Towards Sustainable Port Policy around the Baltic Sea
Globalisation of production and trade results in a steady increase of maritime transport world-wide. Due to the enlargement of the European Union, this trend is particularly strong in the Baltic Sea Area at the moment.

For historical reasons, ports are often located close to city centres. The expansion of maritime transport and ports, as well as increased ship-borne emissions, have led to conflicts of interest with the population and other functions of waterfront areas. Therefore, at the moment, a key challenge is to find a balance between port activities and other uses of the coastal zone. Maritime transport, seaside tourism, living areas and coastal greenery should co-exist in reasonable harmony.

An obstacle for improvements is also current international environmental regulations for maritime transport. They are considerably lower than our national standards for environmental impacts of transport. This prevents the ports from applying enforcement on emissions from ships, and confronts the cities with the negative environmental outcomes of low-limits international maritime legislation.

As challenges are quite similar in all Baltic ports, the partners of the "New Hansa for Sustainable Ports and Cities" project have decided to look jointly for solutions. The aim is to create voluntary environmental arrangements in co-operation for all Baltic ports, port cities and shipping companies.

It is my pleasure to welcome all interested to join this great co-operation initiative for improving the economy, environment and living in the Baltic ports and cities!

Ralf Giercke

Ralf Giercke
Stadtwere Lübeck
Lead Partner of the project

Baltic Memorandum of Understanding on Sustainable Ports (MoU)

Joint policies resulting from the New Hansa project will be presented for the endorsement of all Baltic ports and port cities in October 2005. The Baltic MoU will contain:

- common principles for sustainable development strategies of Baltic ports
- recommendations for harmonised treatment of ships’ emissions to the air
- shared recommended standars for ships’ waste and sewage water reception at ports.

All major Baltic Sea regional stakeholders have been invited to contribute to the preparation process.
Together towards Sustainable Port Policies

The Baltic Sea has become almost an inland sea of the European Union. As trade is growing, the sea transport is increasing. It is basically a good solution for the environment – if problems both at sea and at ports are addressed and tackled. In successful port cities the growth of transport can be achieved in good balance with the living environment.

The New Hansa of Sustainable Ports and Cities project was launched on account of a need for international co-operation. Living environment in Baltic port cities is not improving if the problems at ports are not tackled together.

The project aims at creating ecologically, socially and economically sustainable port cities. This means that the conflicts between different interest groups, for example ports, cities, citizens, shipping lines, tourists and environment, are to be solved.

The interests of the different groups do not need to be contradictory. The needs of the environment and citizens can be taken into account at ports while running a successful business.

There are similar conflicts in all port cities. However, none of them can solve problems alone, as sea transport is an international business. Therefore 17 ports, cities and other stakeholders have joined the project as official partners.

In addition to this, several cities and ports from the Baltic Sea region have been invited to join the project events as associated partners.

The New Hansa project aims at creating common practices that deal with three project themes: preventing ships’ emissions to the air, handling ships’ waste and managing waste waters.

The project was launched in autumn 2003. The process of finding common policies is now going on. The results of the project will be presented in autumn 2005.

Communication between different stakeholders is a central part of the New Hansa project. The dialogue takes place in seminars, meetings, website and on the pages of the Newsletters. The edition you are holding in your hand is the first one – welcome to participate in the dialogue!
The New Hansa project - Inspiration for European

Elina Rantanen

The New Hansa of Sustainable Ports and Cities project aims at developing sustainable port policies around the Baltic Sea - and further. The project contributes to European policy development and has been acknowledged by several Baltic Sea Regional co-operation processes, including Baltic 21 and HELCOM.

Growing sea transport causes increasing use of land, water and air. The European Commission White Paper on Transport states that there already is a contradiction between industry, demanding ever more transport capacity, and public opinion, which is becoming increasingly intolerant of conflicts between economic, social, environmental and health issues. In several Baltic ports, this contradiction is being experienced every day. That’s why the project partners have come together and created the New Hansa project.

The project partners, including the Union of the Baltic Cities, are on the opinion that such contradictions can be solved: it must be possible to run economically successful ports in good living environments. The ship-owners have also recognised the need for co-operation and creation of shared Baltic Sea Regional environmental practices. On their opinion, this is crucial for making environmental improvements onboard the ships effective. Ship-owners are actually quite willing to invest in new environmental practices and technologies, if they know that these investments will be met with corresponding systems used at the ports. For example, waste separation onboard is meaningful only when the reception facilities at ports actually receive separated waste. At the moment, the practices, regulations and technical facilities differ from port to port.

Co-operation needed at different levels

International co-operation is vital for the success of the project, as it aims at harmonised practices and policies throughout the Baltic Sea. Ports are in economic competition with each other and therefore only policies agreed by all partners can lead to considerable improvements. Due to the nature of the problems that are dealt with, co-operation is needed at different levels. The New Hansa project operates in individual ports and port cities, involves regional and national administrations, and contributes to Baltic Sea Regional co-operation and European policy-design.

