

Greening Motorways of the Sea

Sustainable port planning and
shipping in the Baltic Sea area

Proceedings of the conference held in
Stockholm, Sweden
21-22 April 2005



European Federation for
TRANSPORT and ENVIRONMENT



Naturskyddsföreningen i Stockholms län
Stockholm regional branch of the Swedish Society for Nature Conservation

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Proceedings of the conference held in Stockholm, Sweden, T&E 05/4
21-22 April 2005

A T&E publication in association with *Naturskyddsföreningen i Stockholms län*
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T&E – European Federation for Transport and Environment

Rue de la Pépinière, 1 | B-1000 Brussels | Belgium
www.t-e.nu

SNF Stockholms länskansli

Norrbackagatan, 80 | 113 41 | Stockholm | Sweden
www.snf.se

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Note on presentations:

Presentations slides used by the speakers at the conference can be downloaded from the T&E website, www.t-e.nu

Introduction and Objectives

Motorways of Sea, Meeresautobahnen, Autoroutes de la mer, Sjömotorvägar. Whatever the language used, this term employed by the European Commission and its concept is not as self-explanatory as it seems, not even to insiders to the debate.

The idea underlying the Motorways of the Sea generated quite some creativity, not just within the Commission but also amongst its stakeholders. For some, it was a great argument to trigger investments in short sea shipping and in port expansions. For others, obvious risks that need to be addressed encompassed increasing safety risks, more operational pollution from ships and uncoordinated investment in infrastructure. These different perspectives have been the starting point of our work on the “Greening Motorways of the Sea” conference.

It would have been possible to fill two days of debate simply with the various definitions of Motorways of the Sea; however our objective was not just to understand its concept but also to contribute to a better integration of its environmental aspects. For example, strategic port planning and assessment, the impact on the ecosystem and on hinterland transport are important related elements. An independent analysis is needed, and this must be one that integrates the affected citizens’ perspectives and that point out how to reduce negative impact on human health and the environment. In this context, an important success factor to this debate is the introduction of incentive systems, which makes it cheaper for the cleaner and safer ships to use the infrastructures.

The conference was jointly organised by the European Federation for Transport and Environment (T&E) and the Stockholm regional branch of the Swedish Society for Nature Conservation (SNF). We would like to thank the Swedish Environmental Protection Agency, the German Umweltbundesamt and the Office of Regional Planning and Urban Transportation in the Stockholm Region (RTK) for sponsoring the event, as well as the team of the München-Bryggeriet in Stockholm for its help with the smooth organisation.

Susanne Ortmanns
SNF Stockholm

Emma Bagyary and Karsten Krause
T&E



Greening Motorways of the Sea

Sustainable port planning and shipping in the Baltic Sea area

21– 22 April 2005

Venue: München-Bryggeriet | Torkel Knutssonsgatan 2, Stockholm, Sweden

About the Conference

Shifting freight from roads to the sea is considered to be a way of curing congestion and the growing environmental impact of trans-European transport. But safety risks, operational pollution from ships and uncoordinated port investments endanger the potential benefits of increased shipping activities. "Motorways of the Sea" is the European Commission's newest tool to manage intermodal shift from road to sea transport by promoting cooperation projects between European ports.

Transport growth is linked to new investments in port infrastructure. To use public money in a sensible way, tools are needed to assess planned projects and to coordinate between ports. Strategic Environmental Assessments and Cost Benefit Analyses are two tools that are already available and could help to identify win-win projects - avoiding unnecessary impacts on human health and the environment and preventing financially unviable projects from going ahead.

Economic instruments also have an important role in optimising the use of infrastructure and internalising the external effects of ships. But, to be truly effective, a coordination of initiatives in the Baltic Sea Area and the EU is needed.

Greening Motorways of the Sea will bring together a range of different stakeholders working in the maritime transport field. Different ways of unlinking maritime transport from its negative impact on the environment and ways of maximising benefits will be discussed.

The conference is jointly organised by the European Federation for Transport and Environment (T&E) and the Stockholm regional branch of the Swedish Society for Nature Conservation (SNF). It is sponsored by the Swedish Environmental Protection Agency, the German Umweltbundesamt and The Office of Regional Planning and Urban Transportation in the Stockholm Region (RTK).

Registration and Organisation

If you are interested in participating or further information, please let us know as soon as possible (reply to: seamotorways@t-e.nu). Due to organisational reasons, the number of participants has to be limited. The organisational fee is 100 EUR or 1,000 SEK per person. For special conditions for NGOs and public authorities please contact us.

The conference venue is in the centre of Stockholm. We could provide assistance to find affordable accommodation.



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TRANSPORT and ENVIRONMENT



Greening Motorways of the Sea

Sustainable port planning and shipping in the Baltic Sea area

Stockholm 21– 22 April 2005

Agenda

THURSDAY, 21 APRIL 2005

11.30 - 12.30 Registration

12.30 - 12.45 Introductory Remarks by the Chairman

Michael Lloyd

The Alliance of Maritime Regional Interests in Europe (AMRIE)

12.45 - 13.00 Introductory Remarks

Magnus Nilsson

European Federation for Transport and Environment and Swedish Society for Nature Conservation

13.00 - 13.15 Introductory Remarks

Claes Roxbergh

Swedish Parliament's Committee on Transport and Communications

Session 1: Baltic Sea Motorways

13.15 – 14.00 Motorways of the Sea – Challenges and Opportunities for Changes in our Transport System

Arnaud Revel

European Commission

Directorate-General Transport & Energy

14.00- 14.20 Driving forces for the Baltic Sea Region Maritime Transport - Need for a Common Approach?

Henrik Swahn

Swedish Maritime Administration

14.20 - 14.40 International and European Shipping Policies and the Protection of the Marine Environment

Cornelia Ziehm

German Advisory Council on the Environment / European Environmental Advisory Council

14.40 - 15.00 Coffee break

Session 2: Linking Baltic Shipping and Environmental Protection

15.00 - 15.30 Environmental Aspects of Maritime Transport and Intermodal Logistic Chains

Susan Lewey

The Alliance of Maritime Regional Interests in Europe (AMRIE)

15.30 - 15.50 The Environmental Dimension of Baltic Sea Motorways

Lars Vieweg

Baltic Sea Motorway Task Force

15.50 – 16.10 Evidence on Italian Motorways of the Sea

Andrea Molocchi

Amici della Terra / Friends of the Earth Italy

16.10 - 16.40 Business Perspectives of Green Transport Services on Baltic Sea Motorways

Magnus Swahn

Conlogic AB

16.40 - 17.00 Clean Ships – From Concept to Reality

Eelco Leemans

Seas at Risk / North Sea Foundation

17.00 – 17.45 Discussion

17.45 - 18.00 Summary of the Day

19.00 Dinner



Agenda

FRIDAY, 22 APRIL 2005

Session 3: Greening Port Planning

09.00 - 09.20 **General Strategies for Port Developments**

Niklas Bengtsson
Lloyd's Register - Fairplay Research

09.20 - 09.40 **SEA as tool to assess the planning of Port Infrastructure**

Anders Hedlund
Swedish EIA Centre

09.40 - 10.00 **Using Cost-Benefit Analysis for Port Investments Experience from the Netherlands**

Bas van Holst
DoctorandusB B.V.

10.00 - 10.20 **Examples from the Baltic Sea (Part 1)**

Short presentations on different case studies

Latvia:	Aiva Apsa VAK / Friends of the Earth Latvia
Lithuania:	Kristina Bereisiene Klaipeda University
Poland:	Jakub Piotrowicz Maritime Institute in Gdansk

10.20 - 10.40 Coffee break

10.40 - 11.10 **Examples from the Baltic Sea (Part 2)**

11.10 - 11.30 **Coordinated Port Planning: Experiences from Germany**

Nadja Ziebarth
Aktionskonferenz Nordsee

11.30 – 12.00 **Discussion**

12.00 – 13.00 Lunch

Session 4: Incentives to Minimise Ship Pollution

13.00 – 13.20 **Ship Owners Perspective on Tools for Cleaner Shipping**

Johan Roos
Stena

13.20 – 13.40 **Overview on Incentive Systems**

Daniel Radov
NERA Economic Consulting

13.40 – 14.00 **Reducing Air Pollution from Ships**

Nicola Robinson
European Commission
Directorate-General Environment

14.00 – 14.20 **Using Continous Emission Monitoring on Ships in the Baltic Sea**

Eje Flodström
Swedish Environmental Research Institute (IVL)

14.20 - 14.40 **Proposal for the Use of Economic Instruments in the Baltic Sea Area**

Per Kågeson
Nature Associates

14.40 - 15.25 **Panel Discussion**

15.25 - 15.40 **Summary and conclusions**

Michael Lloyd
The Alliance of Maritime Regional Interests in Europe (AMRIE)

15.40 **End**

Motorways of the Sea – Challenges & Opportunities for Changes in Our Transport System

Short Sea Shipping is doing well but it could do better. Short Sea Shipping was in fact the only mode of transport in the last decade that was able to keep pace with the fast growth of road transport in terms of tonne-kilometres. Between 1995 and 2002 the growth rates of Short Sea Shipping and road were equal, that is growth by 25 %. Short Sea Shipping performs currently around 40 % of all tonne-kilometres in Europe while the share of road is 45 %.

