has a structuring impact in the BSR. These flows have a tendency to be part of transport corridors linking urban centres in a network of road and rail on land with a kind of "floating highway" at sea meeting all kinds of needs for commercial and non-commercial activities.

This development influences the spatial structure of the sea-related transports in various geographical areas in and around the Baltic Sea. Ports can be seen as nodes in a network of transportation chains linking places and actors to each other. Some of these nodes provide transhipment services between various modes and directions while others represent points of origin and destination of cargo transports and travels. It is argued in the paper that the management and development of ports, fairways and hinterland connections should consider the character of the demands for competitive services in nodes and links of various types in accordance with their specific role in the network.

Actions to promote the competitiveness of transhipment ports are likely to be more successful if they originate from strategies based on co-operation along a transportation corridor. They should include initiatives to attract trade and travels to this route by providing services in an efficient transportation chain, without harming the environment or causing local disturbances.

Actions to promote sustainable sea transport in metropolitan regions must include strategies to channel the transport flows and to secure the long-term development possibilities of ports and terminals in the region and by providing an efficient multi modal transportation system. Since sea transport links often connect two metropolitan regions or more to each other there is an option for interregional co-operation to define common rules and standards of performance.

Actions to promote export orientated sea transport are also likely to benefit from a strategy based on co-operation along a transport corridor. However the future operations in this type of ports are very much in the hands of the manufacturers and the transportation operators. Common Baltic Sea rules and standards would create a more level playing field where also environmental interests are considered.

The metropolitan areas are in a position to use both "carrots" and "sticks" while urban and regional actors wanting to promote the development of transit ports must focus on the "carrots" all along the corridor. Decisions on the location of multi modal centres seem to be an issue of special interest. These centres are likely to become logistic nodes in the transport chains as well as centres for qualified services related to multi modal transport, providing jobs for a well-educated labour force. Decisions on location of multi modal transport corridors, since their hinterland connections are parts of the trunk networks of rails and roads.

Policy options are discussed from a National/European viewpoint and from a regional and urban development perspective in relation to private business. The main role of politics is seen as related to initiatives and use of public resources to promote smooth and efficient transport flows, lower barriers and frictions that hamper trade and contacts and to avoid environmental disturbances from transport and related activities through actions related to

- investments in infrastructure for communications
- improved institutional frameworks
- improved accessibility to qualified labour force serving the ports
- provision of information and arenas for contacts between actors

II Current conditions and trends

II.1 The logistic trends

II.1.1 Trends in freight transport

Trade and human capital are the most important prerequisites for economic growth. In order to develop they need means for communication and transport. Infrastructure is only one component needed to ensure favourable conditions for this exchange to take place. Organisation of the transport process is another. The way to do this is influenced by global trends in production and distribution affecting transport demand, and the reactions from the transport supply side.

However, these trends mainly relate to manufactured goods with a comparatively high value. Many ports make their living from handling of low value bulk cargo. These transport systems are less complex than the systems for finished and semi-finished products but they are still affected by the changing world trade conditions and the efforts to reduce costs through concentration and economies of scale.

Trends in transport demand

The demand for transport is presently affected by the following trends.

- Product specialisation increases the need for efficient logistics
- Internationalisation increases competition and pressure on product prices
- Production to order and centralising distribution to reduce costs require frequent deliveries and smaller consignments.
- Internet makes it easy to sell but introduces high demands on the organisation for delivering the products.
- Increasing integration in the value chain (e.g. wholesalers taking over retailers and even the producers of the products they are selling) leading to new distribution patterns and roles.
- Internationalisation and new alliances among producers is changing the geographical pattern of transport demand.
- Increasing awareness of a positive "environment profile"

These trends indicate a rapid increase in the demand for transport of manufactured goods leading to

- Increased competitive advantages for truck traffic.
- Strong growth in transport of containers, swap bodies and semi-trailers.
- A growing number of "long term" (3-5 years) agreements between shippers and transport providers.
- A pressure on all suppliers to support the environmental policies of the manufacturer/shipper

Trends in transport supply

The supply side reacts to the changing demands in the following way.

- Mergers in the transport and forwarding sector creating larger companies being able to service many markets in a cost-effective way.
- Creating large hubs for consolidating consignment flows in order to take advantage of economies of scale.
- Optimisation of load carrying units (containers overseas, swap bodies and semi-trailers for inter-European transport).
- Increasing the share of inter-modal transport to reduce costs.
- Introducing more environmentally friendly transport solutions as a competitive advantage

The concentration trends can also be observed among the shipping companies, which are merging or creating alliances to get control of larger transport volumes and to create well balanced transport patterns ("full load both ways"). Alliances are also forged with the shippers for the same reasons as can be seen in the paper and the car industry.

The bigger shipping companies tries to exploit their scale by using bigger ships to cut the costs per unit transported, both in overseas and in feeder services. The bigger ships require a concentration of the services to a reduced number of ports in order to provide an attractive frequency and the necessary freight volumes.

The concentration trends lead to a fierce competition among the ports. Hinterland connections and cost effective port services shall attract cargo, which attracts shipping services which attracts cargo and so on. Ports specialise to attract certain types of services where they can make best use of their competitive advantages, for example being close to a big consumer market, access to logistic services, short distance to the other shore (ferry links). The concentration of freight also leads to an increasing demand for land areas in the ports and to capacity requirements on the hinterland connections. Undisturbed access and no congestion outside or inside the port are major competitive advantages.

II.1.2 The freight transport chain

The players

The following parties are involved in commissioning, organising and carrying out the transport. Some organisations take on several roles as for example the carrier also providing forwarding services or the manufacturer choosing to organise his own transport operations instead of commissioning a forwarder.

The manufacturer	Produces the cargo to be shipped. Shipping conditions normally well defined and related to production and marketing process
The consignor	Sends the cargo to the consignee
The consignee	Receives the cargo
The forwarder	Organises the transport on behalf of the shipper but is increasingly involved in supplying logistics services, e.g. warehousing, product finishing.

The shipper	The owner of the cargo, who could be the manufacturer or the one he has sold the products to, or a wholesaler.
The carrier	(or the transport operator) Carries out the transport.
The haulier	road carrier
The shipping line	A sea carrier
The shipping	Acts on behalf of the shipping line as interface to the shipper or
agent	his forwarder
The terminal	Carries out the transhipments of the cargo, the warehousing and other
operator	services in the terminal (in the port the terminal operator covers the port utility function).

It is important to understand the roles of the partners in a chain and their relationships in order to be able to understand the attitudes to proposals for change. Even if such proposals seem to be feasible from an overall point of view, they are difficult to implement if they are assumed to have a negative effect on the business of one or several parties.

The complexity is augmented when companies carry out several roles. It is not unusual that the forwarder is operating a terminal, but mainly for road to road transhipments. There is also a tendency that the carriers, be it sea road or rail, are trying to do business directly with the shippers in order to compensate for the low prices for the mere transport. Also the big shippers are increasingly involved in organising their own transport systems.

II.2 Intermodal transport

Waterborne transport always works in co-operation with other modes. The term used for this is "intermodal", "multimodal" or "combined" transport. There is no generally accepted definition, but for this purpose we use "intermodal" and define it as the "the movement of goods in an unbroken load unit, from origin to destination, using more than one mode of transport". "Combined transport" is often used to characterise the case when only road and rail are involved. Multimodal is often used as a synonym to intermodal.

To offer a competitive intermodal transport solution means making the correct trade-offs between costs and performance and to set the right priorities for the service quality.

There are a number of obstacles related to intermodal transport, resulting in the fact that its full potential is not yet exploited. While economies of scale are in favour of intermodal transport, the cost for transferring the cargo from one mode of transport to another is an obstacle. The co-ordination in time and space needed for connecting the links in the chain is complicated and often results in halts for the cargo flow at the transfer points.

Intermodal transport solutions normally imply that there are many organisations involved. The integration of transport modes needs to take place between business processes, operations, services and regulatory requirements as well as between infrastructure and communication. The problem of getting these parties to co-operate is further complicated by the fact that participation in intermodal solutions often, to some extent, means "giving up" cargo to competing modes.

The many parties involved and the additional handling or processing along the transport chain introduce uncertainty and costs. Shippers having lean production systems, where semi-

finished goods are transported between factories are very sensitive to disturbances. A strong transport chain management is required.

II.3 Ports and their roles

II.3.1 What a port does

The port is basically an interface between modes, be it an airport or a seaport. However, the port can also be a hub for transfer of passengers or goods within a mode. In this case the interaction between the port and the surrounding region is minimal, while in the first case the region served by the port is the foundation of its existence.

It is necessary to understand the way that the port is organised in order to discuss its response to commercial as well as regulatory influences. The activities of a port can be divided into the following groups.

- Provision of infrastructure, navigational aids, fairways
- Cargo handling services (loading, discharging) including sometimes warehousing and logistics services
- Regulations control

The port must have a management, which is responsible for controlling property rights, for planning the development of port facilities, for providing public goods like navigational aids, breakwaters and dredged entrance channels, for controlling external factors like pollution and congestion and for promoting the general efficiency of the port in the interest of its users. The same management may provide all or almost all of the port services including the cargo handling. It may also engage other organisations under competitive conditions to carry out some of the tasks thereby promoting efficiency to the benefits of its users.

The owner of the port is normally not integrated in a wider network of carriers or shippers (although there are such tendencies). Hence, the port has little possibilities to formulate conditions for the cargo to be handled. In contrast, a terminal for combined transport, handling containers swab bodies or semi-trailers between road and rail, or a distribution terminal as interface between long distance road transport city distribution are well integrated in a transport system operated by the same owner.

