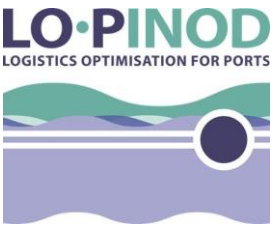
Concretization of the Port concept Offshore-Häfen Nordsee SH:

Logistical solutions for servicing and installation of offshore wind farms by networking of small and medium sized ports

The study is within the framework of the project LO-PINOD the NSR program, which is funded from the European Regional Development Fund.



EXCECUTIVE SUMMARY

Within the framework of the LO-PINOD project, Brunsbüttel Ports worked out logistical solutions for the servicing and installation of offshore wind farms through the networking of small and medium sized regional ports. Near the coast of Schleswig-Holstein seven offshore wind farms will be erected. This offers an excellent business diversification opportunity for local regional ports. Through cooperation it has been established that all the services required can be offered to the wind energy sector by the ports of Schleswig-Holstein. For this, Brunsbüttel Ports worked out logistical concepts for each of the seven offshore wind farms.

In the wider context, this also demonstrates the flexibility of regional ports and their ability to adapt to changing market forces. This particular ports grouping is also a demonstration to other LO-PINOD partners, and to the wider North Sea Region, of the benefits of regional ports working together to address market opportunities and offer joined-up collaborative solutions. Indeed, Lo-Pinod partners have also offered knowledge exchange and input into Brunsbüttel's proposals. This will be used to inform the proposed LO-PINOD project legacy output of a regional ports collaborative grouping.

On the following pages you will get an overview about the background, the key results and outcomes of the case study.

1. INTRODUCTION LO-PINOD

LO-PINOD: Ensuring economic growth of regional ports through diversifying port service and Building an efficient and sustainable transport network.

Globalisation and an increasing demand for goods have led to a growing requirement for more sustainable freight movement in Europe and diversified use of land resources and new operative models for regional ports. Freight movement by road causes congestion on the main transport routes, prompting a need to review how freight can be moved more efficiently and sustainably, enabling ports to develop their economic efficiency and reflect emerging emissions regulations

LO-PINOD (Logistics Optimisation for Ports Intermodality: Network, Opportunities, Development) challenges existing thinking on freight distribution and offers a more sustainable and efficient alternative. By improving shortsea routes, local ports and their inland connections, LO-PINOD encourages freight to be distributed much closer to its final destination by sea. Greater use of regional ports can further balance Europe's congested transport network. This reduces an over-reliance on road transport, lessens the environmental impact of the supply chain and helps to deliver social and economic benefits to communities and businesses across the region.

Led by the Institute for Sustainability, LO-PINOD is funded by the EU Interreg IVB NSR programme and comprises 15 partners from Belgium, Denmark, Germany, Netherlands, Norway, Sweden and the UK.

With an emphasis on optimising the functionality, capacity and potential of regional ports, the project enables cooperation and knowledge sharing and focuses on the following key areas:

Objectives

Improving multi-modal landside links

Optimising rail, road and inland shipping links to enhance access to and from regional ports. Partners are also promoting policy change nationally and at EU level to encourage greater use of regional ports, short sea shipping and multi-modal transport chains.

Exploring access to commercial markets by sea

Developing maritime connections between hub and regional ports to help provide a more efficient and robust transport network. Partners are exploring new short sea services to encourage the shift of freight, including fresh produce and bulk cargoes from road and onto more sustainable modes of transport.

Sustaining regional ports and developing local jobs

Creating efficient and diversified ports and freight handling facilities makes ports more attractive and gives greater choice for freight movement. This includes benchmarking and implementing best practice in areas such as port security, safety, operational procedures and general management as well as developing new markets and business opportunities to increase port traffic.

Port diversification into maritime energy sector

Using ports location and connectivity to explore new opportunities for ports to diversify their activity and apply their operational and management experience to emerging sectors such as maritime renewables. Developing the skills and networks to fully maximise opportunities to secure local economy and jobs.