The project will be presented to a number of European Commission working groups as an important pilot activity that can provide inspiration also for their policy processes on maritime transport and ports. It is expected to have a piloting role in the development of European port policies.

Photo: Port of Helsinki
One of the Baltic 21 Lighthouse Projects

The New Hansa project’s intention to look for common policies has received acknowledgement from Baltic Sea regional stakeholders. The Inter-governmental Agenda 21 of Baltic Sea Region, Baltic 21, has selected the project as one of its three initial Lighthouse Projects.

-The mission of Baltic 21 is to pursue sustainable development in the Baltic Sea Region by regional multi-stakeholder co-operation. This also means to demonstrate how sustainable development can be brought about in practice, says Lars Westermark from the Baltic 21 Secretariat.

The initial Baltic 21 Lighthouse Projects have been selected to ensure high-visibility and to engage as many participating countries and sectors as possible in proving the added value of co-operation within sustainable development.

-The New Hansa project was selected as one of the Lighthouse Projects because it was found to be the right candidate for being a beacon of sustainable development in the Baltic Sea region, declares Westermark. HELCOM appreciates the voluntary action. Also the Helsinki Commission (HELCOM, Baltic Marine Environment Protection Commission) looks forward to the results of the New Hansa project, containing the recommended harmonised practices. The MoU will be based on the good practices and needs identified within the project, and it will be shaped through extensive consultation and close co-operation between the stakeholders.

Research and analysis on the needs and practices of different ports provides the basis for the MoU (please, see the specific article on the research activities for more information). Several project meetings as well as open seminars and commenting rounds will be organised to shape the document. Presenting good practices and expressing opinions in the project Newsletters and website are also essential contributions from the partners.

Finally, the MoU will be presented for endorsement at the VIII General Conference of the Union of the Baltic Cities in October 2005. Wide commitment to this policy paper will then be sought among different stakeholders in the Baltic Sea region.

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The project is expected to have a piloting role in the development of European port policies

-The HELCOM countries took the lead in Europe by adopting a complex set of measures known as the Baltic Strategy aiming at eliminating pollution of the marine environment by the ship-generated waste, specifies Professional Secretary Tadas Navickas from HELCOM.

-It is very important that the initiatives to reduce negative impacts of shipping in the Baltic Sea are taken not only via legal means but also via awareness raising and voluntary co-operation of various stakeholders. The New Hansa project seems to be one of those very important and useful initiatives, assesses Navickas.

Important communication process

The main tool to be created by the New Hansa project for advancing more sustainable port policies will be the Baltic Memorandum of Understanding on Sustainable Ports (MoU). It is the final document of the New Hansa project, containing the recommended harmonised practices. The MoU will be based on the good practices and needs identified within the project, and it will be shaped through extensive consultation and close co-operation between the stakeholders.

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Finally, the MoU will be presented for endorsement at the VIII General Conference of the Union of the Baltic Cities in October 2005. Wide commitment to this policy paper will then be sought among different stakeholders in the Baltic Sea region.
In Stockholm environmental issues within sea transport have been considered important for years. Implemented practices can provide the New Hansa project with good examples. Jonas Tolf from the City’s Environment and Health Administration stresses that shipping companies could introduce environmental practices adopted in Stockholm in other ports as well.

In 2003, an environmental programme was adopted in the City of Stockholm. The programme sets goal for gaining sustainable development in the city.

- Reducing environmental impacts from sea transport is one of the aims of the Environmental Programme of Stockholm, says Jonas Tolf, Head of the Traffic and Energy Unit at the Stockholm Environment and Health Administration.

The Environmental Programme states that ships docking regularly in Stockholm’s harbours shall use exhaust emission control systems and low-sulphur fuel.

- Together with the environmental differentiated harbour fee system that the port has introduced, the Environmental Programme has an important role to play when reducing emissions in the central parts of Stockholm, explains Tolf.

Port in the city centre is a challenge

In Stockholm, the port is located in the very central city close to residential areas.

- It is very important for the inhabitants in Stockholm that the ship owners take their responsibility to improve techniques to reduce emissions. It is also important that the impact that shipping has on the environment is considered in city planning, says Jonas Tolf.

Although effective measures have been taken to reduce emissions from ships, there are still citizens that are worried about their health.

- From the citizens’ point of view safety regulations should be adopted on sea transport, continues Tolf.

- When ships arrive at the centre of a city they should take responsibility for the environmental impact. If there is no understanding from ship owners that citizens might be disturbed, it can result in a boomerang-effect, he adds.

In other words, the citizens’ opinion may change so that they claim that the ports have no right to the city centres.

- In Stockholm we have an on-going dialogue with the port, says Jonas Tolf.

- If we find noise emissions from a ship too high, the port moves it away from the city centre. The co-operation between the port and the ship owners is of great importance.