The attraction of a port is strongly related to the services produced by the port. There is however an equally strong interdependency with services/terminals outside the port which act as interfaces to the local market, or between the port and its hinterland (stuffing and stripping of containers, consolidation of cargo, distribution). Communication between the port and such terminals are in most cases carried out by road and often create heavy traffic flows on the access roads to the port.

II.3.2 Two types of ports

There are a number of alternative forms of port ownership, organisation and administration. Basically two types of ports can be distinguished even if any investigation will reveal that there are many ports which are organised as a mix of the two.

• The landlord port

The port owner provides the infrastructure (dredging, quays and terminal paving) whilst part or all of the superstructure is owned and financed by private companies which are also employing the stevedoring labour.

• The service port

The port owner is also providing all the commercial services normally prohibiting competition between the services within the port.

The port can be publicly or a privately owned. A Nordic speciality is that a public body (typically a municipality) is the owner of the private company owning the port. Irrespective of the ownership there are three function to be fulfilled: ¹

• The landowner function

Managing and developing port estate

Conceiving and implementing port policies and developing strategies

Supervising major civil engineering works co-ordinating port marketing and promotional activities

Providing and maintaining channels, fairways, breakwaters, locks turning basins piers etc.

Providing or arranging road and rail access to the port facilities

• The port utility function

Transferring goods and passengers between land and sea

• The port regulatory function

Maintaining the conservancy (=the control) function

Providing vessel traffic management

Enforcing applicable laws and regulations

Licensing port works

Safeguarding port users' interest against the risk of monopoly formation and the controlling of natural monopolies

It is obvious that the port regulatory function is a public responsibility, while a public or private body might carry out the other two. The port utility function is the most obvious candidate for the involvement of a private company or even companies in order to create a certain degree of competition between different terminals within the port.

If one tries to relate port organisation to spatial planning and infrastructure development in the region around the port, it is evident that it is the landowner function, which is the most relevant interface between the port and its surroundings. In fact this function, apart from being responsible to integrate the port with the land infrastructure, also has the task to translate the needs of the port utility function into demands for infrastructure both inside and outside the port.

The landowner function sees the port utility function as its client, which in its turn has the shipping lines as clients. The shipping lines have the shippers – the owners of the cargo as clients.

¹ as proposed by A Baird in Port Privatisation: Alternative Options. Napier University 1996

II.3.3 Ports provide jobs

The ports and related services are to be seen as key-players in the local economy, which create and stabilise a lot of jobs. Cooling down the ports would mean a lot of unemployment in a region.

Traditionally most works offered in the ports were not very sophisticated. Today there is often a wide range of multi modal transport services provided in and around the ports. Several of these services need a skilled workforce. Many of the jobs require an education on an academic level. The use of telecommunications and computerised support increase rapidly.

Especially the ports handling high value cargo contribute to the structural change of the regional economy, as they have to meet sophisticated demands from multinational industries and manufacturers considering the transportation services to be an integrated part of their total business.

The big Swedish company IKEA, producing and selling furniture world wide, provides an interesting example. In order to meet the demands from the customers in the shops, Ikea requires that partners, carriers and producers meet certain performance criteria related to costs, quality, service and environmental factors. Since Ikea is so big, there is no choice for partners wanting to stay in business, but to deliver. Ikea is now expanding both it's production and it's retail and especially in low cost countries. During the next years there is a huge challenge for Ikea needing to develop their transportation chains. They expect a rapid growth, use of many new routes but also a concentration to a smaller amount of carriers than today. Their ambition is also to move more of their transports from the roads to rail and sea. They have economic possibilities to buy transport capacity of their own if necessary. On the other hand they might choose to outsource their transports totally if this appears to serve their purposes better. Co-operation based on long term contracts with terminals and transport providers is an important part of their strategy.

II.3.4 Politics or business

When, as often in the Nordic countries, all the functions in the port are carried out by the same organisation, a limited company owned by the municipality, the roles may become confused both in the organisation itself and for outsiders. On the other hand it can provide an efficient combination, although "the stevedoring monopoly" is a controversial issue in port politics. It is argued that the stevedoring (the port utility function) should be carried out under competitive conditions, either by having several competing terminals in the port or by having a tendering procedure with regular intervals. The size of the operation of course affects which road to take. That there are economies of scale is shown by the fact that even neighbouring ports start to co-operate (e.g. Karlshamn – Åhus - Sölvesborg or Copenhagen - Malmö or Gothenburg – Uddevalla - Varberg).

In several of the cities around the Baltic conflicts between the urban development programs and the business objectives of the port can be registered. Especially in ports with a Board selected on political merits and reflecting the parliamentary situation, as in many municipally owned ports, the situation can become confused. The Board members may not know whether they should promote the interest of the port or the political policy of their party in the local parliament.

II.4 Political trends

II.4.1 Ports in European transport policy

In its Green Paper on Ports and Maritime Infrastructure ((KOM 97) 678) the European Commission promotes the introduction of a European policy towards more efficient ports and improved maritime infrastructure through their integration in a multi-modal trans-european network including the main network of the neighbouring regions (TINA. Future concepts for financing of the Trans European Networks (TEN) should also include port investment.

The Commission intends to introduce measures, which supports the development of short sea shipping and the ports as multimodal transfer points. One of the issues mentioned is how to create a fair transport pricing system covering all modes.

The creation of equal opportunities on the market and a sustainable transport system require acceptance and control of a common set of rules and regulations affecting all vessels calling in European ports.

The aim to create a level playing field also means that the users should carry the costs, which are incurred by the services they receive. Transparent and non- discriminatory framework for fees should guarantee that public subsidies are not allowed to distort competition. This is a logical, but in practice a highly controversial statement, especially in regions where ports are closely related to municipalities or regional public bodies.

The Commission further intends to propose a concept for calculating the fees for using maritime infrastructure outside the ports, e.g. navigation aids and eventually also fairways. The principles should be to recover the costs for development and construction and to create a system for sharing the running costs with the users.

II.4.2 National policy focusing on the institutional framework

Swedish politics for the Baltic could be mentioned as an example of a National policy with the objective to support the development of the Baltic region, which has the prerequisites to become one of the most dynamic and strong growth regions of Europe. The government underlines, that increased co-operation between trade and industry and politics is a particularly interesting way to promote the development, given the fact that primarily "soft" measures (institutional competence and capacity, transparency and reliability) are considered to be key issues. The Swedish "Action Program for the Baltic" focuses on quality, functionality and efficiency under the assumption that these are more important than the lack of physical resources.

The activities can be summarised as follows:

- Harmonisation of the policy framework based on the principles laid down by the Commission and presented in "Fair payment for infrastructure use" and "Ports and maritime infrastructure".
- Facilitation and transparency of customs procedures and regulations for border crossings.
- Supporting intermodal traffic by changes in charging policy for transit cargo
- Better use of the inland waterways in Poland and Russia
- Technical co-operation for navigational aids, safety and rescue services, environmental protection.

III Spatial structures

III.1 Transport patterns

What patterns could be envisaged in the Baltic for the next 10-20 years? Normally it is fairly safe to forecast that transport will continue to grow in the main corridors. The question is only how much and how will the modal split be affected. In the Baltic case the issue is complicated by the fact that flows are developing in new corridors which have been closed down since 1939. In addition a fixed link is opened in Øresund which together with the great Belt Link provides an unbroken land connection between Scandinavia and the Continent. The only recent trade and transport forecast which addresses at least the first issue is the Eastroute study, which is presented briefly below.

III.1.1 The Eastroute case

The Eastroute project analyses the main transport routes between Scandinavia (Norway, Sweden, Finland and Denmark) and Eastern/Central Europe. It should be noted that no volumes from and to Germany are included and that bulk flows are excluded.

In addition to the TEN and TINA networks, existing and possible new connections between the ports in the Baltic Sea Region have been considered. Based on the analysis of trade figures (from before the latest Russian recession) a forecast has been made and the distribution of the future freight flows have been simulated.

The study deliberately refrained from assessing potentials for single ports along the Swedish and the Finnish coast. This was not an objective and would have required a much more detailed analysis than was possible in the projects.

Even if the results should be interpreted with care, the busiest links could be seen as major corridors for the future freight traffic to and from the fast growing East European markets

Given these restrictions, basically three major corridors can be distinguished for the east-west trade flows across the Baltic:

- Stockholm/Mälar region Turku/Helsinki/Tallinn-St Petersburg
- Stockholm/Mälar region Latvia
- Karlskrona/Karlshamn Latvia/Lithuania/East Poland



III.1.2 Other transport patterns

The focus of Eastroute is the trade between Scandinavia and the East European countries. Beside this relation, also the trade between the Baltic States, Finland, Sweden and the West European countries or overseas destinations has to be considered as traffic in the Baltic region. Not only direct services between the origin and destination countries and ports will affect the transport pattern. On an international, more global point of view a couple of interesting corridors could be distinguished, when a change of the transport mode is taken into account.

III.1.3 Conclusions on major corridors for high value cargo and passengers

It could be assumed, that the main links for goods transport and passenger traffic across the Baltic sea are using the same corridors. Therefore the ports in these corridors have to serve heterogeneous needs. Passengers and cargo with local origin and destination would prefer port facilities near by the city, but these facilities are often interesting for the development of high value residential zones and commercial areas.

Ferry and RoRo traffic are interested in a sufficient hinterland infrastructure such as motorways or rail connections. They do not have to be placed in the city centres.