Maintain the “clean” image of Short Sea Shipping: Short Sea Shipping is capable of becoming an important link in the intermodal transport system chain in Europe with a promising future, but safety risks, pollution (of air and water) caused by the operation of ships, and uncoordinated investment in ports may at least partly cancel out the possible environmental benefits of an increase in Short Sea Shipping. MoS shall promote the use of non-polluting vessels and cleaner marine fuels. What these Motorways of the Sea can offer is a comprehensive framework for co-operation between public and private parties to create high-quality door-to-door transport links, with Short Sea Shipping in the key role. Motorways of the Sea also offer an excellent opportunity to better link logistics with infrastructure.

Getting into Gear

Today a one year old concept: now TEN priority project with four corridors (Article 12a of the TEN-T Guidelines of 29 April 2004): Motorways of the Baltic Sea, Motorways of Western Europe, Motorway of South-East Europe, Motorway of South-West Europe. Extension to our European neighbours is under preparation within the High level group II.

Informal Council 10 July 2004: confirmation of Motorways of the Sea as a quality initiative; emphasis on improvements throughout the whole transport chain; acknowledge responsibility of authorities for alleviating procedures.

Commission Consultation paper of 30 July 2004: a broad support for the concept. Focus on several quality objectives, in limited number, specific to each corridor, measurable and technical enough, regarding also the ships (RoRo or LoLo). Environmental protection matters (such as air emissions) should be considered.

http://europa.eu.int/comm/transport/intermodality/motorways_sea/projects_en.htm

A Vademecum issued in conjunction with the call for proposals TEN-T 2005: the document dated from 28 February 2005 is available on the DG TREN Internet pages (only in English and French at the moment). The vademecum explains what issues are of relevance when applying TEN-T support. It explains what kind of projects/concepts can apply for the support and how the preparation process should be carried out and how the different financing instruments fit into the picture. It is a technical document and it does not have political or legal status.

Next steps:

TEN-T Call 2005 (in the coming weeks): funds available – projects can be submitted.

Spring 2005 (envisaged): European high-level conference on Motorways of the Sea with the Transport Ministers - Political endorsement.

New activities FP6 – Fourth call: Maritime & Intermodal research perspectives on Motorways of the sea. To support and stimulate innovation, launching of motorways of the sea European research projects shall also be envisaged: demonstration, validation and development of new concepts in the ports and their hinterland. The publication of a call in this direction is foreseen for June 2005. Research in the field of maritime transport and technological innovation: a focus on environment. It is one of the best investments for the near future and conditions the competitiveness of the sector. At European level, research has been actively supported under the Framework Programme for Research and Development since 1994.

Need top-down network planning (Administrations, Regions, Member States), bottom-up imagination (logistics operators, ports, ship-owners, transport users), both to come together for successful motorways of the sea and start work now.

*Henrik Swahn, Senior adviser
Swedish Maritime Administration,
Norrköping, Sweden,*

Driving forces for the Baltic Sea Region (BSR) Maritime Transport – Need for a Common Approach?

The development of the regional BSR economy in the wake of the enlargement of EU as well as the general political and economic liberalisation in other countries in the area are major driving forces for BSR maritime transport. Not only has the BSR intraregional trade been stimulated but also interregional trade, maritime passenger traffic and cruising. The natural geographic conditions of the region provide strong incentives and opportunities for maritime transport to cater for increased trade and passenger flows.

Background

A decade ago expansion of maritime transport in the BSR was very much based on bulk goods of comparatively low value. Wood, oil, corn, and minerals were transported from countries in the eastern and south eastern parts of the region to industries in other countries. Manufactured goods and consumption goods of higher value went in the other direction, but volumes in tons were small. Thus flows were unbalanced but economic growth in the new EU countries is gradually leading to more balanced regional flows.

Current Situation

Global trade patterns, however, are also driving maritime goods transport in the Baltic. Growing volumes of Russian oil strongly links maritime transport in the BSR with global trade. Also the volume of high value goods is increasing in international trade as well as in the BSR. This is partly related to new production patterns with global sourcing. Industries in new EU countries are tied into the supply chains, which leads to growing trade flows across the Baltic Sea. These goods flows must be handled in high quality transport chains that provide timeliness, reliability, frequency and speed. More goods are put in containers, not only high value goods but increasingly also goods with lower value. The container offers protection for the goods and global accessibility through well established logistic systems.

Developments

The logistic sector in the BSR area has responded to increasing volume and the changing structure of goods flows and taken advantage of scale and scope opportunities. Generally, this has meant further specialisation as well as larger ships in most segments e.g. oil, containers, ro-ro and ro-pax. Ports have also increasingly specialised and expanded.

There is a dynamic development of BSR maritime transport that poses new challenges. Larger ships put more claims on infrastructure in fairways and ports. For the ports, larger ships and growing goods volumes, increasingly unitized, require improved infrastructure including hinterland connections, new handling and storage facilities, sometimes relocation and organisational restructuring. There are new challenges for maritime safety, security and the environment. The dynamic development of BSR maritime transport must be accompanied, regulated and supported by suitable institutional frameworks. No single country or other actor is in a position to ensure either sufficient institutional measures or a balanced BSR development of infrastructure and ports. A common approach is required not only for maritime environmental issues but also for key infrastructure.

Conclusion

Fortunately, many initiatives have already been taken to control safety, security and environmental impacts of increasing maritime transport in the BSR e.g. the HELCOM co-operation, the PSSA, new EU-directives, IMO-regulations e.g. on double hulls and EMSA (European Maritime Safety Agency). These initiatives should, however, be supplemented by initiatives for accessibility, transport quality and efficient competition. The TEN and the motorways of the sea concepts must be taken further. Initiatives should be taken to ensure that the port sector develops under conditions of fair competition. A common framework to cope with maritime sector externalities should be developed to ensure a level playing field.

*Dr. Cornelia Ziehm
German Advisory Council on the Environment /
European Environmental Advisory Council*

International and European Shipping Policies and the Protection of the Marine Environment

The existing different transport policies at international/global, international/regional, European and national level build the framework for the establishment of sea motorways. If we manage to integrate the protection of the marine environment into these policies there will be a chance that the sea motorways become “greening” ones. There are already a lot of “tools” but they have to be used in an integrated manner. Furthermore, the harmonisation of the different regulation systems is needed.

Against this backdrop, the EU should continue what it has begun, in particular with the “Erika” packages of measures. Using the instruments at its disposal, it should insist on consistent enforcement of internationally agreed marine safety standards in both the new and old Member States. The proceedings brought against several Member States for a failure to fulfil Treaty obligations, for instance, immediately after expiry of the period prescribed for implementation of the amended Directive on port State controls are to be supported unreservedly. However, where necessary, the EU should also not hesitate to perform the function of an impulse for international law, where appropriate by setting regional standards, and thus contribute to that law’s development. Stricter regional conditions for calling at ports are in keeping with the relevant international law.

Although it is not presently possible for an international organisation to accede to the IMO, this should not hold the EU back from working, in the long term, towards its goal of full membership of the IMO. The EU’s policy-making role and the concerted cooperation of the Member States within the framework of the IMO in relation to the phasing out of single-hull tankers have impressively demonstrated the potential which exists. It may also be significant that, for their part, the Member States are rethinking their reservations to a “communitarisation” of the seas and taking a more favourable view towards the EU and the requirements of environment-protection policy. Despite differing administrative traditions and structures in the Member States with respect to port State control, the results achieved and progress made in the field of marine-safety policy in recent times support the case for a stronger position for the EU in the enforcement of maritime safety standards and the setting of new standards where the international law of the sea is incomplete. However, both in its function as an aid to implementation and in its role as a policy maker, the EU must endeavour to create a coordinated and constructive coexistence of Community policy on protection of the marine environment and Community marine safety policy. The current work on a European strategy for marine protection offers the opportunity to do so.