- All ports and shipping companies have to make common efforts to reduce the environmental impact from sea transport. Sustainable sea transport can only be achieved by co-operation, argues Jonas Tolf.

- The New Hansa project concentrates on this exact issue: problems in sea transport need to be tackled internationally.

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The New Hansa project tackles problems internationally, which is the only way to gain sustainable results, says Jonas Tolf.
Ports of Stockholm spearhead environmental initiatives

The Ports of Stockholm has continuously worked on developing measures to reduce environmental impacts from shipping. In the mid-1980s, the work on reducing emissions from vessels was commenced in the form of electrical connections and reduced rates. In 1998 environmentally differentiated harbour dues were successfully introduced.

One of the key objectives of the Ports of Stockholm is to become an environmentally friendly port from the global perspective, and to promote shipping as an environmentally friendly transport mode. Since the mid-80s, the Ports of Stockholm has worked on reducing sulphur and nitrogen oxide emissions from vessels and improving ships’ waste handling.

The first initiative was taken back in 1987 when installations were built to supply two large ferries with land-based electrical power during their daily call at port. In 1991, an agreement on regulating sulphur and nitrogen oxide emissions was concluded with shipping companies that traffic to Finland. It stipulates that fuel with low sulphur content, a maximum of 0.5 percent, is to be used.

Adopting fuel with low sulphur content has also paved the way for the future ferry traffic. Reduced rates have been introduced to vessels that develop and use different methods to reduce nitrogen oxide emissions from ship’s engines.

Rewarding environmental improvements

The Ports of Stockholm uses differentiated harbour dues in order to encourage shipping companies to reduce their environmental impact by offering financial incentives. Whenever environmental improvements that reduce emissions cause costs for shipping companies, the policy of the Ports of Stockholm is to offer them reduced harbour dues.

Discounts to vessels are given for reducing sulphur and nitrogen oxide emissions, for sorting at source ship-generated waste, and for low water content in sludge. In addition, freight owners and shipping companies using tankers with double bottoms or double hulls get lower harbour dues.

Shipping companies have actively participated in the environmental development, and it is clear that the activities of the Ports of Stockholm have stimulated this.

The New Hansa project is of great importance as it will enable ports, cities and shipping industries to share experience and best practice on how to reduce the impact on the environment. It will increase the possibilities to strengthen and harmonize the environmental efforts in the Baltic Sea Region, says Christel Wiman, Managing Director and CEO, Ports of Stockholm.

The Ports of Stockholm requires that in order to receive reduced harbour dues, vessels must implement measures to reduce sulphur and nitrogen oxide emissions on a continuous basis and not just when calling at port in Stockholm. This regulation aims at limiting emissions in the entire Baltic Sea region.

Promising results

A study conducted by the Ports of Stockholm shows that the on-going work has yielded positive results. Between 1995 and 2001 nitrogen oxide emissions from vessels in scheduled services have dropped by 43 percent. 93 percent of the vessels in scheduled services use environmentally differentiated harbour dues.

In the same period, however, the reduction of sulphur oxide was only 2.5 percent, as the ferry owners had already reduced the sulphur content by 1995.

Another result of the activities is that two newly built ferries coming to the Ports of Stockholm in 2004, will both use low sulphur content fuel. Their engines will also be fitted with catalytic converters.

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At Finnlines, Environmental work is part of a

Finnlines is one of the largest European shipping companies specialising in liner cargo services. It represents shipping line’s view in the New Hansa project. At Finnlines, environmental work is considered to be part of everyday working operations.

Today Finnlines has an average of 60 vessels in service. The fleet consists of RoRo freight vessels, RoRo passenger vessels and container vessels. Most of them are sailing in the Baltic Sea, North Sea, and the Bay of Biscay.

Ships can well be compared with other modes of transport by environmental criteria. Finnlines wants to focus on optimal transport planning and routes that move the carriage of goods from road to sea transport. The aim is to have a high fill rate on ships on the southbound and northbound voyages, as this will decrease the environmental stress per transported ton kilometre.

Finnlines considers safety to be the most important environmental issue, which should never be compromised. The vessels are regularly inspected. Classification societies concentrate on ship’s construction, engines and equipment, whereas the maritime administration ensures that the basic operational conditions for merchant shipping and sea transport are maintained and improved.

Regulations on ships’ waste

Shipping is governed by international regulations as well as by national and local agreements. Most regulations relating to marine pollution are based on the Marpol Convention and Solas.

An act and statute on marine vessel waste came into force in Finland in 2000. The act requires vessels to discharge their waste only at port. Vessels must also give the port of call a prior warning about the waste that is intended to be discharged. A waste charge is levied on every vessel calling a Finnish port regardless of whether or not vessels discharge any waste.

Vessels operating in liner traffic can be exempted from these regulations if they can demonstrate that they have an agreement with a competent waste disposal company. For several decades, Finnlines has disposed of its waste through its own independent contracts with waste management companies.