Because none of the ports could serve all needs at one location, a diversification of the services is needed and a spreading of port areas is the result. The alternative to source out services like bulk or container handling from an area near the city to a more remote place is to co-operate with other ports and to specialise each on single services. This will also ensure volumes, which make efficient handling and competitive prices possible.

III.2 Ports characteristics

III.2.1 The biggest ports

The importance of a port can be measured in many ways of which "cargo handled" is but one. However, also "cargo" has to be specified as different cargo is related to different markets and requires different handling equipment. The following tables illustrate that there are many ports in the Baltic Sea Region, which have a high ranking in at least one aspect.

Port	TEU 98	Port	Lorries, intermodal units 98	Port	Passengers 1997
Gothenburg	520.000	Lübeck	815.000	Elsinore	13.657.000
Helsinki	345.879	Helsingborg	458.272	Helsingborg	13.412.000
Aarhus	330.000	Gothenborg	340.340	Helsinki	8.146.000
Gdynia	213.366	Elsinore	335.798	Stockholm	7.429.000
Copenhagen	171.000	Trelleborg	303.678	Puttgarden	5.850.000
Helsingborg	170.000	Frederikshavn	194.205	Malmö	5.154.000
Kotka	169.000	Stockholm	193.226	Tallinn	4.840.000
St Petersburg	160.000	Malmö	190.000	Gothenburg	4.715.000
Riga	122.260	Kalundborg	160.000	Fredrikshavn	4.305.000
Hamina	114.366	Kiel	125.649	Turku	4.000.000

TEU = Twenty feet Equivalent Unit, used as a standard measure for unitised goods.

Port	General cargo 1997
Lübeck	16.767.000
Helsingborg	3.319.000
St Petersburg	3.174.000
Tallinn	2.939.000
Gdynia	2.756.000
Trelleborg	2.713.000
Rostock	2.644.000
Kiel	2.643.000
Turku	2.597.000
Ventspils	2.582.000

Port	Tank and bulk Tons 1997
Ventspils	33.140.000
Szczecin-Swinoujscie	19.145.000
Brofjorden	18.558.000
Gothenburg	18.360.000
Gdansk	15.663.000
Narvik	13.714.000
Fredricia	10.913.000
Rostock	10.717.000
Tönsberg	9.122.000
Kalundborg	8.597.000

III.2.2 Port typology

The following table presents one way (of many) to structure different types of ports. Many ports are a mix of the types described, but any discussion about a port must be related to the type of cargo or the passengers served. The primary role of the port is the serve as an interface between land and sea transport modes and the ability to fulfil this task is the key issue which has to be considered when discussing the ports impact on spatial planning objectives.

	Services Port function		Location characteristics	
Ports for high value unitised cargo	Import/export of high value goods (finished and semi- finished industrial products).	The port is a hub in a complex network of terminals and related land and waterborne services consolidating and distributing the goods.	Dependency on good access by road and rail and on nearby terminals and markets which normally means locations in or close to densely populated areas and conflicts with urban development and environmental requirements.	
Passenger ports	Ferry or cruise passengers.	The port must provide close links to urban centres and local passenger markets.	Demand for city centre location and good access by car and public transport. Conflicts with urban development and environmental requirements.	
Industrial port and bulk ports	Export or import of low/medium value goods directly from /to ship.	The port is a part of the plant complex or closely related to such a site through a dedicated road, rail or pipeline.	Little dependency on services and markets apart from the fact the industrial site as such has to be served by road and rail. Mainly environmental problems.	
Sea tranship- ment ports ²	Transfer of containers between overseas and feeder services.	The port must be strategically located in relation to the over-sea shipping routes.	Little relation to land transport network. Mainly environmental problems.	

III.2.3 Port location in relation to TEN and TINA

The TINA network aims at identification of the network components for a future Trans-European Transport Network in the candidate countries for accession. The Working Group on Transport Infrastructure Needs Assessment of the associated Central and Eastern European Countries States (TINA) has enlarged the plans for the Western European Trans-European Networks (TEN) into Eastern Europe. The aim has been to identify corridors that are economically essential and fundable infrastructure needs until the year 2015 and a pan-European multimodal transport network.ⁱ

² Several of the other port types could also have a transhipment function as will be discussed later

Like in the TEN for both road and rail important infrastructure links have been identified, while, on the other hand, no comparable framework exists for the ports. Also ferry lines are neither included into the TEN nor the TINA. Except Russia all the Baltic Sea nations are included into the TINA project. For the other East European States the land corridors developed on the transport ministers' conference in Helsinki are relevant. However, no corridors *across* the Baltic Sea are identified that link the various ports and the land corridors. The map on next page, showing some of the main population centres around the Baltic Sea, provides a useful starting point for a discussion of the corridor issue.



Ports and main networks for road and rail transport according to TEN, TINA and Helsinki networks

Since the TINA networks have been identified on National level by each country the map above presents the current National plans for the development of road and rail network in the EU accession countries.

The ports on the map are collected from the report Baltic Outlook. In the Central Baltic Sea Region some additional ports have been added in St Petersburg/Leningrad Region in accordance with presentations made in the Baltic Palette Project.

If the map above is compared with the results of the trade flow simulation presented in the Eastroute case earlier, it is obvious that a number of interesting port zones can be identified. These are on the one hand linked to the TEN and TINA networks and on the other to links across the Baltic.



Ports in relation to some of the main population centres in the Baltic Sea Region. The size of the circles reflects the population in each city.

III.3 A model for describing the role of a port in the transportation network

Networks for transport, communications and other forms of interaction are often described in terms of nodes and links, so also networks for trade flows which are the basis for transport networks. In order to be able to distinguish different functions of these nodes and links we apply a model,³ which characterises the nodes as "sources", "sinks" and "saddles", where flows are:

- generated in "sources",
- transformed in "saddles" and
- terminate in "sinks".

The notion of hubs and spokes is used to describe a specific hierarchy of nodes and links. If this model is applied on ports as nodes in a freight or a passenger transport network we find that different options for spatial policy apply.

According to this model, a port node which is characterised as a "freight source" is an export port with a location determined by a nearby industry (e.g. paper, chemicals etc): Such a port normally handles low value cargo and has little need for sophisticated logistic services. A port, which could be labelled as a "passenger source", is related to a nearby urban area generating both private and business trips.

A port functioning as a "freight sink" serves a surrounding local market, be it import for a local industry or for a regional consumer market. In the latter case there is normally a need for qualified services related to trade and logistics and a location which is depending on efficient regional distribution, and closeness to business and services. A port functioning as a "passenger sink" attracts private and business trips to nearby urban services or to tourist and recreational goals. The "sink port" is likely to have a tendency to generate a growing need for space close to the port to allow passenger and cargo handling as well as accommodation of additional services.

Ports characterised as "saddles" have incoming flows of freight and passengers, which do not have the port or its surroundings as goal. The ports mainly function as hubs or transhipment nodes. This requires a certain set of infrastructure and services depending on the cargo handled. Ports in this category could be everything from a simple ferry node (e.g. Puttgarden) to a sophisticated logistics centre as the HHLA terminal in Hamburg. The location is determined in the context of a network consisting of the hinterland rail and road connections but is also depending on the preferences of the serving shipping lines and the hinterland connections of the corresponding port.

³ Gateway regions of the world, Royal Institute of Technology in Stockholm, TRITA-IP FR 99-60

	Low value cargo	High value cargo	Ferry cargo and passengers
Source port = export port	Spatial policy is linked to the characteristics of the related plant as land area needs, emissions, transport more on land than at sea.	Mostly relevant in metropolitan areas Extension/moving of port facilities maybe needed Investments in transportation service centres	Need for good passenger and vehicle access -mainly road. Conflicts with competing land use interests and risk for environmental disturbances and congestion in central urban areas
Sink port = import port	Provision of access to local industries. In metropolitan areas location/character of depots and networks for distribution	High demands on a wide range of services as third part logistics and distribution. Growing land area needs close to the consumer markets and co-operating land terminals. Impacts on regional/local transport road system.	Same as above
Saddle port = transhipment port	Normally, big facilities for temporary storage of the cargo (grain, oil, chemicals, etc.) have a visual impact, might cause disturbances due to emissions: Demands for good land transport access unless pipelines or sea feeder or barges are used.	As above but a much higher dependency on good access by land (road, rail) and sea	Less risk for disturbances of surrounding areas, but high dependency on good access by land (road, rail) and sea

It is now possible to discuss different strategies for spatial policies using these definitions

III.3.1 Nodes of different character

Even if most ports, are a mix of these types, it will be shown that it could be fruitful to try to characterise the port according to the model, because of the differences in spatial policy requirements and their position in the urban network.

• Sources

The export port generates transport demand within a fairly limited area around the port. Normally a specific industry is dominating the region and normally such a port is mostly generating low value cargo. Only more populated and industrially diversified regions generate a transport demand for high value cargo, which is big enough to merit containerised and/or ferry services.

• Sinks

Ports in metropolitan areas are traditionally important for the import of goods to the local/regional consumption market. The character of cargo changes with the economic development. The share of high value cargo and ferries increases as the economy improves. Sea related transport links connecting the metropolitan areas are likely to sustain. However big and well-established ports also attract increasing transit transport. Since growing transport

flows cause disturbances in urban areas and there often are competing land use interests in centrally located port areas, the pressure to move the port is likely to rise.

Local and regional actors along a transport corridor connecting metropolitan areas may benefit from a more pronounced co-operation. The market is there to stay but the geographic distribution of the transport flows and the modal split need to be managed. Joint actions and co-operation between urban and regional partners may help to restrict and to guide the transportation flows without harming vital economic interests.