*Dr Susan Ann Lewey,
Technical Expert - Environment
Alliance of Maritime Regional Interests in Europe (AMRIE),
Brussels, Belgium*

Environmental Aspects of Short Sea Shipping and Intermodal Logistics Chains

There is an increasing pressure on the environment caused by transport, particularly rapidly-growing road and air transport. The Common Transport Policy and the TENS-T programme make it essential for us to understand the environmental impacts of the different transport modes and the impacts of modals shifts.

Environmental Impacts

The environmental impacts associated with transport fall into two categories, those that are common to all modes of transport and therefore comparisons can be made, e.g.

- Air emissions-local and global
- Energy consumption
- Noise

There are other areas where comparisons should be made e.g.

- Accidents
- Congestion
- Waste, and

Other impacts which are very specific to the mode of transport and therefore direct comparisons are very difficult, e.g.

- Contamination by antifouling compounds of ships.

Comparative Environmental Impacts

Currently there is no consensus on the overall comparative environmental impacts of the various modes of transport, it can be demonstrated that

- **Air Emissions** – There is a complicated picture, varying with different chemical emissions. Generally, rail is the least polluting
- **Water Pollution** – Road and rail are the least polluting, while - SSS and inland waterways are highest polluting
- **Land use** - SSS and inland waterways least damaging and Road is the most damaging
- **Noise Pollution** – pollution from SSS and inland waterways is insignificant, while noise from Road and Rail is the highest

*Lars Vieweg, Director
Swedish Maritime Administration
Norrköping, Sweden*

The Environmental Dimension of Baltic Sea Motorways

The concept of Sea Motorways has been included in the new priority list of TEN-T projects. In all 30 different infrastructure projects are included in the list. The Sea Motorway concept can be elaborated in four different regions, of which the Baltic Sea is one.

The Commission has presented guidelines (vademecum) for the Sea Motorway projects. According to these guidelines and the TEN-T guidelines the following items are eligible for support:

- Access from landside to the port
- Access from the sea to the port
- Infrastructure in the port
- Information and management system in the port

Two different kinds of projects can be possible. Port to port projects and projects of wider benefits not linked to a special port.

From Sweden we have underlined the importance of icebreaking in order to keep maritime transport open year around in the Baltic Sea.

The Environmental impact of the Sea Motorways can be assessed from at least to angels. In the first place maritime transport is generally more energy efficient and thus less harmful for the environment than land transport. This is also one of the reasons for promoting maritime transport and the efforts to divert traffic from land to sea. Generally speaking maritime infrastructure needs less construction and raw material compared to investments in rail and roads.

Environmental Impact Analysis (EIA) is always made before starting a fairway project and conditions from environmental view are set up by the authorities.

Two examples are presented regarding planning and construction of fairways in Sweden. The enlargement of the fairways to the port of Göteborg has newly been completed. The other example is the ongoing planning to enhance part of the fairway through the Stockholm archipelago to the port of Stockholm.

Andrea Molocchi, environmental economist,
Friends of the Earth Italy (Amici della Terra)
Roma, Italy.

Evidence on the Environmental Costs and Benefits of the Italian Motorways of the Sea

In the framework of supporting the environmental improvement of transport, Friends of the Earth made many studies in the last years on the environmental performances of maritime transport. As to the Motorways of the Sea, they are promising from the economic point of view, but from the environmental point of view they present many black spots and **an evaluation of the overall performance is needed**. We believe that the promotion of Motorways of the Sea should be based on a in depth analysis in order to avoid policy making social distortions regarding the choice of harbours, the choice of ships technological features, the choice of possible incentive schemes.

We have analysed the performances of Ro Ro ships and of Combined Sea-Road Transport as compared to All Road Transport using the **External costs evaluation tool** (costs of an activity that fall on society and that are not born by the activity responsible). This tool may be used also within a proper Environmental Cost Benefit Analysis in order to compare possible policy actions.

Using external costs methodology we have analysed the role of the main factors influencing the Net External Benefit of Motorways of the Sea as compared to All Road Transport. The ship's Load Factor, the choice of the Harbours for the Maritime Lines, the main Environmental factors (ship's specific energy consumption, fuel sulphur content, emission standards), and obviously the distances difference between the land and the sea-land routes can bring to **different results, ranging from Net External Costs to Net External Benefit of Motorways of the Sea**.

In the present situation (low load factor, etc.), assuming parity of distances, Net External Costs are prevailing. This is mainly due to the fact that since many years Heavy Duty Road transport is engaged in an on going improvement of air emissions performances, while maritime transport is very late and slow in this change (Annex VI, approved in 1997, enters into force only this year).

But in the same time **the technical/commercial potential (i.e. by increasing the ship's load factor and the ship's loading capacity) and the environmental potential (by reducing air pollutants emissions) of maritime transport are very high**, and they could lead to quite high Net External Benefits of Motorways of the Sea.

The analysis undertaken until now shows that Short Sea Shipping Policy cannot rely only on logistic competitiveness targets (as it has been until now) but it should start to integrate also cost efficient environmental targets. This means:

- To **lower the fuel sulphur content** on *at least* the three main types of ships *when used* on EC Motorways of the Sea (Ro-Ro cargo, Ro-Ro pax, Container ships). At present EC has absurdly targeted only a) passenger ships on b) any type of EC lines
- To **use of harbour taxes (Taxes not Charges) in an environmental efficient way**: at least a 20% of harbour taxes levels should be differentiated (neutral income differentiation) in order to introduce convenience to invest on energy/carbon efficient engines (CO2/tkm) and on NOx/PM emissions abatement technologies
- To **use the external costs evaluation Tool in the Motorways of the Sea decision-making** (on which ports, lines and type of ships should be supported).

Business perspectives of green transport services on Baltic Sea motorways

Introduction

The business perspective on green transport services can be described in a short and long-term perspective. This presentation aims at describing how the environmental work can be carried out in sea transport based on the general business logic i.e. making a profit short and long term.

Durability in the business model

Describes how if and the business model of the company short term adapts to the changing demands from the surrounding world and if new demands are properly monitored as well as leading to real business consequences as for example phasing out old inadequate solutions and techniques. From an environmental perspective this means working with:

- Environment in the general business plan process
- Strategy for new ships and engines
- Strategy for new fuels
- Strategy for trading emission allowances of carbon dioxide and other emissions
- Climate change and its business opportunities and threats
- Strategy for emissions to the water and air

Investment and costs of capital

Are the foundations for investments taking environmental considerations in to account and can productivity gains due to new investments being achieved along with environmental gains? Are there environmental liabilities that need to be taken care of that can reduce the financial credibility of the company and its financial rating? This means working with:

- Assets and new investments
- Subsidies and support from various funds and governments
- Environmental liabilities

Sales

How are the demands of the customer identified and fulfilled? Can environmental considerations increase sales? Which are the customer's environmental demands?

Can sales increase with good environmental performance?

Profit margins

Describes how a systematic resource savings programme can lead to improved environmental performance as well as reduced costs via:

- Reduced operational costs
- Lower taxes and fees

Long-term brand development and freedom of strategic choices

Describes how a good environmental image can lead to advantages regarding the brand externally and internally. Furthermore is the issue of how licence to operate can be affected long term by a good environmental work.

Clean Ship concept: the solution to marine pollution

International shipping is a source of many environmental problems, for instance oil pollution, litter, antifouling paint and exhaust gases. The fact that these problems exist has been accepted since decades, but actions to solve them have been far too little and too slow.

The conventional way to address marine pollution is setting up regulations, such as the International Convention for the Prevention of Pollution From ships (MARPOL 73/78). The slow progress made by the IMO and the lack of real changes by Marpol have triggered some states or regions to design stricter regulations. An example is the US Oil Pollution Act (OPA 90), as an answer to the Exxon Valdez disaster. And since the sinking of the Erika and the Prestige, shipping has become an important issue on the EU agenda. Regulations on Port Reception Facilities, Antifouling paints, SO_x emissions, and Tanker Safety are being proposed or have already been accepted. Neither of these regulations, however, have been able to provide a “green revolution” in the shipping sector. Protecting the marine environment from pollution by shipping therefore, asks for more than a set of regulations. What the worlds’ oceans really need is a genuine integrated approach, with a combination of technological development, regulation, education and financial instruments. And because the process is so time-consuming, standards for the future should be set today.