Ships are required to keep accurate records of the life cycle of waste. They must have written documentation on how much waste is produced, who will collect the waste and where it will be delivered.

Onboard the ships, Finnlines sorts paper, board, glass and metal. Separate locked containers for hazardous waste have been arranged in the ports that Finnlines calls in Finland. A high percentage of waste is recycled. For instance, waste oil recovered from ships is treated in an evaporation plant and the separated oil is delivered to industry for energy generation. Metal, glass, waste
Shipping lines’ needs – a crucial factor

Shipping companies that sail the Baltic Sea face challenges in their environmental work. Their ships call at different ports that provide ships with different environmental systems. Services have improved during the years: for example 20 years ago no ports had waste management systems for recycled waste. However, there still remains a lot to be done both at ports and ships.

Nowadays ports usually have proper waste handling systems, but they differ from port to port. Similar problems are related to waste water management as well as to power supply at ports. In most cases, ships are still running their engines for electricity while staying at ports. Bearing in mind the emissions to the air, this electricity would better be provided by a standardized cable from the shore.

Shipping companies are increasingly eager to invest in new environmental practices and technologies. However, the new systems at ships should preferably fit together with the systems in all ports. Shipping companies’ perspective is clear: common practices and policies at ports are needed in order to make improvements.

Shipping companies are in a very important role in the New Hansa of Sustainable Ports and Cities project. They are sharing information and insights with ports and cities. Finnlines and Stena lines have joined the project as official partners and more shipping companies are involved in the consultations. It is strongly in the interest of the shipping business to improve environmental management both at ships and ports around the Baltic Sea.

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normal working day

wood, board and paper can be recycled. Paint and solvent waste is burned in high-temperature kilns and used for generation of district heat and electricity.

Coming next: low-sulphur fuel

Fuel consumption is an important environmental factor in shipping. The sulphur content of oil varies depending on the country of origin. Today, there is shortage of low-sulphur fuel at a reasonable price on the market.

The Marpol Annex VI enters into force in May 2005. The sulphur content of fuel will then have a limit of 1.5%. Hopefully there will be then more low-sulphur fuel at hand. At port, power is usually generated using auxiliary engines running on low-sulphur fuel oil, under 0.2 %.

Economy = ecology?

Economic instruments have been introduced in some countries and ports around the world to encourage ships to reduce their atmospheric emissions. These include differential taxes on marine fuels and differentiated port and fairway dues.

Shipping has always been an international trade. Seas are open for competition. Investments in sustainable development should be welcomed with a bonus system in the form of lower fees.

At Finnlines, environmental work is considered to be part of normal working operations. It is seen that only a financially sound company is able to develop its operations in the long term taking environmental aspects into account.
A tool for preventing ships’ emissions

Shore-to-ship electrical power

Elina Rantanen

An important work-package of the New Hansa project concentrates on preventing ships’ emissions to the air at ports. As a measure for this, a pilot project for shore-to-ship power supply will be implemented. Experiences from the Ports of Göteborg and Los Angeles have proved the viability of the system.

A considerable amount of power is needed to supply all functions in the ship during the stay at the port – lighting, ventilators, ramps, winches etc. Running ships’ engines for electricity supply at ports causes air emissions, noise and vibrations.

Engines connected to generators consume heavy fuel oil or marine diesel fuel. Instead of burning fuel while at dock, ships could “plug in” to the shore-side electrical power that is converted to a voltage compatible to the ship through a transformer.

At first a pilot installation

The shore-to-ship electricity supply was involved in the New Hansa project, as it was considered to be the best solution to prevent emissions to the air. National laws do not have much of power to prevent emissions to the air, as ships are sailing under international maritime laws. Cities however wanted to do something about the emissions.

Shore-connected electricity supply

- Ships ‘plug in’ to shore-side electrical power
- The electricity (kW) is converted to a voltage compatible to the ship through a transformer
- The frequency is transformed from shore-side 50 Hz to shipboard frequency, mostly 60 Hz
- A ferry consumes approximately 5 000 kWh of electricity during an average harbour stay
- Emissions of nitrogen oxide, sulphur dioxide and solid matter are abated or avoided
- Noise from the auxiliary engines is avoided

Sources: www.portgot.se
www.portoflosangeles.org

In Göteborg, the land connection has so far prevented approximately 80 tonnes of nitrogen oxide and 60 tonnes of sulphur dioxide every year.
Shore-to-ship electricity should serve all possible shipboard power systems

The New Hansa project co-ordinator Jörg Sträussler from the Baltic Energy Forum thinks that the shore-to-ship electricity supply is the best way to tackle ships’ emissions to the air. As an interregional Save Energy Agency devoted to tackling climate change, we strongly appreciate the introduction of the power supply system. There is an increasing accumulation of emissions from more and ever bigger ships in ports. In one Baltic port 94% of SO\textsubscript{2} emissions come from ships, also 79% NO\textsubscript{x} and still 50% of CO\textsubscript{2} emissions, states Sträussler.