• Saddles

A transit port faces a different situation since competing transport route alternatives may exist. Any change in local/regional condition may favour a competing corridor. Local/regional actors along a corridor must consider the quality offered along the whole route. Regional efforts need to be co-ordinated to allow overall reliable and competitive services in the corridor.

III.4 Sea related transport corridors

III.4.1 Øresund region

In Denmark the fixed link across the Great Belt connecting Zealand and Fyn was opened in June 1998 after 12 years of construction. Since then the car traffic between these two islands has increased significantly. During the first year, the daily amount of vehicles previously carried by ferries increased from 8 000 to 18 000.

The traffic prognosis made by the Øresund Consortium also forecasts that the Øresund Fixed Link will attract 10-20% of the existing volume of private cars crossing Kattegat and the Baltic Sea.

As for the ferry traffic between Helsingborg and Elsinore, it is estimated that the local car traffic will not be affected, but part of the international traffic will transfer to the link connecting Malmö and Copenhagen.

There are also initiatives made to build a railway tunnel between Helsingborg and Elsinore.

• Fyn/Zealand-Scania-Blekinge-Latvia/Lithuania

This corridor is studied in the SEBTrans project.

The new fixed links in Great Belt and Øresund open new routes for these east-west connections.

• Rödby Puttgarten

There are surveys and research being carried out on possibilities for constructing a fixed link between Denmark and Germany, across the Fehmarn Belt. This bridge would replace the 45 minute ferry link now existing between Puttgarden and Rødby.

A new fixed link crossing the Fehmarn Baelt would provide improved accessibly in relations between Zealand (Copenhagen) and northern Germany (Hamburg). This is a main issue in the STRING project.

III.4.2 Southern Baltic Sea Region

• Direct waterborne service ferries Finland – Germany

Well-established important services for Finnish export and import, but also for transit traffic to Russia. Hamburg Port (HHLA) is building a special terminal in Lübeck for feeder goods to/from the Baltic. The new terminal doubles the productivity of the feeder vessels, as they do not have to pass through the Kiel Canal or around Skagen.

- Sea borne services Lithuania/Latvia/Estonia/Russia/Belarus Germany
- Oslo region Gothenburg Scania/Denmark -

Rostock/Sassnitz - Southern Germany - Austria - Italy or

Travemünde/Rostock - Western Europe or

Swinoujscie - Central and South-eastern Europe

This is a corridor with a rapidly growing demand with extensions to South Eastern Europe that has a strong political backing. Huge investments have been made to develop infrastructure in recent years. Rail, road and waterborne services are co-operating as well as competing along the whole corridor.

• Oslo region - Gothenburg --southeast Sweden-Gdynia-Warsaw-southeast Europe

This corridor has a rather stable growth due to good and stable ferry services and the generally favourable Polish development. The corridor has the prerequisites to continue to develop.

- Mid-Sweden Scania -
- Rostock/Sassnitz Southern Germany Austria Italy or
- Travemünde/Rostock Western Europe or
- Swinoujscie Central and South-eastern Europe

Competition between ferry and existing/future fixed links for the connections with Germany. This corridor is studied in the Translogis project.

III.4.3 Central Baltic Sea Region

• St Petersburg region – South Finland – the Åland Islands – the region of Mälaren/Bergslagen – Gothenburg

This is a corridor, which is relatively densely populated. Infrastructure and transport services are of good quality except for the Russian part. Finnish ports in combination with land transport substitute the lack of port capacity in Russia. Gothenburg provides the only Nordic port with direct calls of overseas services. It has frequent feeder connections to main European ports. The corridor is studied in the E 18 project and in the Baltic Palette Project.



Corridors defined in the Baltic Palette Project

• Belarus/Latvia - the region of Mälaren/Bergslagen

An old route to be rediscovered, with a potential, which still has to be proven.

- Russian and Finnish rivers and canals Central/West European rivers and canals
- Via Baltica (Finland–Estonia-Latvia-Lithuania-Kaliningrad-Poland)

Well established and infrastructure developing. However, demand generally stronger in eastwest direction than north south. The corridor is studied in the project Via Baltica Development Zone.

III.4.4 Bothnian Bay

• North Sweden(Umeå/Sundsvall) – Vasa

Sparsely populated regions on both sides of the Bothnian Gulf and little trade exchange. This line was to be closed down completely as a result of the abolishment of tax-free sales, but the governments of Sweden and Finland decided to subsidise traffic on this route because of the importance of the link across the Gulf of Bothnia.

III.5 Interreg II C corridor development projects

Several Interreg II C projects include studies of trans-national transportation links including maritime links. Some of them are listed below:

- STRING Co-operation along a corridor connecting southern Sweden (Malmö/Lund) to Copenhagen and south via Hamburg and further towards Hanover.
- **Baltic Bridge** The objective is to prepare investment incentive measures and to create functional and strategic networks connecting the regions located between Berlin, Szczecin and Scania.
- **Translogis** Links connecting South Sweden, northern Germany, northeast Poland and Berlin/Brandenburg. These transportation networks include maritime links connecting the

port of Trelleborg and Ystad in Sweden to the ports of Rostock, Szczecin and Sassnitz on the southern shore of the Baltic Sea.

- SEBTrans The project deals with transport corridors, modes and technologies and regional development in the South East Baltic and especially transportation networks connecting, Liepaja in Latvia, Klaipeda in Lithuania and Gdynia in Poland to southeast Sweden and Denmark.
- Via Baltica Development Zone The project includes Uusimaa and Tampere Regions in Finland, Riga and several regions and municipalities in Latvia, Estonia and Lithuania, Polish Communes within Euroregion Niemen and Berlin/Brandenburg in Germany
- E 18 The E 18 transport corridor connects the capitals of Norway, Sweden and Finland to each other and to Russia (St. Petersburg).
- **Bothnian Arc** The objective of the project is to develop combinations and co-ordinations between different transport systems and between countries, in order to increase and intensify the transportation through the regions in a safe and sustainable way. The project concerns the whole communication system, the marine, road, air and telecommunication system in the northern parts of Sweden and Finland and the Murmansk and Karelian Regions of Russia.
- **Kaspnet** The project is focused on co-operation in a wide area in Northern Europe, called Karelia-Atlantic Spatial Development Network
- **The Baltic Palette** The project includes transport corridors and maritime networks connecting the metropolitan regions in Stockholm Mälar region, Åland Islands, Southern Finland, St Petersburg/Leningrad region, Tallinn and Riga.

Several development corridors that are studied within the framework of Interreg II C represent links between densely populated areas, metropolitan regions or gateways to large hinterlands. The maritime links are integrated parts of the corridors.



Map showing an overview of links studied in various Interreg II C projects

The overview presented above illustrates that several corridors studied in Interreg II C projects connect cities and regions with a large population.

These type of corridors may be expected to attract a growing amount of high value cargo and travels. They will provide improved possibilities to develop business networks between partners located along the corridors. Integrated information technology systems are likely to be developed to provide information and to support co-ordinated functions in logistic chains.

The development of this type of development corridors is likely to have a strong integrating effect between regions and cities in various parts of the Baltic Sea Region.

IV Three types of waterborne transports

IV.1 Links for different types of transport

Waterborne transport (as all transport) is a complex mix of cargo types and transport solutions, but for this report with its spatial policy perspective it is argued that it makes sense to study the impact of the following transport tasks:

- Transport of raw material or low value, semi-finished products as bulk or general cargo
- Transport of high value cargo packed in different types of transport units (containers, swap-bodies, semi-trailers) including related services
- Ferry transport of passengers including buses and individual cars and often rail wagons and lorries

Basically, in all three cases, an increase in trade and transport has consequences on land use and infrastructure. However, the last transport task also has a structuring impact in the Baltic Sea region. Ferry transport has a tendency to constitute transport corridors linking urban centres in a network of road and rail on land through a kind of "floating highway" at sea meeting business communication and transport needs as well as leisure and other types of private transport needs.

Such corridors which offer high frequency, rapid and cost-efficient services has the best chance to strengthen the links between urban centres and attract more developers of services which will again promote a better waterborne transport offer and so on.

In several ports in the BSR all three types of transport tasks are handled, albeit in different terminals. This is the traditional way for the ports to develop. However, future regional spatial port policy has to distinguish between the three types described if economic and spatially acceptable results are to be obtained.

IV.2 Low value cargo- important volumes but little impact on urban networks

IV.2.1 Large volumes, low price and environmental risk

Historically the ports mainly handled general cargo and raw materials. This type of cargo is still an important part of the sea transports in the Baltic Sea. It consists of different types of transports

- transport directly related to a certain industry or plant complex (paper/pulp, steel works, mills, cement works, refineries, etc)
- raw material like oil, chemicals, timber etc
- general cargo

The value per ton is generally low, which means that the transport cost per ton must be low. Economies of scale reduces the costs but also normally the transport frequency which is of reduced importance (anyway) due to the low value. This is the "traditional" shipping business with many players acting all over the world. Many of the port calls in the Baltic Sea made by vessels older than 20 years, are likely to be found within this sector. There are often environmental problems related to the shipping of low value cargo including risks for discharges of oil, chemicals and other pollutants into the Baltic Sea, partly because of the product transported and partly because of the vessels used. Other problems may be related to passages of large vessels carrying hazardous goods through narrow passages and fragile coastal areas like the archipelagos as well as heavy transport on the links connecting the port to the trunk networks for road and rail transport.