In order to initiate a new course, the North Sea Foundation organised a conference at the Delft University of Technology in 2002 and asked a panel of maritime experts when the realisation of a “Clean Ship” would be achievable. Answer of these experts: a little more than a decade. Next step was to promote the Clean Ship concept at the 5th North Sea Conference (Bergen, Norway March 2002). There the Ministers accepted the proposal to develop new approaches and mechanisms to minimize the impact of shipping on the environment. As a result of this, the European Commission integrated the “Clean Ship concept” in the recently published EU Marine Strategy, and the ministers at the Joint Ospar/Helcom conference (Bremen, June 2003) made a statement supporting the concept as well. This means that there is a clear political signal to support developments towards clean shipping. At present, a special Issue Group on Sustainable Shipping is working out the measures needed for the realisation of the Clean Ship.

The Clean Ship concept consists of 2 elements:

- **A description of the Clean Ship.** The realisation of a Clean Ship starts at the drawing board. The designer should include all environmental aspects of the ship and look at the entire Life Cycle, which means that during the building process *and* operation *and* recycling the ship will have no negative impact on the environment. Apart from the ship itself, the people around it play a very important role, starting with management and crew. But also representatives of port authorities, class societies, charterers and investors are able to influence the impact of a ship. All these persons should have some level of knowledge of the marine environment.
- **The course towards the Clean Ship.** Improving the environmental performance of shipping requires a complete toolbox with at least:
 - Technological innovative development
 - Regulation including control and enforcement
 - Education / awareness building
 - Financial instruments

An integrated use of these instruments will increase their effectiveness

¹ The North Sea Foundation (Stichting De Noordzee) is a Dutch environmental NGO aiming at a sustainable use of the (North) Sea. The website www.noordzee.nl has an English section.

General Strategies for Port Developments

Agenda

- Port market driving factors
 - Trade/exports
 - Seaborne transport
- Ships
 - Deep sea
 - Short sea
 - Environmental performance
- Environmental and logistic guidelines for port investments

Why this development for the deep sea transports?

- Globalisation
 - Fragmentation of production processes
 - Consolidation of multi-national enterprises
- Exploration of economies of scale
 - Highlighted by the container fleet
- Population growth

The development for short sea transports

- Growing all over the world
- The ships differs between regions
 - In Asia general cargo and container ships
 - In Europe general cargo and ro-ro ships
- Exploration of economies of scale
 - Ships in all sectors are larger when replaced
 - This gives pressure for rebuilding of fairways and ports
 - Big advantage regarding ships emissions since fuel consumption are lowered in relation to tonnes carried

Environmental and logistic strategies for port investments

- Dry and liquid bulk ports, small container ports (<100,000 TEU), ro-ro terminals
 - Close to the industry/user
 - Away from habitat areas
 - Close to road and railway
- Cruise and passenger ferry terminals
 - Close to city centers
- Environmental reception facilities
- Facilities for cold ironing (high voltage)

*Anders Hedlund,
Swedish EIA Center
Sweden*

SEA as a tool to assess the planning of Port Infrastructure

"At present, two types of environmental assessment "tools" are used in public planning and decisions making: Environment Impact Assessment (EIA) and Strategic Environmental Assessment (SEA). The main difference between EIA and SEA is that EIA is used for decision on projects and SEA is used for decision on policies, plans and programmes.

EIA goes back to the early 1970s when it was established in USA in their federal environmental legislation. At first "Environmental Impact Assessment" was just a phrase. However, EIA developed rapidly during the 1970s and 1980s. In 1985, when EC directive (85/337) on EIA of certain public and private projects was presented, it was obvious that EIA had found its formula consisting of both a process and a document. The process in EIA is actually a regulated procedure with certain characteristics and public consultation as one important feature. Today, well over 100 countries round the world have legislation on EIA. The EC directive 85/337 is implemented in all 25 member states. According to this directive, EIA should be carried out when a court or an authority tries legal permits for a port or a fairway. In such cases, EIAs procedural nature "inflicts" environmental consideration into the planning process of the port or fairway operator.

Regarding the aspect of integration of environmental consideration, the shortcoming of EIA and decision on projects became obvious in the 1990s. Decision on projects can not deal with the whole range of suitable alternatives or mitigation measures, cumulative impacts can't be taken into account, etc. Also the "green agenda" changed. Industrial pollution was no longer the most important problem. The "large scale impacts" of transport systems was one of issue that became more prominent. In this spirit, environmental assessment for policies, plans and programmes was developed - SEA is the most used term for such an assessment. Practise on SEA varies a lot around the world, and there are certainly some early implementations issues still to be solved. Unlike the case of EIA, we can't talk about a developed "SEA procedure".

In 2001 the EC directive (2001/42) on assessment of certain plans and programmes was presented. The directive has been implemented in the 25 member states during 2004. According to this directive plans and programmes, in e.g. the transportation sector, that are mandatory by law or administrative regulations should have an SEA. SEA is therefore present in many planning procedures in Europe concerning development of transport infrastructure. If a member state plans or programs its port or fairway infrastructure, an SEA should be carried out. However, such public planning and programming doesn't exist in many member states. The EC-directive can be implemented in existing legislation and procedures - or by procedures established in order to comply with the directive. This means that the directive, indirectly, can lead to a discussion on whether legislation on planning of ports and fairways could be adequate in a particular member state.

Both EIA and SEA is about environmental impact. However, the environmental scope is quite wide. EIA and SEA could, besides ecological aspects and public health aspects, include for example aspects on gender and socio-economics. Since the EC directives state that "material assets" should be assessed, the use and the feasibility of the port and fairway structure naturally are components of EIA and SEA."

*Bas van Holst,
Private economist researcher
Director / owner Doctorandus B.V.*

Using cost-benefit analyses for Port Investment - Experiences from the Netherlands

In the Netherlands major investment decisions on public infrastructure, such as on public ports, have to be backed by an (economic) impact report based on cost-benefit analyses. The analyses have to show under which conditions the project(s) whether or not contribute to the national welfare and how the benefits and costs are spread among winners and losers. With regards to (sea) ports or sea going transport recently the focus was on three major projects:

1. A new lock for the Port of Amsterdam;
2. Land reclamation (Maasvlakte 2) for the Port of Rotterdam;
3. A request from the Flemish government and the Port of Antwerp to improve the port entrance of Antwerp, by deepening the Scheldt.

As part of the policy preparation phase of the public decision making process, environmental impact studies have been conducted as well as cost-benefit analyses. In particular the projects for Rotterdam and Antwerp, well-organised and equipped project teams were in charge as independent mediators and as programme managers to collect and disseminate adequate information for all stakeholders and interest groups involved. The studies were conducted by highly qualified research institutions, in an open process, all guaranteed by second opinions and or advisory boards with consultations of stakeholders and the public.

The results are on headlines surprisingly:

1. Although of interest for the Port of Amsterdam a new lock is not beneficially for the (Dutch) society, the tax payers;
2. Land reclamation for the Port of Rotterdam bears the risks that the benefits are leaking abroad;
3. Improving the competitive position of the Port of Antwerp by deepening the Scheldt in the Netherlands leads to a welfare increase in the Netherlands.

The debates will be continued.

On behalf of the Dutch government member of the management team, as programme manager cost-benefit analysis, of the project Mainport development Rotterdam and on behalf of the Dutch and Flemish governments as programme manager cost-benefit analysis of the board of the Scheldt Estuary Project Development Plan 2010.

Information on the projects can be found on:

Rotterdam: www.mainport-pmr.nl
Antwerp: www.proses.nl or www.proses.be

Examples from the Baltic Sea: The Latvian Case

VAK has already worked for about seven years on port related issues. We have helped to establish new non-governmental organization called "Kundziņasala" for local people living in port area to represent their interests at the municipality and official hearings.

Territory of Riga Freeport is large and is about one third part of whole territory of Riga city. It is located on both sides of the river Daugava, very close to living areas, NATURA 2000 sites and old recreation zones for citizens of Riga.

Why is it a problem?

- Air pollution and smell
- Planned three new oil terminals
- Growing transport intensity and noise (railway)
- Close location (tens of meters!) to living areas and playgrounds
- Related risk factors (injuries of children)
- Close to NATURA 2000 sites and zone of recreation for citizens
- Inadequate Environmental Impact assessment procedure - no Health aspects!
- Other offences done by Ltd "Man-Tess"

What we have done?

- NGO "Kundzi_sala"
- Case study
- Actions
- Piquets
- Writing letters
- Art exhibitions
- Work with media
- Participation at hearings
- Policy work

Our achievements:

- 15 000 signatures against new oil terminals
- Cabinet of Ministers limiting regulations of malodorous gases (Regulation Nr. 626, 27.07.2004.)
- Strategic Environmental Impact assessment for all Freeport of Riga authority territory

Environmental aspects of Klaipeda seaport development strategy

Lithuania - occupies a strategic location on the Eastern edge of the Baltic Sea. The shortest distances connect Klaipeda port with the most important industrial regions of eastern hinterland (Russia, Byelorussia, the Ukraine and etc.). The main shipping lines to the ports of Western Europe, South-East Asia and the continent of America pass through Klaipeda port. The annual Klaipeda port cargo handling capacity is up to 30 million tons. In the period 1999–2004 container cargo increased from 28668 TEU till 174 241 TEU. From 1991 till 2004 general cargo increased ~29%. In long-range perspective (2025-2035), when cargo turnover will increase twice or more, the present port could not hand this cargo flow without radical reconstruction and expansion.