Touristic, residential and nature reserve areas are suffering already from considerable environmental and economic consequences like algae blooming in the Turku and Stockholm archipelagoes, he continues.

Sträussler has discussed the possible solutions for preventing emissions to the air with ship owners. It turned out that it would be highly desirable to provide shore-to-ship electricity supply in a standardized manner that could serve all possible shipboard power systems. Until now shore-to-ship power supply facilities in ports are dedicated to special ferry routes only and mostly of low voltage design that cannot meet varying demands.

In addition to Lübeck, some other cities and ports have also shown interest in the shore-connected electricity supply. It is expected that the system will be adopted in many Baltic Sea Region ports during and after the project.

Experiences from Göteborg and Los Angeles

The shore connection of high voltage electricity was inaugurated in the Port of Göteborg in 2000. In Los Angeles the Alternative Maritime Power (AMP) container terminal was opened in June 2004 as a result of the request to reduce air emissions. They are among the very few ports providing shore-to-ship electricity.

Los Angeles Department of Water and Power is supplying the terminal with the shore-side electrical power of 6.6 kilovolts. This is converted to 440 volts through a transformer, after which the power is sent to the ship through nine plugs. The Port of Göteborg has also co-operated with the local energy suppliers. Its long-term goal is to be able to provide all customers with electrical connection. The Port of Göteborg provides ships with electrical power via one-cable 10 kV connection. According to ship owners, this solution is more practicable to adapt to all possible shipboard electrical systems.

In both ports the benefit of the shore-connected electricity supply has been calculated. In Göteborg the land connection has so far prevented approximately 80 tonnes of nitrogen oxide and 60 tonnes of sulphur dioxide every year. In Los Angeles it is estimated that the connection eliminates 1 ton of nitrogen oxide per day as compared to ships using conventional marine fuel. It is also said that with every AMP ship, there is as much pollution removed as is generated by 16,000 truck trips.

In addition to emissions, also noise is avoided completely during the harbour stays, which has improved the working environment. The environmental impact of the electricity production is minimized in the Port of Göteborg, as the terminal is partially supplied by electricity generated using wind power.

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Waste and Sewage Management
in Szczecin and Swinoujscie Seaports

The Authority of Szczecin and Swinoujscie Seaports has prepared and initiated a programme on the management of waste waters and solid waste in the port area.

Waste and sewage handling are two of the main areas of attention in the New Hansa project. In the Szczecin and Swinoujscie Seaports they have recently been under renewal.

Waste from ships - i.e. used oils and oily bilge waters, sewage and garbage - are handled into the port receipt facilities. Receiving is performed directly on the quay by special vehicles. The waste is then transmitted to the sewage treatment plant or to the local dump area. Such a solution is consistent with the Polish Law, and it is also economically reasonable.

All sewage from the Ports of Szczecin and Swinoujscie is treated in the port’s modern sewage treatment plants. Practically, the sewage does not pass the port areas, which decreases the environmental risk.

In order to manage waste efficiently, the Authority of Szczecin and Swinoujscie Seaports has prepared a waste management system. Before the departure of the ship, a form of confirmation of ship’s waste receipt is required. Software database registers quantities and kinds of received waste from ships. Special treatment of infected sewage and hazardous waste is included in the system.

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Co-operation in waste management

Waste handling has been the most actual issue of the New Hansa project themes in the Port of Kolding. A plan for handling of waste from ships has recently been adopted.

- Shipping companies need to be informed about the importance of co-operation in waste management, says Harbour Master Per Bendix Jensen.

In March 2003, the Danish Environmental Protection Agency approved the plan for handling of waste from the ships entering the Port of Kolding. The plan is in accordance with the HELCOM and EU regulations.

The implementation of the waste plan has worked out well. Some equipment had to be bought – latest 3 tanks for sludge – and some working routines had to be altered. In 2003 the Port of Kolding received and disposed of nearly 800 tons of waste. In spring 2004, the port furthermore obtained the ISO 14001 approval.

Problem of the 24 hours rule

The only flaw in the handling of waste from ships calling at the Port of Kolding is the 24 hours rule.

According to the rule agreed on by the European countries, ships must forward a notification form that details the content and the amount of waste generated by the ship since it last called at a port. The notification form must be received at the port 24 hours prior to the time that the ship wants to hand in its waste, but this deadline is often ignored. The Port of Kolding, however, still agrees to receive the ship-generated waste at short notice in order to avoid its dumping.

- The only thing we can do is to keep on informing the shipping companies again and again, as we have done since the rule was implemented, declares Per Bendix Jensen. The Harbour Master hopes that the shipping companies and the crew would realize the importance of notifying the port in due time.

- If we get a due notification, we can plan
Implementation of the port's waste plan has been mostly successful, says Per Bendix Jensen, the Harbour Master of the Port of Kolding delightedly. Photo: Port of Kolding.