IV.2.2 Bulk transport patterns

Many ports and routes dedicated to the export of low-value cargo are traditionally to be found around the Baltic. Cargo originating from Russia, Ukraine and Belarus is today often transited through ports in several neighbouring countries.

Large projects are however currently being prepared in order to increase capacity and modernise several ports including ports and related infrastructure in Russia. If these efforts are successful major changes may occur affecting the flows through ports in Estonia, Latvia, Finland and Lithuania. A rise in Russian economy and an increase of transited cargo volume would however also result in increased total demand for sea transports in the Bay of Finland and the southern part of the Baltic Sea.

The current investment in a new "Bothnian link" on the railway network in northern Sweden is an example of a major improvement in the rail network that may have a big impact also on the market for sea transports. The investment will result in improved conditions for northsouth bound cargo transports on rail and perhaps also affect icebreaker services at sea, thus possibly reducing the competitiveness of sea transports on routes parallel to the new rail link.

Policy issues

The cost pressure for this type of transport is high, competition intense and the cargo carried is often polluting. Therefore, it is especially important to harmonise the rules governing the transport and the way that they are applied.

- The risk for environmental disturbances in fragile archipelagos and shallow water basins, such as the archipelago outside Stockholm, the Åland Islands, Turku or in the Bay of Finland, must be taken into consideration. Discharges into the sea damage the water quality. This is not only an environmental problem, but also a threat to tourism in the coastal zones.
- As pointed out by the Swedish Maritime administration, co-operation in the Baltic Sea Region is needed in order to improve the environmental standards in ports and fairways, to reduce risks for polluting discharges getting into the water and to harmonise the regulatory framework for this type of transport. Differences contradict the European requirements for creating fair conditions for competition.
- National bodies need to co-operate to harmonise legislative regulations and rules in order to create a level playing field and to facilitate sustainable sea transports between different ports in the Baltic Sea on equal conditions.
- Planning authorities on all levels have a responsibility to deal with conflicting interests related to the environmental impacts of transports on sea and land.
- As the general market demand for sustainable transport and environmental friendly products grow, commercial actors manufacturers as well as the transport business are

likely to improve their environmental performance by developed systems for quality control and environmental auditing (the ISO 14 001 standards or similar). This may increase the demand for transport modes with comparably low impact on the environment in favour of transports by sea and rail.

IV.3 High value cargo

IV.3.1 Just in time delivery and qualified services based on long term contracts

Some sea transport routes and ports have developed into important links and nodes in sophisticated transport chains for high value cargo, most often transported as unitised goods in containers, swap bodies or even, as in the case of Volvo cars transported between Gothenburg and Gent, as brand new products. These flows are to be considered as parts of industrial production chains and transport/distribution networks. They require precise timing and are often scheduled to arrive in due time for each day's production or scheduled to be delivered at a specific client at a specific time. High value means high costs for storing the cargo, which implies that transport frequency is important. High frequency means that it will be difficult to fill a train or a vessels within the time span available, which results in a competitive advantage for the lorry or a need to concentrate the cargo flows to maintain a good service level with the ship.

The logistics requirements and the need to concentrate enough cargo to maintain an attractive frequency produce a complicated organisational and commercial network in and around the port. This makes it difficult to assess the impact of changes in for example access, higher prices etc. on the port itself and in relation to rival ports.

Long term contracts ensure that sufficient investments are made in infrastructure, transport capacity and information systems. What is actually happening is that the logistics systems are regarded as an integral part of the companies' business process rather than as an independently supplied facility. Formal and informal relationships are developed.

The ports are not only competing with prize, but also with rapid handling, long opening hours and other services. The cargo often needs special treatment in the ports as it may consist of frozen products, fresh vegetables or cars that are prepared for delivery. Containers are to be stripped and the cargo reloaded for distribution to various destinations.

Handling of this type of cargo needs space. Containers are stacked a maximum 3 units high and rapid delivery for land and sea transport means that they have to be easily accessible. That is why old port basins are filled out. More container and transport movements under longer periods of the day (and partly even night) might also result in disturbances for neighbouring areas even if the port area itself is not enlarged. However this is often the case, because transport of containerised cargo is growing at least twice the rate of the GDP.

IV.3.2 Transport flows integrating densely populated areas and big markets

The high value cargo flows are mainly related to gateways to large markets for consumption characterised by a combination of a large population and a vivid economy. These ports are often located in the biggest metropolitan regions representing both a substantial local potential and a gateway to large markets in their hinterland. Their trade tends to be "consumption lead" implicating that the port calls seem to be more determined by the import than the exports. In

the EU-member countries and Norway many, though not all, of the old port locations from the Hansa period has today grown into sophisticated centres of trade and logistics.

In the transition economies this is not yet the case. In the long run a similar development is likely to occur in the big cities with a strategic location in the transport networks and favourable accessibility to large and growing markets. Many of them have a background as trading centres like Tallinn, Riga, Gdansk, and Rostock. Also St Petersburg has a vast future potential as a trading centre supported by sea transports and related services, though the economic and political development preconditions are different in Russia than in the EU accession countries. The development into a market economy is likely to take longer time in Russia.

IV.3.3 Development corridors

Big, long term and investment demanding transportation flows through ports related to industrial production chains and large market potentials are likely to sustain and grow as the market economy develops in the Baltic Sea region. They will contribute to the integration between the Baltic Sea regions. They will also contribute to create trans-national development corridors attracting businesses that are able to benefit from the good accessibility and the qualified transportation services. Many others are likely to use already established corridors where high quality services are available.

These transportation links and nodes should be seen as part of the TEN/TINA network.

Policy issues

- Corridor location is influenced by political decisions on investments in infrastructure for the port itself, fairways and navigational aids and hinterland connections. Investment decisions are often made on both national and regional level, which might lead to conflicts.
- The responsible agencies and governments on all levels must also consider the total costs of an operation. Over investment in ports could lead to high strains on the municipal budget. Costly services for navigation and ice breaking could lower the competitive position for some ports. Reducing the number of ports open during winter could reduce costs and improve the chances for waterborne transport for some, but lead to loss of traffic for others.
- The environmental aspects mentioned for low value cargo are also relevant here, with the difference that the cargo is not so polluting and the shipping lines are operating more regularly on the same link, which facilitates control.

IV.4 Ferry traffic

IV.4.1 Floating bridges operating on a commercial basis

Ferries normally carry both passengers and cargo (rail wagons, lorries, unaccompanied semitrailers and swap-bodies on chassis) serving the most frequently used maritime links.

The ferries provide the fastest waterborne services and in consequence only high value cargo can "afford" to use them. This is especially true for the high-speed ferries.

Traditionally international sea-borne passenger traffic in the Baltic Sea Area is concentrated in four main areas:

- Denmark and Sweden,
- Denmark and Germany,
- Sweden, Åland Islands and Finland
- and increasingly between Finland and Estonia.

Three basic groups of passengers use the Baltic Sea for travelling. Business travellers, cruise and shopping tourists, and tourists. The ferry can provide a combination of services to passengers, cars and lorries and sometimes also rail wagons. Thereby it actually functions as a prolongation of the land infrastructure, normally as a link between two major urban areas or as a part of such a corridor.

The demand for transport gives the basis for ship type and size and sailing frequency.

It takes time to develop new ferry connections. It is a long process before a new connection gets known and even longer (1-2 years) before the commercial traffic operators will start considering readjusting their traffic patterns.

In order to be attractive the ferry must offer a reliable and attractive sailing plan. Frequency, arrival and departure times are important to attract customers. Normally the need of the passengers governs the timetable with some compromises for the commercial transport. Lorries want to leave late and arrive early. Railway services normally means quite substantial demands on turn around time in the port (it takes a long time to get the wagons off and on the ferry), but also restrictions on the timetable. The ferry might also have to wait for late trains, which affect other customers negatively.

Ideally the timetable should be designed so the ferry is either in port being discharged or loaded or under way between the ports. However, at the same time the departures and arrivals must be adapted to the customers needs. The ferry service must also offer a reliable regularity, which means that the timetable has to give room to cope with bad weather.

The basic restriction is the demand and the distance. The former can of course be affected positively by an attractive service and so a better offer might create more demand. It has to be remembered though that the operation has to meet commercial objectives and that few operators have the possibility to subsidise a service in expectation of generating future traffic.

A ferry is more expensive to operate than a conventional roll-on-roll-off (RoRo) vessel, which is more expensive than a lift-on-lift-off (LoLo). When the distance increases the competition with the airlines or even longer land routes increase. With the passengers gone another type of ship is required and possibly also a restriction to handle only containerised cargo.

IV.4.2 Ferry transport as part of TEN and TINA networks.

Investments in infrastructure – rapid train transport and new bridges/tunnels in the Øresund region cause a new competition situation between transport modes. In many cases, as in the corridors connecting Swedish and Finnish ports along the 'E 18 axis', it is beneficial to combine cargo and passengers. There is also a growing market for ferry lines providing new connections. Especially the ferry lines between Helsinki and Tallinn have been very successful. The attempts to establish ferry lines between Stockholm, Riga and St Petersburg however have not yet been able to sustain.

These shipping routes are an integrated part of the infrastructure for transport in the Baltic Sea region. Links and nodes should be seen as part of the TEN/TINA road network and as part of

the most significant t transport network providing important preconditions for regional integration in the Baltic Sea Region.