Navigational and environmental problems (tricky (complicated) entrance to the port and navigation in inner channel, depth limits (10-14m) in the berths, a very narrow channel width in the port entrance zone ~125m, limited the navigational space for ship turning in the inner channel, small distance (200-300m) from the berths till dwelling quarters, large quantity of sediment, which are flowing to the port area by Nemunas river, negative impact to the town (noise, emissions, dust, smell)) would become more crucial as the ship traffic increase in future.

Many years are discussing about Klaipeda port development. There are two main alternatives of Klaipeda port development:

- To expand existing a deep-water harbour behind the International Ferry Terminal.
- To build new the deep-water harbour in the northern part of the port.

The southern port development project would require less investment at the moment, but high maintenance costs will be necessary, since the ecology of the Curonian Lagoon will be changed and the project depth is to be maintained permanently because of sedimentation from the river. With the alternative to develop the southern port, dredging Harbour Entrance would be necessary again.

Still, there is another question, that is: air pollution. KU have made a study on air pollution in Klaipeda port and have determined that there are two critical air pollution points at the moment. They are the Harbour Entrance and the southern part of the port.

In the future the intensiveness of navigation will increase twice. Bigger vessels will come to the port and therefore, air pollution in the city will also increase. Southern port will induce the appearance of new pollution points. Ship service time will become longer and they will have to sail at a slow speed.

The development of the northern port would be positive from another point of view - it would take away part of shipping from the present port. This port would be more attractive for larger tonnage vessels and would make less impact on the balance of nature of the Curonian Lagoon, but Melnrage as a recreational zone would be forgotten. In this location air pollution would not change. After the construction of a deep-water harbour, the number of ships sailing inside the port would a bit decrease, and the distance from the port to the dwelling quarters would be sufficient. The city would be less polluted.

Some perspectives have - Sventoji seaport. At this moment KU had made "Studies of Sventoji seaport restores possibilities" and the government approved it. Sventoji port will accommodate pleasure boats, small fishing and special rescue boats, oil-collecting vessels and coast guard ships. Environmental impact of this port will be minimal and in special cases - positive (to protect beaches).

Main part of transit crude oil from Russia is handling in Butinge oil terminal (40km from Klaipeda). According to decreasing crude oil quantities from Russia development of this terminal is problematic. Butinge oil terminal had the environmental impact to water, during oil spillages.

Conclusions

1. Lithuania – cargo transit state, where dominate cargo flow from East to West thought Klaipeda seaport, Butinge oil terminal and Kaliningrad (Russia) port.
2. Is expecting that during next 20 years cargo flow thought Klaipeda seaport would increase twice, so port development is necessary.
3. There are two possible port developments scenarios–internal and external. None of them is good enough, but external deep-water harbour is more perspective.

Baltic Sea Motorways- Case Study of Port of Gdansk

Background

The presentation shows the overview of Port of Gdańsk current situation. In the enlarged Europe, there are many challenges waiting for the port to cope with. Some of them include new economic conditions e.g. adjusting to the intensified competition pressure, since the European ports serve common hinterland; customers' requirements are changing, ports become an element of "door to door" transport and logistics chain, which needs to be more reliable. Another challenge is the increasing rate of intermodal transport development that imposes introduction of appropriate facilities and good access to the port infrastructure.

As to the opportunities for the port, the increase in inter member state trade is expected as well as the development of the coherent and sustainable Trans European transport network (TEN-T) including MoS, and SSS concept.

Development of the Port

Some of the concrete actions of the Port of Gdansk in view of MoS development include development of the adequate quality port infrastructure such as: modernisation of the ro-ro/ferry Terminal Westerplatte, modernisation of the Container Terminal in Szczecinskie Quay, construction of the new container terminal facilities, preparation of the logistics centre development. There is also urging need to develop computerized information systems to facilitate logistics services and administrative procedures to the vessels, cargo and passengers in port. Much attention of the port and the Municipality is also directed towards actions on preparation of projects aiming at the improvement of land links connecting port facilities to the national road and railways network as well as commencement of the work on generating the MoS project based upon signed agreement between ports of Gdansk and Helsinki.

Impact of MoS

It was concluded that the realisation of the MoS concept will certainly have positive effect on sustainable development of the transport network in enlarged Europe. However, full integration of the MoS and road/rail part of the TEN-T must be stressed and is essential for successful MoS projects development. Whereas in EU policy general priority is given to the rail, inland waterways and sea transport, the development of main national road system, securing port access to TEN-T network cannot be neglected. Inadequate quality road/rail connections to the adjacent main national transport routes could easily become significant bottlenecks restricting whole hinterland access to the port.

Large diversity of European port sector (different geographical location of the ports, ownership structure, way of management, etc) results in difficulties to obtain common agreement on some detailed solutions included in the MoS guidelines. In such a case, wherever possible the decisions should be left to the national or regional level.

Nadja Ziebarth
Aktionskonferenz Nordsee
Bremen, Germany

Coordinated Port Planning: Experiences from Germany

Current Situation

The German seaports on the north coast are expanding. The JadeWeserPort (deep-water port) in Wilhelmshaven is planned, Bremerhaven is building a new Container Terminal (CT 4), Hamburg and Bremen have started preparations for further dredging in the Weser and Elbe rivers. Following this development, the Hinterland connections are also developing. A "coastal motorway" from the Dutch to the Polish border is planned just 40 to 60 km north of the existing motorway including an Elbe and Weser crossing.

Not only are these projects ecologically problematic, but their costs also amount to a growing 2 billion euros, which are mostly paid by taxes. The absurdity in this egoistic regional competition is that each port is trying to attract the same future group of container giants, and this even though over 90 % of all container ships operating worldwide will still be able to call at German ports even without such developments.

Environmental Impact

Furthermore, the effect on the balance of the environmental impact is worrying. The last decades have seen a substantial loss of habitats, as well as a loss in ecological quality in rivers and in the port regions. Dredging and other river constructions destroyed, in the last 100 years, nearly 80 % of the shallow water zones in the Weser and since 1962 more than 70 % of the shallow inlets and salt meadows in the lower Elbe.

Solutions

We need a new vision for future port developments, which has to protect and improve the still existing natural landscape features and habitats in their ecological function and dynamics and if possible even increase them. Even the nature protection guidelines of the European Commission, express strongly the protection of the rivers, coast and landscapes as seen for example in the EU Council Directive (92/43/EEC) "Natura 2000" and in the Water Framework Directive (WFD 2000/60/EU). The EU Directive (92/43/EEC) and the federal nature protection law prescribe in cases of a possible impact on protected areas a check of alternatives. The bases for a check of alternatives are: stocktaking and analysis of port economy/subsidies, turnover capacity, size and depth development of future ships, hinterland connections and ecological status. In addition, the outcome of a stocktaking and analysis should be an ecological and economical ingenious cargo steering and the division of labour, approximately by cross-linking between the ports.

Conclusion

A new Vision and a port concept must thus include an estimation of the protection values under renouncement and/or modification of individual infrastructure projects including possible alternatives and a representation of different scenarios. It is desirable and necessary to develop targets and visions for environment quality goals.

Ship Owners Perspective on Tools for Cleaner Shipping

Stena Bulk

- Oil should always travel first class
- Stena bulk operates tankers built for performance and high efficiency, for the care of the environment and the oil

Voluntary measures are temporary, at best

- Sulphur content (%) in bunker fuel:
 - Stena line Scandinavia: 0.5
 - IMO < 2006: 4.5
 - IMO >2006: 1.5

Tools for cleaner Shipping

Regulation and Motivation

- Shipowners do not like regulation, but appreciate the need for improvement.
- Regulation must be global/regional, tamperproof and meaningful.
- Motivation, i.e. incentive schemes can bridge shipping towards sustainability, but will not suffice long term.

Technology and Responsibility

- Thanks to uniform, predictable regulation, pollution from trucks and lorries will (almost) not be a problem in EU 2020.
- So why should the shipping industry solve its problems end-of pipe?
- Quality fuels, clean engines, trained crew and PPP are the corner stones.

Conclusion

Motorway must not equal high speed!!!