Good examples are looked for in the Port of Mariehamn

In the Port of Mariehamn, the New Hansa project is expected to provide cities and ports around the Baltic Sea with good examples, no matter the size of the port or the city. The Port of Mariehamn is relatively small, but a number of passenger vessels make a stop there every year.

The Port of Mariehamn is located in the Åland Islands in the middle of the Baltic Sea. Ship traffic to and from Åland is heavy, consisting mainly of passenger traffic. Due to Åland’s tax exception, many passenger vessels make a stop in the port in order to enable passengers to buy tax-free goods onboard.

The Port of Mariehamn is located in a bay with sheltering islands around it. The port is relatively small, but it is busy with traffic. Today there are every year around 4,700 port calls. The number of calls will probably grow in the future, as ship traffic to the new EU countries Estonia, Latvia and Lithuania is increasing. The port prepares for the traffic increase by constructing a new quay in the harbour area.

An example of the environmental problems to be met in the Port of Mariehamn is the ships’ sewage management. The waste water from the ships is pumped directly from the quay to the city’s sewage treatment plant. The capacity of the plant, however, meets demands of only 30,000 persons. Consequently, it is possible that there will be a cleaning capacity problem with the heavy traffic load.

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Port of Kolding

- one of the smallest ports in the New Hansa project
- 46 ha of land and 2.5 km of wharves
- water depth only 7 m in the channel leading into the port
- 1,100 ships a year call at the port
- 600,000 tons of cargo loaded and unloaded during the first 6 months of 2004

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Nature conservation area nearby the port is a challenge in Turku

Today most operations in the transport chain are covered by quality and environmental management systems. The Port of Turku is no exception. The nature conservation area near by the port sets special challenges for reducing port’s noise and emissions to the air.

The Port of Turku has certified the environmental management system according to ISO 14001 Environmental Management System Standard. The management system functions as a tool for developing port’s business operations. The Port of Turku has identified environmental impacts of its activities and services. It maintains environmental management programme in order to achieve its environmental objectives.

Environmental nuisance from construction, emissions to air and noise from harbour operations, and energy and water consumption are to be reduced and proper waste management is to be implemented. Getting involved in the New Hansa project is also one way to develop environmental consciousness in the Port of Turku.

Ruissalo area requires attention

Noise and emissions to air, particularly SO$_2$ and NO$_x$ from port activities are classified as harmful in Turku, as the harbour areas are situated nearby the nature conservation area Ruissalo. The Ruissalo area is proposed to be part of the Natura 2000 areas in Finland.

The Port of Turku has decided that the key areas of attention are preventive measures and cutting the levels of the harmful emissions. The preventive measures will be examined, planned and carried out together with harbour operators and shipping companies.

Future actions

The Port of Turku and operations within the harbour areas are to be regulated by environmental permits issued by the Western Finland Environmental Permit Authority. This permit has already been given to one part of the port, to Pansio train ferry and oil harbour.

The Port of Turku submitted an environmental permit application for the main harbour areas at the end of the year 2003. The permit conditions will regulate, for example, how harbour’s waste and waste water management should be arranged and what noise emission and NO$_x$ and SO$_2$ levels at surrounding areas should be.

The Port of Turku wants to be a leading environmental expert among port authorities in Finland. This means that there is a need to anticipate and react to changes and requirements in the surrounding environment. The environmental management system is one way to do this systematically. The New Hansa project also helps to adopt new practices.

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New Hansa is a possibility to create uniform principles in specific environmental issues, says Mr Markku Alahäme.

Photos:
Ruissalo; Hannu Waher, City of Turku
Small photo: Port of Turku
Main photo: Port of Helsinki
In Port of Pori, dust is the biggest environmental problem

The New Hansa project partners have different qualities that characterize their environmental challenges. In the Port of Pori, the annual traffic volume is about 6 million tonnes, of which bulk accounts for 75 per cent. Therefore dusty bulk materials cause the biggest environmental problem for the Port of Pori.

Dust emissions can take place in several ways. There is a risk of material falling into water between wharf and vessel and from grab bucket to the wharf or into the crane structures. Wind can raise fine dust particles from the vessel hold, grab bucket or discharge point of grab.

The Port of Pori has made emission surveys in the harbour area and its immediate surroundings. The results showed that emissions are mostly local and, for instance, dust detriments remain mainly in the port area.

The Port of Pori focuses on environmental issues e.g. by pointing out the maintenance of the fields, by developing environmental management system and by investing in the crane and conveyor equipment.

Dust prevention techniques

With modern control technology most of the dust problems can be overcome. An example of the environmentally friendly investments is the coal gantry unloader in the deep-water harbour that essentially reduces the amount of dust.

To prevent spillage and to minimize dust formation, the control system of the ship unloader should be optimal. It needs to recognize that the grab is fully closed, to guide the grab through the most efficient path to the discharge point, and be able to control the opening of the grab at the optimum height and position in relation to the hopper.