Enabling ports to lobby with one voice

Bringing regional ports together to identify key issues and assessing impact of key policies and regulation. Enabling ports to develop joint positions and recommendations to lobby both nationally and specifically at EU level and explore innovative funding mechanisms.

Improving linkages with towns

Partners are exploring ways in which ports can regain a more prominent place in their local community. This includes work at ports which are using their heritage status to encourage better engagement with their local community and attract visitors. This has a positive impact on both the perception of the area and the local economy.

For more information on the project, visit www.lopinod.eu

2. INTRODUCTION BRUNSBÜTTEL PORTS GMBH

With the strategically exceptional location of Brunsbüttel at the lower Elbe and at the Kiel-Canal the group of Ports at Brunsbüttel – Elbehafen, Oilport and Port of Ostermoor – offers direct access to North and Baltic Seas as well as to the European inland waterways, being in close distance to Hamburg with available industrial areas next to the port. These advantages of location but also the extensive range of the maritime services around the commodity of "sea cargo" make the Ports an attractive centre for cargo handling for the largest connected industrial area of Northern Germany and for the metropolitan area of Hamburg.

Core competencies

Brunsbüttel Ports GmbH serves regional customers as well as national and international customers in the range of

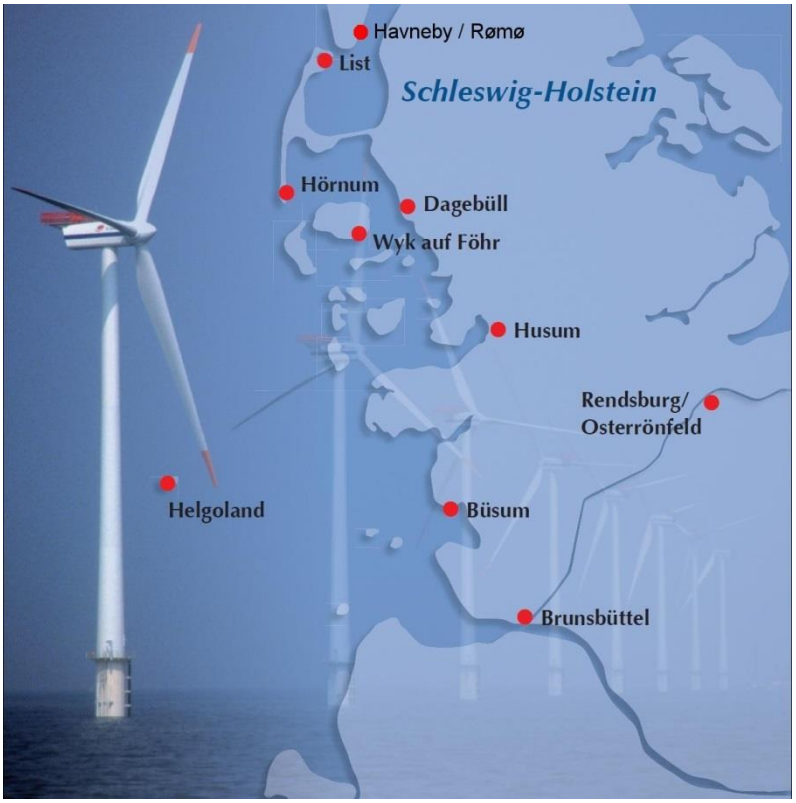
- cargo handling
- storage
- transit and project logistics

Wind energy sector and Hafenkooperation Offshore-Häfen Nordsee SH

The handling, storage and transportation of wind power stations are a basic element within the product range. For years now Brunsbüttel Ports GmbH is able to increase the turnover-figures of this segment year by year. Amongst others 5MW offshore wind power stations are stored temporarily and then transshipped onto sea vessels and barges at Brunsbüttel.