Overview on Incentive Systems – Some approaches to reducing maritime emissions

Overview of possible instruments

According to economic theory, many options to reduce maritime emissions are available and these fall into two categories: the trading or charging options. On the one hand, the trading option offers beneficial possibilities such as a credit-based approach which would be attractive to marine vessels and entirely voluntary, however there are the disadvantages of “additionality” issues, plus it needs existing ETS and has uncertain benefits. Another two approaches are benchmark trading and cap-and-trade. In the first case, the benefits are more certain than for a credit-based approach and still allow compliance flexibility but additionality issues are uncertain. In the cap-and-trade approach, the environmental benefits are known and it has the best incentives for abatement but is the administration capable of dealing with these mobile sources?

On the other hand, charging options offer a whole array of possibilities such as taxation, en-route charging, differentiated port or fairway dues and subsidies. Once again there are pros and cons to these approaches: taxation or charging is very transparent but politically unpopular, en-route charging needs less monitoring but is similar to taxation, differentiated port dues can use the existing infrastructure and is voluntary but is difficult to coordinate and lacks transparency, differentiated fairway dues actually has successful examples and fewer coordination issues but its institutions are not universal, finally subsidies are easy to sell to vessels but its funding source is uncertain.

Some examples of the credit-based approach already exist. In Los Angeles, a programme provides a framework for a NO_x scheme that works in conjunction with a cap-and-trade approach for land-based emissions. In Norway, the offshore industry for VOCs is another example: loading from offshore platforms produces VOCs which can be removed if tankers are fitted with special equipment, thus platforms can trade “rights” to unabated loadings or pay for abatements, plus specially-fitted tankers receive payments from all platforms participating.

The marginal cost of reducing shipping emissions

When one wants to quantify the costs and emissions reductions he must take into account three main variables: NO_x reduction, sulphur reduction and the diversity of the ships. In the case of NO_x reduction various options are available such as internal engine measures, direct water injection (DWI), humid air motors (HAM), exhaust gas recirculation (EGR) or selective catalytic reduction (SCR). In the situation of sulphur reduction, one can either switch to 1.5% or to 0.5% sulphur fuel, but could also install a seawater scrubber. Last, it is the diversity or variation in ships that provide benefits to trading. These variations’ key component is the geography of the emissions, for example in which water are these ships travelling (in-port, 12-mile, 200-mile, SECA) and how long they spend in these waters.

Final thoughts

As a conclusion, the role of economic instruments is to provide flexibility to the existing regulations, lower costs overall, to maintain or possibly increase environmental benefits and to be of a voluntary nature so as to avoid legal constraints. Preliminary findings suggests firstly a credit-based approach in the case of NO_x control, secondly benchmarking as a supplement to the Sulphur Directive and finally differential dues need coordination if there are to be effective. However, two outstanding issues remain: how to avoid “anyway” credits especially in the complicated case of sulphur and the choice of the balance of complexity to costs ratio.

*Nicola Robinson
Unit C1 - Clean Air & Transport
Directorate-General Environment
European Commission*

EU Policy on Ship Emissions to Air

Shipping is a key part of the European Union's economy, with 90% of EU trade transported by ship, and - since the recent EU enlargement - 30% of the world's ships flagged in EU countries. As EU roads become increasingly congested with freight trucks, the European Commission's transport policy has been to encourage a modal shift from road to rail and waterborne transport, through EU-funded initiatives such as Marco Polo and Motorways of the Sea.

But this modal shift to shipping must be accompanied by improvements in environmental performance, particularly with regard to air emissions. Air pollution from ships is a serious concern in the European Union. Ships' sulphur dioxide and nitrogen oxide emissions are expected to exceed emissions from all EU land-based sources combined by 2020. To reduce these emissions, global action is preferable, because international law reduces the scope for regional and national measures on foreign-flag vessels, and about 50% of the ship emissions in EU seas come from vessels flagged outside the EU.

So, working in parallel with EU Member States and the IMO, the European Commission has taken a proactive approach to develop EU policy on ship emissions. In 2002 we published an EU strategy on ship emissions, and a directive proposal on sulphur in marine fuel, which was finalised by the European Parliament in April 2005. The directive includes a 1.5% sulphur limit for fuels used by ships in the Baltic Sea, North Sea and Channel, and for passenger vessels throughout the EU; as well as a 0.1% sulphur limit for ships at berth in EU ports.

We are developing other measures on shipping this year, in the context of the new Clean Air for Europe programme (CAFE) and the review of the EU National Emissions Ceilings Directive. New modelling for CAFE shows that many ship emission abatement technologies are extremely cost-effective compared to further land-based measures.

Shore-side electricity for ships in port is one measure, which has attracted the attention of policymakers in both the EU and US. While it is one of the more expensive techniques for reducing ship emissions, it can offer significant environmental benefits in populated port cities. The Commission intends to publish EU guidelines on shore-side electricity later this year.

Finally, building on work already done for the Commission by the economic consultants NERA, we continue to explore various market-based instruments to promote low-emission shipping. Measures currently under consideration include infrastructure charging, emissions trading, differentiated port dues, consortium benchmarking and environmental subsidies.

Using Continuous Emission Monitoring on Ships

DEMO project (PricewaterhouseCoopers)

- Demonstration of continuous emission measurement of NO_x including verification procedures on *Manon* and *Stena Jutlandica*.
- Demonstration of continuous monitoring of fuel consumption and analysis of fuel on *Bro Atland* including verification procedures. (Simulation of fuel sulphur reduction verification)
- Continuous reporting to land of position and NO_x-emissions from *Stena Jutlandica* (C A Clase).

Results of DEMO-project Phase 1 and 2

- It is possible to continuously measure exhaust emissions reductions of NO_x and SO₂ in a way that enables future emission trading.
- Measurement uncertainty is a key issue for an emission trading system and depends on the choice of measurement strategy which in turn effects cost.
- Problems with the equipment may occur on ships with large vibrations and inclinations and during long time service when operating with HFO (maintenance costs).
- Future development of measurement equipment will likely reduce both measurement uncertainty and cost.

Finally:

Continuous emission monitoring appears feasible considering:

- Land based installations
- Demonstrations by PwC, IVL & CA Clase
- Existing systems for SCR process control

Sealed system is not yet practical

- Maintenance & frequent calibration
- Sensor contamination
- Immaturity of new NO_x sensors (developed for the truck sector)

Requires:

- Trained personnel
- Auditing and verification
- Unannounced inspections (Remote sensing)

Long term operation on board ship has not been demonstrated

Dr Per Kågeson
Nature Associates
Stockholm, Sweden

“Proposal for the Use of Economic Instruments in the Baltic Sea Area”

The report investigates the feasibility of a kilometre charging system for sea vessels in the Baltic Sea. The idea is to mandate port authorities to collect, in addition to port dues, a mandatory fee that relates to the calling ship's latest trip in Baltic Sea waters and the ships' emissions of NO_x and sulphur during that journey. The port would report the trip and transfer the revenue to a common authority in charge of a Baltic environmental ships register. In addition, the authority would use the AIS-system to check the number of kilometres travelled in European waters and carry out a limited number of random checks of on-board facilities for NO_x-abatement and reduction of sulphur emissions.

The revenue could be returned to the owners of the vessels in a way that does not disturb the function of the charge. There are several options for recycling the money. It could be done based on the ships annual net-energy consumption or on the number of gross registered tonne kilometres produced in the designated area by each ship owner. A third alternative could be to design the system as a cap and trade scheme, where the average ship would have to comply with a baseline or bench-mark value (kg/kWh) that is successively lowered over the years. This, however, would require the industry to establish a trading place for emission permits. A fourth possibility would be to use the revenue for funding grants to ships that invest in NO_x and/or sulphur abatement technologies. Under this kind of regime, ship owners who invest in sulphur- and NO_x-abatement technologies would receive more than they pay, and owners of high polluting ships would pay more than they get back. For the industry as such it would be a zero sum game.

By using a flexible policy instrument instead of mandatory technical standards and by making clear that charges are only applied on ships calling at ports in States that have chosen to participate, the potential conflict with the right of innocent passage can be avoided. The shipowner or his customers could alternatively choose a port that is not part of the programme, a risk that those creating and adopting the scheme must be aware of.

Neither is there a conflict with UNCLOS' Article 26 that states that no charge may be levied upon foreign ships by reason only of their passage through the territorial sea, and that charges may be levied upon a foreign ship passing through the territorial sea as payment only for specific services rendered to the ship. UNCLOS does not limit the right of coastal states to introduce non-discriminatory charges on voluntary port calls.