The Advanced Grab Drive control system supports the driver to operate the unloader in the most efficient way and to minimize emissions to the environment. The closing of the grab is supervised and it cannot get airborne if not closed properly. Automatic operation modes guide the grab along the optimum path to the optimum discharge point. Spillage that occasionally occurs due to the human error is eliminated, when the complete opening procedure of the grab is carried out in automatic mode by the control system.

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The Port of Rostock expects common conflict solving

In Rostock it is seen that the conflicts of ports are similar everywhere. Within the New Hansa project, a cardinal question for the Port of Rostock is, however, how to evaluate sustainability of a port in consideration of its unique cargo structure and traffic volume.

The Port of Rostock is the second-largest German port and it is busy with traffic. This creates a specific character for the port. It had a throughput of 21 million tons in 2003. 58% of it consisted of RoRo and ferry traffic and 37% of bulk commodities. The motorways A19 and A20 dominate the hinterland connections of road traffic. In combination with a deep and wide sea route these hinterland connections are the precondition for a further growth of the ferry and RoRo-traffic.

As most of the harbours around the Baltic Sea, the Port of Rostock also has to cope with several conflicts. There is extension space available around the harbour, but in addition to the port extension it would also be needed for housing. Another challenge is the existence of the nature reserve areas at a short distance from the port.

These are examples of the conflicts between maritime business and other interest groups. The problems are similar in all ports, and therefore a project like the New Hansa is expected to provide ports with good solutions to overcome them.

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The development of common environmental policies in the New Hansa project is based on research information. A survey has been carried out among the New Hansa project partner ports and cities in order to analyse the environmental problems and practices at ports. The analysis is still going on by the research partner, Centre for Maritime Studies (CMS) of Turku University. “According to the answers analysed so far, it seems that the most problematic environmental factors at ports are those that cause conflicts with citizens living close to the port area”, says researcher Minna Alhosalo from CMS.

The partner ports differ from each other, which can be seen in the answers. Some of them receive only passenger vessels; some don’t receive those at all. Sizes vary a lot: while one port gets 1 000 ship calls a year, the other gets 15 000. Some things are still handled in similar ways.

- For instance ships’ waste water management is performed in principle similarly everywhere. Waters from the big passenger vessels are pumped into the municipal sewage system and then further to the sewage treatment plant. Tank trucks are ordered for non-regular ships, explains Alhosalo.

Trouble with emissions

Emissions and noise are considered to be the most harmful environmental factors at ports. They are also reasons for complaints. On the other hand ports are continuously working and co-operating on solving these problems.

- Emission levels are quite good in partner ports. Even the highest levels seem to be under guidelines, which means that the situation is probably not as bad as it is commonly believed, says Alhosalo.
- It seems that the emissions may not increase in proportion to the increase of the sea transport. Different techniques aiming at the reduction of emissions are invented all the time and the use of low-sulphur fuel is growing. The air quality is under continuous observation, she adds.

Waste management varies

Waste treatment is one of the focus areas of the New Hansa project. Many shipping lines handle their own waste making contracts with private waste companies.

- There are problems related to the notification on delivery of the waste, to hazardous waste and to sorting, tells Alhosalo.

In most ports there is a no-special-fee-system for those ships that don’t have waste management contracts. All ships need to pay the waste fee even if they don’t discharge any waste.

Ports want equality so that one port would not receive all waste or sewage. This rule encourages ships to discharge their waste at every port they call, explains Alhosalo.
Feasibility Studies Support the Joint Policy Development

The Centre for Maritime Studies of the University of Turku performs the feasibility studies for the New Hansa of Sustainable Ports and Cities project. The studies will contribute to the formulation of the Baltic Memorandum of Understanding on Sustainable Ports.

The Centre for Maritime Studies (CMS) was founded in 1980 and was made a special unit of the University of Turku in 1984. It has developed into one of the leading providers of maritime education, research and expert services in Finland.

International cooperation is an essential part of the activities and expertise of the CMS. It co-ordinates and provides expert services to international co-operation projects concerning the Baltic Sea Region. Examples of such action are NeLoC and InLoC projects (Networking and Integrating Logistics Centres in the Baltic Sea Region) or Baltic Palette projects (Co-operation and Networking of the Baltic Metropolitan Areas).

The CMS has two regional units in Satakunta Province, the Education Unit in the City of Rauma and the Research Unit in the City of Pori. They work closely together and co-ordinate projects related to the development of shipping, transport logistics and ports in Satakunta Province.

The special fields of expertise of the Pori Unit are environmental topics of shipping and ports, especially issues related to emissions and effects of the vessel traffic.

**Studies on effects of vessel traffic in ports**

The CMS Pori Unit performs the feasibility studies for the New Hansa project. The studies contribute to the formulation of general policy and the Memorandum of Understanding by producing information. The studies concentrate on environmental practices in ports around the Baltic Sea.