A certain concentration to traffic corridors is a necessary measure in order to create the right conditions for transportation; modern port facilities, effective use of the ships, good hinterland connections, large volumes and frequent departures. As efficient use of the ships means frequent/daily departures rather short distances on sea are preferred. Fast (around 30 knots) or the high-speed (above 40 knots) ferries increase the distances, which can be served. However, the weather conditions in the Baltic during winter are a problem.

The next map gives an impression of where the magnitude of the offer of ferry services in the Baltic are located. Obviously, the most frequent connections are to be found in Øresund. This situation will dramatically change with the opening of the fixed link between Copenhagen and Malmö. The Swedish Finnish connections are also very frequent. The ferry services between Tallinn and Helsinki have expanded rapidly during the last years.



Ferry lines per week 1998 Source: Cruise and Ferry

Policy issues

- Decisions on improved capacity in fairways and road/rail connections are delicate matters, as both transport economics and environmental aspects must be considered. Public authorities should provide shipping with good fairways to the lowest possible level of cost by concentrating them. However concentration leads to large scale and high frequency transport services and often also to increased disturbances in central urban areas.
- Frequent transportation by big and/or fast vessels and fragile natural areas with high recreation value are not easy to combine. Spatial policy based on economic, social and environmental considerations may result in specific actions to protect certain natural areas from intrusion or other measures to obtain sustainable transport in the area.
- Discussion on bridges/tunnels instead of ferry transport has to consider the environmental effects from both alternatives. Ferries and feeder lines are increasingly using less polluting fuel and sea transports are often considered to need less fossil fuel than road transport, thus resulting in less emissions of CO2. However the energy consumption from ferry services and lorries should be compared in relation to the benefit from each in terms of energy consumption per ton cargo or persons transported per unit, (e.g. kilometre and year).

V Regional challenges

Sea transport in the BSR will grow as the transition economies develop. Old routes are revitalised and new routes will be developed. Together with the already busy Finnish/Estonian-Swedish and German/Danish-Swedish corridors, three geographical areas may be distinguished as centres of gravity for these sea-related integrating transport links across the Baltic Sea – the Central Baltic Sea, the southern part of the Baltic Sea and the Øresund region.

The policy options for influencing the development in the ports in these areas are different due to the function of the port in relation to the surrounding region and the relation to the hinterland.

V.1 Challenges in various geographical areas

V.1.1 Central Baltic Sea

The Central Baltic Sea area houses several large metropolises of national importance and a big population including St Petersburg/Leningrad region in Russia, Tallinn in Estonia, Riga in Latvia, the Stockholm-/Mälarregion in Sweden and Turku and Helsinki in southern Finland. All these big population centres are parts of wider regions as well as important gateways to large hinterlands. Their ports function as "sinks" as well as "saddles".

The corridors connecting these metropolitan regions could be expected to gradually grow into links providing transport services for cargo of increasing value and also passenger services in both directions between the various urban cores. The spatial planning challenges are mainly of reactive character – to facilitate smooth multi-modal transport services for both high value cargo and passengers and to deal with land use and environmental conflicts.

Many of the big ports in the metropolitan regions also provide transit cargo services. They are nodes in transportation chains of a wider geographical range. Especially raw materials

originating from other parts of Russia and even the Far East are transferred through ports in St Petersburg and Leningrad Region but also in Finnish, Estonian and Latvian ports inside or in the vicinity of the big metropolises. The routing of these flows is competing with alternative routes through neighbouring ports or even through the Mediterranean, the central of Europe or perhaps with future routes using ports in the White Sea and the Arctic Sea Region.

There is a clear element of competition between land and sea transports but also between various ports. The spatial planning challenges are here to find ways to support efficient cargo transfer in the whole transportation chain in order to channel the transfer of flows through certain corridors and ports while paying attention to economic, social and environmental effects in the whole region.

V.1.2 Southern parts of the Baltic Sea

Sea transports in the southern Baltic Sea are mainly dominated by transit cargo and travel services. The ports along the coasts provide multi-modal services allowing cargo transfer from road, rail and pipelines to ships including ferry transport. The ports could be characterised as "saddles".

The increasing demand for transit traffic has already lead to increased traffic passing the ports and rail-/road networks in south-east parts of Sweden. These links and ports may face a very different situation in the future compared to the last fifty years. Ports and hinterland connections on the Latvian, Lithuania, Kaliningrad and Polish coastlines also have to cope with a new situation characterised by increased competition. The future role of Kaliningrad as a "preferred" Russian port is insecure but represents a big potential.

Many challenges facing the actors involved in transit cargo services in the Central Baltic Sea region are also appearing in the southern parts of the Baltic Sea.

V.1.3 The Øresund region

The "accessibility landscape" and the demand for transport and travelling in the Øresund region are changing rapidly. A new situation is developing due to the new geopolitical situation, the growing economy in eastern parts of Germany and the EU accession countries and also due to the new bridges and tunnels crossing the Øresund, Store Baelt and perhaps also a future bridge crossing the Fehmarn Baelt. The competition between land and sea transport as well as between ports and corridors is affected by the access to new infrastructure and changing economic and institutional conditions. Lorries and trains are expected to provide a greater part of the transport volumes in the coming years, but nobody knows today how fast the regions around the Øresund will integrate into one.

The ports in the Øresund area may be considered to be both "sinks" and "saddles". The new situation has resulted in a co-operation between ports inside the region (Malmö and Copenhagen) at the same time as old port areas in both cities are used for new construction. The increased use of telecommunication calls for new types of services, organisations and logistic solutions. More land will be needed for expanding ports and related services.

The growing economy in the densely populated areas around Berlin and in Poland is likely to result in new routes. This future accessibility landscape is not yet fully developed, but investment in ports, road- and rail infrastructure is likely to provide alternative corridors to the continental hinterland compared to the traditional routes through Lûbeck and Hamburg.



Map showing areas with rapidly changing markets of various character for sea related transport in the Baltic Sea.

V.1.4 Changing market characteristics in various parts of the Baltic Sea

Areas of different shipping and port markets character can be distinguished in the Baltic as is illustrated in the map above.

The Central Baltic Sea includes several metropolitan regions connected by ferries. In some relations the ferry traffic is not yet operating on a regular basis. A lot of cargo is imported to the big markets for consumption in and around the metropolitan regions. Many of the ports in the metropolitan regions are also gateways to large hinterlands.

In the southern part of the Baltic new connections are developing. These connections are parts of long distance corridors connecting large cities and markets in their hinterlands. The ports are mainly serving as transhipment ports.

In the Øresund region a new situation is rapidly developing characterised by growing transport flows, new trade and travel relations, and growing competition between the transport modes. The influences on sea transport deriving from new road and rail links crossing the Great Baelt, the Øresund and in the future perhaps also the Fehmarn Baelt, are still to be experienced.

V.2 Port policy challenges

The challenges facing the spatial planners are complex. However the call for reliable transport services along well functioning transportation chains is likely to result in an increased focus on corridors and terminals as links and nodes in networks. There is a growing need to see to the total network and not single parts of it. Spatial planners will have to develop a systems approach in spite of administrative and natural borders aiming at lowering barriers and friction of the system as such. When considering how ports could contribute to bridging the gaps in the Baltic Sea Region it is useful to consider that the policy options are different for different ports as was demonstrated above.

Export ports are to be seen in relation to the industry they serve. As long as the industry is working the port has a task to fulfil. The planning should assure access and secure that environmental requirements are met. International co-operation is especially important here to ensure that commonly adopted environmental standards for shipping are being met, also in practice.

Spatial policies for import ports have to consider how the port is integrated in the region, how it is linked to related services and how the conflicts between the port's needs and the urban and environmental requirements should be addressed. This type of port has a rather captive market and reasonable changes in location, price and service will normally not have a drastic impact on passenger and cargo volumes.

Transhipment ports must be seen as part of a transport chain between markets, where the sea transport only is one of several links. Normally there are competing transport chains between any two markets, which make the specific transhipment port much more vulnerable than the import port. Changes in the port's own competitive advantages or somewhere along the chain might result in a change of the transport chain to another combination of nodes and links.

Therefore, in contrast to the import port, policies for the transhipment port must address not only the situation in the port but the whole chain up- and downstream the port. This means that spatial policies for a transhipment port must consider the development of the hinterland infrastructure, the transport services on that infrastructure, the related information services and the administrative regulations and procedures (e.g. customs). However, the port must also look at the corresponding infrastructure and services for the port at the other end of the waterborne link. A continuous development of the competitiveness of the complete chain is necessary to ensure the position of the port. In this context, it is of course important that a commonly adopted set of European rules is applied to ensure a fair competition on land and at sea.

V.2.1 Interests and actors

It has been demonstrated that waterborne transport is a complex blend of commercial and public objectives, and that the port constitutes a field where regional and local spatial policy can affect this transport development and thus also the regional conditions. However, there

are several restrictions and limitations governing the available policy options, some self imposed, other generated by national and even European institutions or by the market.

This is a reason for joint lobbying and co-operation between port cities and other local/regional actors along the sea related transport corridors in order to influence the regulatory framework, EU-funding and subsidies in favour of sustainable sea transport.

The port and its hinterland connections are normally a local/regional issue and as such creating regional competition. National or European efforts are mainly focusing on providing fair terms for competition and guarantees for minimum quality standards.

Apart from this the national level can contribute by providing a stable regulatory environment which is stepwise harmonised with the regulations applied in other countries.

Much of the attraction of a specific port is based on commercial performance, its location close to a major market or its position in an efficient transport network. However, apart from the obvious provision of infrastructure in terms of road, rail and telecommunications, spatial policy can indirectly contribute to the competitiveness of a port by providing a stable framework for its development. Shipping companies as well as other partners in the transport chain are increasingly seeking long term relationships for sharing investments and for efficient planning. It has also been discussed that different types of ports are more or less sensitive to political decisions.