When designed in this manner and collected only in the ports of participating States, the introduction of a distant-related en-route charge is neither conditional on amendments to MARPOL nor on the approval of non-participating States.

Per Kågeson's report, *Reducing Emissions from Ships in the Baltic Sea Area –the feasibility of introducing a distance-related en-route charge* will soon be published by T&E (05/2).

Michael Llyod
Director
AMRIE

Conclusions of the Chair

There were essentially three main areas of presentation and discussion.

1. The Nature of Sea Motorways

Sea Motorways were seen as an 'evolving' concept. Their full definition will await the submissions to the Call for Tender for projects and, particularly given constrained financial resources in 2005/2006, feasibility studies, expected in late April/early May. This will enable routes to begin to be defined by the Member State governments involved (two or more) and the European Commission.

Certain aspects are clearly required and are set out in the Vade Mecum, published in March 2005. The essence of sea motorways and their primary funding is as TEN-T infrastructure projects, relating to the development of ports and port hinterlands and linked to the land-based TEN-T networks. The projects will include, however, fairways improvements to facilitate the approaches to ports and VTMS systems.

The sea motorways will be *main* routes with a concentration of cargo traffic to ensure their viability. Though they may involve the carriage of passengers they are primarily aimed at the carriage of cargo, particularly unitised cargo.

2. The Relevant Environmental Considerations

A variety of environmental aspects relating to sea motorways were raised and discussed during the Conference. Among these were:

- **Impacts generated by vessels;** including: emission to air and to water; the management of the increases in vessel traffic generated; the negative environmental impacts of Ro-Ro vessels, particularly sailing at current and potential future speeds; concentration of the environmental footprint is preferable (though the point is contentious) to a wider dispersal of environmental impacts
- **Intermodal /multimodal chain impacts;** including: extra land-based impacts and transshipment point impacts, e.g. noise at ports and in fairways, impacting humans and sea mammals, hazardous material transport' increases, impact on other activities, e.g. fisheries.
- **Ports and port hinterland impacts;** including development impacts on humans and on environmental and ecological systems: these will include displacement of existing settlements, increased risks of accidents; degradation of precious environmentally sensitive areas; congestion increases

3. Methodologies for Assessment and Monitoring

Various possible methodologies for assessing the impacts (environmental costs and benefits and other external costs and benefits, e.g. congestion, accidents, etc) were then discussed. These included:

- Environmental Impact Assessments
- Strategic Environmental Assessments
- Cost Benefit Analyses
- (Multi-Criteria Analysis)

The aim of these methodologies/techniques was to provide a framework within which all the various environmental, external cost, and economic considerations could be set in a framework to enable judgements and decisions to be made in a rational manner. There would always be some differences of opinion about valuations of benefits and assessments of costs, but it was essential that an agreed framework for comparison and evaluation was established.

In the case of air emissions from vessels in particular the use of economic instruments was reliant not only on the viability of market-based instruments, but also on the ability to have sufficiently precise and

robust monitoring of emissions. There were clear technological and cost constraints in these areas; though in time these might not be insurmountable. Though in one case – that of kilometre-based charging there might also be considered to be legal constraints, it was argued that these may not in fact be insurmountable barriers.

Overall Conclusions

Consensus on whether it was possible to achieve a full 'greening of sea motorways' might not have been achieved at the Conference. However, the discussion and exchange of views between the stakeholders and presenters seemed to indicate that the dialogue was worth continuing and that the search for acceptable methodologies to establish a conflict resolution framework should continue, with a good hope of success.

Conclusions by SNF and T&E organisers

How could *Motorways of the Sea* become beneficial for the environment?

Question marks

Shifting freight from road to sea transport is considered to be the solution to congestion and the high environmental impact of transporting freight between different European countries. The concept of "Motorways of the Sea" is an integral part of the European Commission's transport policy to achieve such a modal shift. In essence, Sea Motorways are defined as a limited number of strategic connections between ports. Sea Motorways are in a list of 30 priority projects for investment in the Trans-European Transport Network (TEN-T). The subsidies should help to complement shipping links that are solely based on commercial conditions, and shift freight traffic from congested roads to the sea.¹ *Motorways of the Sea* should also be considered as a quality label and promote environmental and safety standards that go beyond minimum requirements.

However, some ports and ship owners are concerned that the selection and financial support of certain projects will result in a distortion of competition, and the potential environmental footprint of Sea Motorways is also too often ignored. Most in the maritime industry consider shipping to be greener than the competing transport modes. But the image of green shipping does not hold true for large parts of the maritime transport industry. Hidden behind comfortable IMO legislation and protected by effective lobbyists, ships have lost much of their potential as a green transport mode. For instance maritime transport is on its way to becoming one of the largest sources of air pollution in Europe. Shifting freight from road to the sea does not automatically bring environmental benefits. It strongly depends on the individual ship, its operation, the chosen route and port terminal. In addition to safety risks and operational pollution from ships, uncoordinated port investments also endanger the potential benefits of short sea shipping.

During discussions at the International conference "Greening Motorways of the Sea" held in Stockholm, 21/22 April 2005², a number of questions were raised as to the environmental impact of this new instrument:

Solving Congestion?

Building more transport infrastructure has never solved congestion because it always generates more traffic. On land, the construction of new motorways to meet a projected transport demand has never solved the problem of road congestion. Numerous studies showed that the improvement of the existing network in combination with traffic management and road pricing are a much more rational response to congestion problems.³ The financial support for Sea Motorways will therefore not solve the transport problems of European economic integration, if they are not embedded in an intermodal strategy.

Furthermore, new transport does not automatically bring benefits to a region. Economic growth is not dependent on the tons carried from A to B but on innovative products. Growth in a knowledge-based economy could actually reduce transport demands, because the most innovative sectors, like the IT industry, produce lighter products. So, unchecked investment in transport infrastructure is potentially a waste of taxpayers' money, useless for the competitive sectors of an economy.

Hinterland Connections?

The economic success of transport services on Sea Motorways depends largely on the accessibility of the ports for trucks and railways. This increases the pressure on existing net-

¹ For further information:

http://europa.eu.int/comm/transport/intermodality/motorways_sea/index_en.htm

² Presentations available online: <http://www.t->

[e.nu/modules.php?op=modload&name=News&file=article&sid=104&mode=thread&order=0&thold=0](http://www.t-e.nu/modules.php?op=modload&name=News&file=article&sid=104&mode=thread&order=0&thold=0)

³ See for instance Bent Flyvbjerg: *Megaprojects and Risk*. Cambridge University Press, 2003

works and creates a need for more investments to connect the port with the hinterland. Furthermore, in many European cities, port terminals are located close to residential areas. Increasing hinterland transport to and from the port has a negative impact on the quality of life in these residential areas close to the port and its access roads.

Because port infrastructure development in most European countries is not part of a nationally co-ordinated planning process, development of ports can lead to an inefficient network of new land infrastructure, which is expensive in economical, ecological and social terms. New infrastructure generally leads to loss of habitats, more traffic, more congestion and more emissions. The Sea Motorways concept through its funding opportunities must not become a means of further allowing transport to increase, but should focus instead on efficient measures to promote a clean modal shift. The concept should give priority to Sea Motorways connecting a limited number of ports with the capacity to facilitate cargo transfer from ships to smaller feeder vessels or railway links.

These indirect impacts of Sea Motorways projects should be projected and incorporated in the planning process.

No Taboo?

There is a long and frustrating tradition of European support for infrastructure projects built in ecologically sensitive areas. In particular in the New EU Member States and Accession Countries, many plans to expand ports have a negative impact on areas, protected under NATURA2000, the Fauna-Flora-Habitat Directive or RAMSAR. Compensation schemes to offset the impact are unsatisfactory. In practice, relocating areas and endangered species is often not feasible, or adequate compensation areas are missing. Any financial support or labelling as Motorways of the Sea should not be considered where protected or sensitive areas are threatened - either by the port development, the operation of terminals or the traffic to and from the port.

Fast, Dirty and Unsafe Ships?

In addition to port developments and hinterland transports, unsafe and high-emitting ships are another potential problem that undermines the credibility of Motorways of the Sea. No other transport mode offers such a variety of vessels, from ageing rust buckets to hyper-modern, clean vessels. No other transport mode has so little incentives to use available solutions and so big incentives for non-compliance with the existing legislation. While some quality ships go beyond legal requirements, a substantial part of the vessels operating in EU waters enjoy the economic benefits of illegal practices, like saving cost for port reception facilities by pollution offences at sea. If European taxpayers' money is used to support a well-off industry, these subsidies should only be used for safe and environmental friendly service providers. Subsidising the status-quo, without an environmental conditionality will undermine the credibility of the Motorways of the Sea idea. Labelling a project under the EU Motorways of the Sea and providing financial support is not acceptable unless environmental quality is a key criterion, and the project goes significantly beyond the standards common in the current competition between ports and service providers.