Brunsbüttel Ports GmbH is spearheading an initiative to enable a number of small and medium sized ports in northern Germany to work together and provide a comprehensive service to the growing offshore wind-energy sector, named "Hafenkooperation Offshore-Häfen Nordsee SH". On their own, these ports cannot fulfill all necessary requirements to raise the interest of the energy sector, but through cooperation, they are able to deliver an effective and workable solution. The ports of Brunsbüttel, Büsum, Dagebüll, Helgoland, Husum, Hörnum, List, Rendsburg-Osterröfendl and Wyk auf Föhr have agreed on working together in a cooperation with the prupose to offer to the offshore-windfarm operators the complete package of maritime services for theier windfarms with regards to installation and servicing. The cooperation puts its focus on "production, logistics and service ports for offshore-windfarms. The port cooperation is a pilot project because it is the first cooperation of ports with the focus on offshore-wind energy. The knowledge and output of this cooperation will help other offshore ports to optimize their logistical concepts.

Recently the Danish Port Havneby/Rømø has joined the cooperation and will be integrate in the future activities of the port cooperation. With this step the port cooperation is grown from a national and regional to a transnational cooperation.



Ports of “Hafenkooperation Offshore-Häfen Nordsse SH”

3. BRUNSBÜTTEL PORTS ACTIVITIES AS PART OF THE LO-PINOD PROJECT

Brunsbüttel Ports GmbH is leading the cooperation “Hafenkooperation Offshore-Häfen Nordsee SH” a cooperation of several small and medium sized ports. All ports of this cooperation have concerned the renewable offshore wind energy as a big opportunity for themselves and diversify their port activities according to this. The innovative aspect of this port cooperation is that by networking of ports the strength of each port can be bundled with the result that innovative and sustainable logistical concepts can be offered to the renewable energy market. Every port undertakes a different function. One port alone is not able to fulfill all necessary requirements of the offshore wind energy market but collectively a complete maritime package can be offered. One objective of LO-PINOD is to explore new opportunities for ports to diversify their activity and apply their operational and management experience to emerging sectors such as maritime renewables. With this pilot project Brunsbüttel Ports deliver a lot of new experiences to the LO-PINOD project and their partners. By sharing the obtained experiences and during ongoing discussion with the LO-PINOD partners also experiences from other ports were helpful to plan the next steps.

4. MANAGEMENT SUMMARY – LOGISTICAL CONCEPTS FOR INSTALLATION AND SERVICING OFFSHORE WIND FARMS BY NETWORKING OF SMALL AND MEDIUM SIZED PORTS

In 2011 Brunsbüttel Ports GmbH assigned UNICONSULT to work out logistical solutions for installation and servicing offshore wind farms near the coast of Schleswig-Holstein by networking of ports of Hafenkooperation Offshore-Häfen Nordsee SH. These logistical solutions are a supplement to a port concept which has been worked out in 2010 and following the summary of the results are shown.

With an installed capacity of 2,900 Megawatt (MW) and as a location for a large number of big companies from the wind power industry Schleswig-Holstein is said to be „wind state number 1“. Schleswig-Holstein is a pioneer country when talking about the onshore wind sector. Currently research and development in the wind power industry are focussing on the offshore wind energy production. It is planned to install 25-30 Gigawatt (GW) of wind power in the German Bight by the year 2030. The construction of offshore-wind parks in the German Bight (German Exclusive Economic Zone) has already begun (e.g. the installation of the park BARD Offshore 1, in which 80 wind power plants are going to be built).

All ports along the German North Sea coast have realized that the field of offshore-wind industry has an enormous added-value potential. The chances to emerge as base or service ports and to emerge as production locations have been recognized especially along the North Sea coast. This leads to a competition between the locations for the settlement of the offshore-wind industry along the North Sea coast. Ports act for themselves as well as part of port communities.