For the further discussion, the policy issues are structured into three themes,

- economic policy
- urban development policy
- environmental policy

The three themes are not totally independent of each other, but nevertheless they represent poles of interest in politics and are also reflected in the organisational structures.

V.2.2 Economic policy

Ports and the related trade and service activities are important centres of economic activity. Jobs are created by the direct activities of handling vessels, vehicles, cargo, crew and passengers, but even more through the surrounding services for warehousing, third part logistics, tourism services, vessel services and repairs, information support, brokering, insurance and financing. Many actors provide the services in ports and terminals. All parties concerned make big interdependent investments and are tied together by systems and organisations for handling and information. Ports should be seen as knowledge intense service centres.

Access to competent staff and advanced logistic and tourism services is becoming an important competitive aspect, especially in the field of information technology. Local and regional authorities should support this in order for their region to be able to offer an environment, which can keep up with technical and organisational development.

The regional/local level can contribute by focusing investments in relation to ports needs, both in the port and on connecting sea and land links. Old parts of the port might be closed, new areas incorporated, fairways dredged etc. It should also provide a long-term framework for port expansion/reorganisation to guide public as well as private investments reducing frictions and uncertainties.

It is the task of the management of the port to guide the development according to the objectives of the owner. Strategic alliances might be sought with some of the key customers to secure service and investment on both sides.

Local public authorities own many ports around the Baltic. The political situation is often immediately reflected in the composition of the port's Board and political differences have a tendency to guide the Board's work, which does not necessarily promote the prosperity of the port nor the confidence in its long-term strategies. Professionalism is asked for and the political issues are better addressed on the level of the local or regional parliament.

National and European restrictions and guidelines regarding the port and the shipping business also affect the economy of the port. The regions must assess the impact of the rules as realistically and as early as possible. This is true for taxation and dues and environmental regulations, but it also applies to regulations aiming at creating conditions for fair competition. As many ports today are subsidised by public money, these latter restrictions will have a big impact in the future.

V.2.3 Urban development policy

Though the port activities often have been one of the main features in the city economy there is often a pressure to move the port out of the city. Ports were traditionally located in city centres. This is still the case in many cities, especially in the transition economies. However, as both the port and the city grow, the competition on land use is likely to grow too. The increase of heavy transports to and from the port will increase the conflict as well as noise and pollution generating from the handling activities in the port.

As traditional port areas in city centres develop into multi-modal transport terminals in combination with service providers the demand for high accessibility in connecting rail and road networks also rises. The time tables for ships and freight terminals often demand accessibility at rush hour when many people on their way to or from work use the same routes.

Passenger terminals for ferries often present a special problem, as they should be placed close to the city centre and public transport to provide a good accessibility for the passengers. At the same time cars and lorries using the ferry might create congestion and increase the risk for accidents on the city roads.

New ports and terminals for dry bulk, oil and containers might be more easily moved and several have been built further out in many cities, while the old harbour areas are used for urban development.

Port areas in big cites represent property with seaside location and rising land values. These central port areas are often attractive for both housing and commercial activities. In several of the bigger cities – Copenhagen, Helsinki, Stockholm, Oslo, Gothenburg, Helsingborg and others - old port areas have served as the main land resource for new construction in the city during the last years.

Moving the port means not only moving the port facilities, but also that the related activities have to move or at least to adapt to the new traffic situation. There will be commercial consequences both for the operators on land and at sea, both positive and negative. More space and less restriction opens for more efficient operations and attractive services. Sailing access can be improved as well as rail and road connections. However, access to critical markets can become more complicated, which might destroy the commercial basis for some operations.

The reasons for moving a port or a terminal could be

- increased traffic
- the need to cater for new services
- increase in vessel size or navigational problems
- urban demands on port areas
- environmental problems

The port represents huge investments, not only to the organisations owning and operating the facilities in the port, but also outside the port, where organisations have developed terminals linked to the port.

Road and rail connections are often inadequate, which could be a reason for moving, but they still represent big investments. They might also by tradition be tolerated as traffic corridors. City access is attractive to ferry and cruise operations. Good connections and services to markets have grown over time to form an intricate network of companies and services.

In this context it is important also to look at the port issues from a wider spatial perspective. What role does the port play in the network of production facilities, trade patterns and transportation services?

Metropolitan regions with large local/regional market potentials provide options for a wide range of alternative locations and technical solutions. The decisions affect both urban and regional development structures for a long time.

It also affects the integration of metropolitan areas on different sides of a sea transport link. Efficient and smooth transport services are facilitated by co-ordinated policies. Firm and coordinated spatial policy in port cities connected in a joint sea transport network may strengthen the region's position in relation to the market actors as well as to national and European bodies. This also helps building a climate of confidence and credibility, encouraging private investments and industrial development in the region.

V.2.4 Environmental policy

Like most economic activities the port also generates traffic and disturbances not only in the urban area but also along fairways and hinterland connections. However, they are most evident as long as port terminals are located close to the city centre. The growing transport flow demand space and cause emissions as well as visual and physical barriers between city and sea as modern ports handle containers and unitised cargo on large scale and occupy vast areas.

The location and provision of new and expanding port facilities and its connecting infrastructure are often delicate matters. More traffic, noise, dust and emissions might cause conflicts with neighbouring activities. Hence, decision-making related to location of new ports and multi-modal transportation centres must consider the long-term impact of the port and related activities on the environment. This is especially important in coastal zones close to the metropolitan areas where competing economic, recreation and ecological interests meet but are difficult to combine. Speed restrictions, waste and bilge disposal must be supervised and taken care of.

In order to be efficient, many environmental regulations have to be issued on a national or even on a European level. Regional authorities can promote this development by formulating the needs, assessing the impact and controlling the application.

Environmental policy needs a co-ordinated approach involving both co-operations with other ports, with the clients of the port and with national authorities. The environmental policy must be based on overall political goals, which means that port issues must be communicated in order to create a possibility for the political fora to take wise decisions.

VI Policy options – summary

VI.1 Conflicts and synergies

Policies aiming at promoting both economic growth and sustainable transport solutions including sea transports must face the difficulties to combine waterborne transport, urban development and commercial interests and find ways to handle this situation.

The actors representing the commercial interests are strong and their behaviour is guided by the rules of the market. They provide jobs. They bring income and dedicate investments to a city and a region. And they need cost efficient and reliable transport services, often with strictly scheduled departures and arrivals. Their economic interests are legitimate. Business people must deal with risk management and compete in a growing and rapidly changing world. Commercial actors are used to negotiations and to settle contracts. Their time horizon for a strategic discussion is short. Strategic alliances and intricate networks are built between several partners to obtain optimised production systems including efficient transportation services.

Urban and regional development managers represent the opposite. Infrastructure change only slowly. Most cities have existed for hundreds of years, though major changes have occurred during the last century. Decisions related to infrastructure often take a long time too. Many actors and interests are involved. Plans guiding this type of decisions must be prepared, communicated and revised according to various interests. Conflicting interests are always there and negotiations are a natural part of the planning process.

VI.1.1 Port management

These two types of actors often meet in the Boardroom of a port where they are expected to see to the joint interests of the Port. Political boards often represent a complex mix of objectives with risk for an inconsistent behaviour. The position of the port between the city and the sea limits the necessary development of the port both in terms of lack of space for expansion and due to restrictions of emissions of different kinds. The port areas are also attractive for city use (housing, offices etc).

The owner/the municipality wants to promote the activities of the port in order to support the economic development of the city. The landlord organisation in the port is acting to fulfil this objective with the support of the organisations responsible for the port utility function (the terminals) and their clients. At the same time other city agencies responsible for city development and supported by neighbours to the port are trying to develop the port areas to meet their objectives.

Especially in ports with a Board selected on political merits and reflecting the parliamentary situation, as in many municipally owned ports, the situation can become confused. The Board members may not know whether they should promote the interest of the port or their own line in the local parliament. There is a difference between ownership control and the management of port operations and the two tasks should be kept apart.

Given the fact that the port must be seen as a business unit, regardless of who the owner is, the port management must position the port in relation to the potential customers by providing an attractive service. In addition to providing cost-efficient internal services (as described above), this also means positioning the port in relation to the hinterland services and the in the regional context. The port must develop the transport connections and negotiate an acceptance for its development with the regional and sometimes national or even European authorities responsible for guiding the overall development.

The notion of the port as a business unit will be strengthened by the European transport policy, which, among other things, means that no subsidies are accepted for the operation including the infrastructure investments in the port. Investments in fairways, navigational aids and road and rail access routes are seen as parts of the public infrastructure. However, there is evidently a grey zone, where it is difficult to discern where the port ends. The planning process and the related investment planning must be designed with respect to this restriction.

The table below proposes a structure for the planning tasks related to what is happening in the port with the plans, which are made for the port. A division is made between planning of the operations (the business plan), planning of the infrastructure needed and other planning activities (spatial, traffic and economic) where the port is a part. The table is based on the concept described above, where the port is seen as a combination of three functions: landowner, port utility (stevedoring/operations) and regulatory. The last function is regarded as a framework, which governs the daily and the future activities.

Internal port planning is focused on using available space and resources in the most effective way. The focus is on the operation and on what can be done internally by the way of investments in equipment and infrastructure, securing the best conditions for present and future operation. The key issue is to correctly assess the future traffic demands and how these affect the port in terms of space and services and to translate the result of the analysis into a demand for investment and financing.