Ships don't pay their share

Shipping is the transport mode with one of the smallest contribution to its infrastructure costs. In Germany, for instance, ship operators finance less than three percent of the costs to maintain the information and safety installations on maritime waterways. Port infrastructure and dredging are usually subsidised, often by the federal government. As long as ports are not responsible for the overall economical and ecological consequences or new investments, these tax-financed subsidies are leading to an uncoordinated investment in the expansion of the ports and to overcapacity in the industry. The Motorways of the Sea initiative should not add European money to projects that are economically infeasible and unsustainable.

Recommendations

Despite the above mentioned problems, *Motorways of Sea* could be a useful element of an integrated European transport policy. Based on the 21 presentations of the International conference "Greening Motorways of the Sea" held in Stockholm, four ideas have been discussed that we would like to propose as elements to be integrated into calls for proposals and into the further development of this concept by the European Commission and its stakeholders.

Environmental Conditionality

Given the interest of the maritime industry in the concept and availability of financial support in particular, the selection of eligible project proposals should be closely linked to environmental protection and safety management. Similar to ferry services, ships on Sea Motorways will operate in EU waters, relatively close to the coastline and have a high frequency in calling at EU ports. Therefore, all ships operating on Sea Motorways should be treated like ferries, for instancing, being required to use fuel with 0.5% maximum sulphur content and the control of other pollutants such as particulate matter and nitrogen oxides. In addition to mandatory requirements, safety and environmental efforts and their contribution to EU policies in the relevant areas should be considered as additional value in the Commission's selection process.

Strategic Environmental Assessment

Motorways of the Sea should help to close the gap between market-driven developments and the political desire to use short sea shipping routes as an alternative to road. To close the gap, a link between the project proposal and its wider political framework is needed. In many European countries, port infrastructure planning is not subject to nationally co-ordinated planning processes, and co-ordination with the development of road and rail infrastructure is unusual. This is partly due to the fact that many ports are privately-owned entities, and even when they are owned by municipalities or the state, ports are managed as companies.

Applied tools as Environmental Impact Assessments (EIA) are useful to point out and minimise impacts from assessed projects. But an EIA cannot deal with the whole range of suitable alternatives or mitigation measures, cumulative impacts etc. In many other transport planning procedures in Europe, Strategic Environmental Assessments (SEA) are now carried out. SEA means environmental assessments are carried out on policies, plans and programmes, particularly where they affect more than one country. But so far, SEA is not applied when port infrastructure is planned. The absence of SEA becomes even more serious now that the Sea Motorways concept is launched and supposed to increase traffic through ports.

EU member states are supposed to select the ports that shall become part of Sea Motorways. We propose that member states should draw up a plan for their port infrastructure (including hinterland connections and fairways) and then carry out a SEA. By doing so, the decision making process would become more transparent and it would be easier to identify the solution which is least environmentally damaging.

Charging the Use of Sea Motorways

All transport modes should cover the costs they impose to society and the environment. This approach would strengthen the competitive position of shipping and also foster innovation to use the technological potential within the maritime industry. However, the current lack of financial liability in the shipping sector, in comparison with other transport modes, is hampering the idea of a modal shift. More maritime transport will in some cases worsen local environmental pollution. Therefore environmentally differentiated user charges for Motorways of the Sea are needed to incentivise green shipping.

The introduction of an environmentally differentiated user charge for all ships using the benefits of Motorways of the Sea should be linked to the further development of the Commission's initiative on charging for port infrastructure. The charge should link the impact of the vessel to the distance travelled in EU waters. It can be collected as an additional fee in the ports on behalf of a central fund. The charge would create an incentive to improve the average stan-

dard of ships and could be recycled to promote innovative environmentally sound technologies and management schemes among the participating vessels.⁴

Contact & Feedback:

Karsten Krause (T&E)
European Federation for
Transport and Environment
+ 32 2 502 99 09
karsten.krause@t-e.nu

Susanne Ortmanns (SNF)
Stockholm regional branch of
Swedish Society for Nature Conservation
+ 46 8 644 52 55
susanne.ortmanns@snf.se

⁴ The study on a distance-related charge can be found the could be under www.t-e.nu

List of participants

1	Alahäme	Markku	Port of Turku
2	Apsa	Aiva	VAK / FoE Latvia
3	Bagyary	Emma	T&E - European Federation for Transport & Environment
4	Bahlke	Christian	GAUSS mbH
5	Balcers	Ojars	VAK/ FoE Latvia
6	Bengtsson	Niklas	Lloyd's Register -Fairplay Research
7	Bereisiene	Kristina	Klaipeda University, Maritime Institute
8	Brismar	Anna	SWECO VIAK AB
9	Carlsson	Ola	County Administrative Board of Stockholm
10	Clasen	Jacob K	Danish Shipowners' Association
11	Dutt	Susann	Port of Göteborg
12	Fedorov	Alexander	Centre for Environmental Initiatives
13	Flodström	Eje	Swedish Environmental Research Institute (IVL)
14	Greger	Mats	Södertälje Hamn AB
15	Gyllenhammar	Stephan	SNF - Naturskyddsföreningen i Göteborg
16	Haghbayan	Soheil	WWF Sweden
17	Hamilton	Gurli	SNF - Nynäshamns Naturskyddsförening
18	Hammarlund	Katrin	Coalition Clean Baltic
19	Hedlund	Anders	Swedish EIA Centre
20	Heinen	Falk	German Environment Agency
21	Hellgren	Claes	Södertälje Hamn AB
22	Höhnke	Alexander	German Green Party in Brussels
23	Hök	Charlotta	Ports of Sweden
24	Isensee	Jürgen	BUND AK Meer und Küste
25	Jaän	Roy	Swedish Maritime Administration
26	Kågeson	Per	Nature Associates
27	Klingström	Anders	Ports of Sweden
28	Krause	Karsten	T&E - European Federation for Transport & Environment
29	Leemans	Eelco	Seas at Risk / North Sea Foundation

30	Lemieszewski	Stefan	Swedish Maritime Administration
31	Lewey	Susan	AMRIE
32	Lloyd	Michael	AMRIE
33	Luther	Mathias	Journalist
34	Mellwig	Wibke	Free and Hanseatic City of Hamburg
35	Molocchi	Andrea	Amici della Terra / FoE Italy
36	Neckman	Björn	Ports of Stockholm
37	Ney	Thomas	Stockholm County Council
38	Nilsson	Magnus	T&E and SNF
39	Norén	Gunnar	Coalition Clean Baltic
40	Oldenburg	Magnus	Näringsdepartementet
41	Ortmanns	Susanne	SNF - Naturskyddsföreningen i Stockholms län
42	Oud	Jacqueline	Bureau Green Award
43	Piotrowicz	Jakub	Maritime Institute in Gdansk
44	Przedzimirska	Joanna	BSR INTERREG III B Joint Secretariat
45	Radov	Daniel	NERA Economic Consulting
46	Revel	Arnaud	European Commission DG Transport & Energy
47	Robinson	Nicola	European Commission DG Environment
48	Roos	Johan	Stena
49	Rosberg	Irene	Copenhagen Business School
50	Roxbergh	Claes	Swedish Parliament's Committee
51	Rudeberg	Gun	Ports of Stockholm
52	Sakari	Kajander	University of Turku Centre for Maritime Studies
53	Sandkvist	Jim	SSPA Sweden AB
54	Saurama	Antti	University of Turku Centre for Maritime Studies
55	Sköld	Daniel	Region Blekinge - The Baltic Master Project
56	Södahl	Björn	
57	Straeussler	Joerg	New Hansa of Sustainable Ports and Cities
58	Sviden	Ulf	Ministry of Sustainable Development
59	Swahn	Henrik	Swedish Maritime Administration

60	Swahn	Magnus	Conlogic AB
61	Tarnanen-Sariola	Kirsti	Finnish Port Association
62	Van Hartevelt	Ilse	FEPOR
63	van Holst	Bas	DRSB
64	Vieweg	Lars	Baltic Sea Motorway Task Force
65	Wallberg	Mårten	SNF - Naturskyddsföreningen i Stockholms län
66	Wallenberg	Olga	Citizens' Initiative
67	Wilske	Åsa	Port of Göteborg
68	Ziebarth	Nadja	Aktionskonferenz Nordsee
69	Ziehm	Cornelia	German Advisory Council on the Environment