The North Sea ports in Schleswig-Holstein have joined forces and agreed on a cooperation focusing on the offshore industry. The new created network of small ports is assembled by the ports of:

- Büsum
- Brunsbüttel
- Dagebüll
- Helgoland
- Husum
- Osterrönfeld
- Wyk
- Hörnum and
- List

The aim of the cooperation is to be able to offer all the functions as well as the logistical and infrastructural prerequisites demanded by the offshore wind market, in order to hold a strong position in the competitive market.

Close to Schleswig-Holstein's North Sea coast the new market is coming into being, which has a significant investment and added-value potential. Within the next years investments of more than eleven billion Euros in production, installation and operation of the offshore wind parks (OWP) are expected. During this period the companies will generate revenue of more than 12.5 billion Euros. These numbers just relate to seven planned OWP off the coast of Schleswig-Holstein. Currently it is said that up to 69 OWP are going to be installed along the whole German Bight, plus the export and the logistics for OWP in European waters beyond the German Bight.

The recent events in the nuclear power plant Fukushima in Japan created a new dynamics in the debate on the turn in energy politics and the production of energy after the decade of nuclear and fossil fuels. This dynamics can lead to a reduction of time in which the planned parks are realized as well as increase the amount of parks. By this development new jobs and additional regional economic effects can be created along the coast. Schleswig-Holstein’s North Sea ports are the nodes for this new market. Due to this it is important that all ports between Brunsbüttel and List have joined together in order to secure the added-value potentials of the single locations.

There is the chance to tie relevant actors for the long term to Schleswig-Holstein’s North Sea ports right from the beginning on. This can be done by offering a needs-oriented infrastructure and by developing reasonable logistics systems.

This study’s analysis has shown that Schleswig-Holstein’s North Sea ports are able to cover all processes of the offshore life cycle concerning all infrastructural and logistical topics:

Production:	Brunsbüttel and Osterrönfeld
Pre-Assembly and Installation:	Brunsbüttel
Operations and Services:	Brunsbüttel, Büsum, Dagebüll, Helgoland, Hörnum, Husum, List and Wyk
Training and research and development:	Büsum, Husum and Osterrönfeld
Export:	Brunsbüttel, Osterrönfeld, Husum

If the ports will manage to combine the strengths of the single locations and to compensate the weaknesses of single locations, Schleswig-Holstein’s North Sea Region will be able to reposition itself as a productive region for a sustainable and highly value-adding industry. Furthermore the analysis came to the conclusion that the ports rarely compete against each other but complement each other in a reasonable way. This is due to the individual profiles of the sea ports as well as their location and the distances to the OWP.

Therefore the cooperation should not be limited to an exchange of information, networked thinking and a common marketing campaign. It should rather be a physical combination of the single locations for the offshore industry. By establishing an “Off-

shore-Shuttle-SH" – possibly operated by a common subsidiary of the nine cooperation ports – the analyzed ports could form an entire offshore-system.

For this an intensive dialogue with the future operators and the engineers of the OWP is inevitable. Due to the location and the superstructure there are great chances for the ports in Schleswig-Holstein to establish their self as base and service ports especially for the OWP which are in an early planning stadium. This relates to the following OWP:

- Amrumbank West
- Nördlicher Grund
- Sandbank 24

However, when the OWP are already in an advanced stage of planning, the nine cooperation ports can as well act as additional locations for the concepts that have already been decided. This is true for the following OWP:

- Meerwind Süd / Ost (with Helgoland as most probable service port)
- Nordsee Ost (with Helgoland as most probable service port)
- Butendiek
- DanTysk

In this context it is important to get into dialogue with Esbjerg and Bremerhaven, which are already operated as installation ports, in order to present oneself as locations for the substitution of possible capacity bottlenecks – especially in peak times.

The creation of an efficient infrastructure for the offshore industry is of great strategic importance. If a marketable infrastructure is realized in Brunsbüttel earlier than the completion of the planned Offshore Terminal Bremerhaven and the extension plans in Cuxhaven this will mean an enormous advantage in the competition between the locations. The remaining eight ports could as well profit from this advantage.