The planning tasks illustrated also indicate that port planning require a clear perception of the roles to be played. In practice, the same person may have several roles as for example land owner and stevedore manager or as owner (representative) and politically responsible for the regional development.

	Business plans	Infrastructure plans	The port in other plans
Objective	To develop the "port utility function" (as described above), i.e. to promote cost-efficient handling and service functions	To develop the "landowner function" i.e. to provide the port with a good infrastructure (land and sea-side) to ensure efficient and safe operations	To define the port in relation to other related activities (rail, road terminals) to other planning objectives regarding land use and environment and the role of the port in a wider regional and trans- pational network
Planning issues (examples)	Bringing together the demand (from the shipping lines) for frequent hinterland connections to attractive areas with the land side demand for frequent waterborne connections to interesting destinations Providing special facilities for certain types of cargo: refrigerated, hazardous, space consuming (cars) etc. Optimisation of the trade off between space, work organisation and handling equipment. Organisation of space utilisation and traffic flow within the area available. Developing electronic com- munication with all parties involved.	Land use planning within the limits of the port. Forecasts for area requirements from forecasts for traffic development Based thereupon: plans for breakwaters and fairways, port basins and quays, paved land surfaces, warehouses and offices. Development of access routes to the port by sea, road and rail Positioning of the port in the sea traffic management systems Developing information systems to support the port's clients.	Port space requirements in relation to competing needs for housing industry, leisure etc. Port activity requirements in relation to plans for neighbouring activities (traffic, noise, pollution, safety) The port in relation to its supporting activities (terminals, service centres) and the impact on traffic and land use planning. The port as a hub in a regional and trans-national transport network
Planning horizon	2-5 years	5-10 years	10-30 years
Responsible	The manager(s) of the port utility. Could be the port director (in a small port) or specialised terminal operator(s).	The port owner	The region where the port is situated Including those in co-operating regions
Participants	The clients of the port (the shipping lines) and their clients (shippers, forwarders, road and rail carriers)	The clients of the port, national and regional infrastructure and spatial authorities.	The port owner together with the other stakeholders.

VI.1.2 Regional and local level

The local political and commercial actors together create the preconditions that determine the level of service that is so crucial for successful business – efficiency, competence, sustainability, stability and predictability. The public sector's responsibility is to see to the

• investments in relation to ports needs

- long term framework for port expansion /reorganisation guiding public and private investments including the location of new multi modal transportation centres
- access to information, competent staff and advanced logistic services, especially in the field of information technology
- defining the long term conditions for the port
- infrastructure investments
- the spatial framework,
- creating an environment of confidence and predictability

There are also possibilities for local/regional political initiatives to co-operate with other municipalities and regional bodies and to provide arenas for exchange of knowledge and experiences etc. This type of initiatives allows various actors to get in contact with each other, to learn and to discover new business opportunities.

The local/regional actors also have an important role when it comes to promoting cooperation between various actors representing other hubs and links in the wider transportation network. It is a political obligation to develop policies and to influence other public bodies, which are involved in strategic decision making related to sea transport development, on various levels in the city/region or on the national / European level. Co-ordinated actions from several partners are more likely to be have an influence on spatial policy issues, related to the development of multimodal transport including sea transports and port issues, than if the same actors try to achieve the same result all by themselves.

VI.1.3 National / European level

Politicians and civil servants must learn to understand the conditions of private businesses. Market and Politics need to meet and to decide what chains and corridors to facilitate. This type of ranking should be made on national level since there is often a conflict between local/regional political objectives and the ambitions of the ports.

The policy role is also to create a level and transparent playing field by providing a stable regulatory environment. This needs to be handled on various administrative levels, stepwise harmonised between countries.

There is a need for common information of high quality that is open and accessible for anybody. The regional and national public authorities should provide this information, preferably on a joint co-operation basis. The information should include basic facts on the current situation and trends and also allow an overview of planned investments in infrastructure, changes of the legislative and regulatory framework, fees and charges etc.

Attachment - Current conditions and trends

Trade characteristics

GDP development

To get an impression of the development in the Baltic Sea Region, it's useful to take a look on the GDP figures (GDP = Gross Domestic Product) of the countries. While the annual growth rates shows the relative dynamic of the economy, the absolute level gives an impression of the level these growths are starting from.

GDP development	Figures used in the F	EAST-ROUTE forecast
1995 - 2010	1995-2005	2005-2010
Sweden	2.1	2.1
Norway	2.6	2.4
Denmark	2,5	2,5
Finland	2.4	2.2
Germany*	2,2	2,0
Russia	2.5	4.0
Poland	4.0	5.0
Lithuania	3.0	4.0
Latvia	3.0	4.0
Estonia	4.0	5.0

Table 1: GDP development

Source: Eastroute forecast; * = own estimations





Source: Baltic Maritime Outlook 2000, Swedish Maritime Administration



The tables above show the economic power of Germany, but also the rapid development of the Polish economy, which together with the recovery of the Russian economy will have the biggest influence on the development of trade and transport in the BSR.

Present trade volumes and forecasts

Trade in the Baltic Sea region (measured in value) is dominated by the exchange with Germany. Trade between the EU-members in the Baltic Sea Region and the former eastern countries of the region are still on a very low level. In 1996, the value of the Swedish trade with Russia, Estonia, Latvia, Lithuania and Poland together was less than the Swedish-Finnish trade. The picture will not change dramatically in the future, although the impact of the Polish development is quite visible.

The following table presents the growth of foreign trade in the Baltic Sea Region countries:

 Table 4: Development of Nordic countries' foreign trade with Poland, Russia and the Baltic States
 Source: Nordic Statistical Yearbook 1998



Year	Export	Import	Export	Import
Denmark			Russia	
1992	12.977	14.364	6.354	7.573
1995	14.363	12.785	10.297	13.612
1997	16.023	14.654	16.434	17.165
1998	16.379	13.265	14.513	14.747
Increase 92-98/a	4,0%	-1,3%	14,8%	11,7%
1	Norway		Estonia	
1992	5.659	9.108	129	78
1995	6.123	10.807	369	253
1997	7.739	15.538	659	457
1998	8.523	13.053	765	519
Increase 92-98/a	7,1%	6,2%	34,6%	37,2%
S	Sweden		Latvia	
1992	14.631	14.094	200	285
1995	18.399	13.938	592	580
1997	20.630	14.819	888	660
1998	21.722	15.990	1.101	713
Increase 92-98/a	6,8%	2,1%	32,9%	16,5%
I	Finland		Lithuania	
1992	5.659	6.550	256	323
1995	6.909	7.152	769	609
1997	8.148	7.549	1.657	904
1998	9.414	8.377	1.808	963
Wachstum 92-98/a	8,9%	4,2%	38,5%	20,0%

The German trade with the Russia and the Baltic countries are presented in the table below.Table 5:German Foreign Trade with Selected Baltic Countries (in mill. DM)

Source: Statistisches Bundesamt

There are also big differences in value of the goods handled. Swedish export to Russia had a value per tonne - which was about 20 times higher than the import from Russia. It is to be expected that these differences will be slightly less in the future because a developing trade also implies an increasing share of products with a higher value, which require more elaborate transport concepts. Measured in tonnes, the corresponding cargo volumes are presently small in comparison to the total waterborne transport in the Baltic Sea region. SIKA⁴ is presently preparing a forecast for modal split of Swedish export and import where high value cargo cater for 5,7 % of the export and 5,3 % of the import (in tons).

⁴ Swedish Institute for Communication Analysis

Seaborne transport characteristics

Volumes in total and per country relation

According to the recently published report "Baltic Maritime Outlook 2000⁶⁵, the present total seaborne cargo volumes in the Nordic Baltic Sea Range (Denmark-Norway included) are estimated to 425 million tonnes, 40% of which is intra-regional.

The following diagram from the report "Baltic Maritime Outlook 2000" illustrates the dominance of tank and bulk in the ports of the Nordic Baltic Sea Range.

Table 6: Estimated waterborne cargo



⁵ Swedish Maritime Administration, Baltic Maritime Outlook 2000. Norrköping, November 3686-99. ISSN 91-86502-15-8

The most important sea cargo links (measured in tonnes) are related to Swedish ports according to a ranking made in the report "Baltic Maritime Outlook 2000"

	Top ten sea cargo links	Mio. tonnes		Top ten sea cargo links	Mio. tonnes
1	Sweden-Germany	24,8	6	Sweden-Norway	9,0
2	Sweden-Denmark	19,9	7	Germany-Denmark	7,7
3	Germany-Finland	13,1	8	Germany-Latvia	6,3
4	Sweden-Finland	11,6	9	Finland-Poland	5,6
5	Germany-Norway	11,0	10	Denmark-Norway	4,7

Waterborne transport services within the Baltic and externally

Almost 80 % of the ships making a call in a NBSR-port are either coming from or going to another NBSR-port⁶. As the following table shows the percentage differs depending on the type of ship.





⁶ Baltic Maritime Outlook p 47

Main sources:

Sea Transport in the Baltic Sea Region (Matros, Baltic Palette and USUN)

Swedish Maritime Administration, Baltic Maritime Outlook 2000.

Sea related transport corridors (PM on behalf of USUN)

Understanding the synergy between spatial planning, public investments and business (Notes and input to a seminar held in Stockholm on the 17th of January)

Green Paper on Sea Transports and Maritime Infrastructure (EU Commission)

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Gateway regions of the world, Royal Institute of Technology, TRITA-IP FR 99-60

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