Data on the environmental practices implemented in ports and cities is collected from the project partners. This is necessary, as knowledge on current situation is needed in order to improve the management of ship-generated emissions to the air, water and waste waters. The feasibility studies will be based on the collected data.

Ports want equality so that one port would not receive all waste or sewage. This rule encourages ships to discharge their waste at every port they call.

The specific aim of the studies is to evaluate the existence and availability of the data regarding the topics of the project’s work packages. The data on technical and non-technical solutions of the environmental practices is analysed and alternative solutions for environmental best-practices are presented.

Comparison of legal frameworks, environmental impacts, socio-economic and spatial consequences and different practices implemented in the ports is performed in order to draw up synthesis of the feasibility studies for the joint policy paper.

**CMS makes a report for each Work Package:**

- **WP I:** Atmospheric Emissions, Noise and Vibration
- **WP II:** Ship-Generated Waste Management
- **WP III:** Ship-Generated Waste Water Management

- According to the answers analysed so far, it seems that the most problematic environmental factors at ports are those that cause conflicts with citizens living close to the port area”, says researcher Minna Alhosalo from CMS.

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The Port of Helsinki has made environmental measurements and plans for the environmental permit application. They concern noise and emissions that mainly cause the danger of contamination. In the New Hansa project the Port of Helsinki will continue its environmental work and share good examples and practices with other partners.

In the Port of Helsinki, environmental permit is considered to help the work for environmental improvements. Nowadays harbours are also obliged to apply for an environmental permit for their operations in Finland.

The Port of Helsinki has earlier held an environmental permit for the West Harbour passenger terminal operations. Now it has applied for environmental permits also for the cargo harbours of the West and North Harbours and for the South Harbour that serves passenger traffic.

Noise studies for the permit application

The current environmental permit for the passenger traffic of the Port of Helsinki’s West Harbour specifies environmental noise limits. The steady-state continuous noise \( (L_{eq}) \) in the nearest residential areas, caused by passenger ships and catamarans docking at West Harbour, and by the harbour lorry traffic and the unloading of ships, may not exceed 55 dB during the daytime, or 50 dB during the night time. In addition to this, the port must undertake noise analysis at three-yearly intervals.

The environmental permit applications consist of the description of the operations of the port sections and their environmental impacts, and measurements and calculations of environmental loading. For this purpose the Port of Helsinki has commissioned environmental noise studies in all of its port sections. The environmental noise of shipping and harbour operations is examined in different situations and at different times.

These noise studies also serve as indicators of the port’s environmental activity. If the studies show that in certain situations the environmental noise exceeds the reference values, the sources of the noise are investigated in collaboration with the shipping lines, and technical means to reduce the noise are sought.

Emission calculations

Together with Helsinki Energy, the Port of Helsinki has made calculations on air emissions that were carried out in the Finnish Meteorological Institute. They examined the spread of sulphur dioxide, nitrogen dioxide and particle emissions. The harbour operations are a major cause of loading in the harbour areas only with respect to sulphur dioxide.

There have been attempts to influence the amount of sulphur emissions by checking the sulphur contents of the fuel in ships. The port utilizes a calculation method for estimating emissions. This provides the basis for preparing the annual environmental report.

When the environmental permits have been granted, they will form the framework for the environmental protection in the Port of Helsinki. The requirements of the environmental permits are the minimum levels of performance. Some further ideas of improvements are sought within the New Hansa project.

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The New Hansa of Sustainable Ports and Cities is a joint project of 17 ports, cities and other partners from all sides of the Baltic Sea. The project aims at ecologically, socially and economically sustainable ports in the Baltic Sea region.

During the project (2004-2005), good environmental solutions will be analysed and common practices for ports in prevention of ships’ emissions to the air and receiving and handling waste and waste water from the ships, will be created. The main outcome of the project will be the Baltic Memorandum of Understanding (MoU) on Sustainable Ports. It will be presented for endorsement at the VIII General Conference of the Union of the Baltic Cities in October 2005.


Dialogue is a key element of the project. Partners and stakeholders are meeting each other in altogether five workshops and seminars. Above, participants of New Hansa workshop in Travemünde, June 2004.

Project partners

- Stadtwerke Lübeck
- baltic energy forum e.V.
- Union of the Baltic Cities
- University of Turku - Centre for Maritime Studies
- City of Lübeck
- Port of Rostock
- Port of Kolding
- City of Malmö
- City of Stockholm
- Ports of Stockholm
- City of Mariehamn
- City of Pori
- City and Port of Turku
- City and Port of Helsinki
- Szczecin and Swinoujście Seaport
- Finnlines
- In addition, several cities and ports from the Baltic Sea Region have been invited to join the project events as associated partners

Co-funders

- The project partners
- European Union Baltic Sea Region Interreg III B Programme
- Finnish Ministry of the Environment

Further information about the project can be obtained from the project website:

www.newhansa.net

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