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DEVELOPMENT OF THE EEMSHAVEN

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Thesis report of MSc | Xiaowen Chen

DEVELOPMENT OF THE EEMSHAVEN

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Preface

This master thesis report is the final result of the last part of my study at the Department of Transportation & Planning of Delft University of Technology. The research was done at the Department Milieu & Ruimte of ARCADIS Nederland BV for almost a year. It was nice experiences to work close with people of the engineering profession. I appreciate the opportunity a lot of working there.

First my gratitude goes to prof. Sanders, who gave me great guidance and precious remarks on my study approaches, methods and the contents. He patiently help me tackled the problems I met during the study. I am also grateful that Mr. Luitjens accepted me as an intern at Arcadis, made numerous arrangements for my study and provided important information and comments on my study. Many thanks go to other committee members, prof. Bouma, Dr. Verhaeghe and Ir. Wiggenraad, who gave me lots of valuable ideas and feedback during the committee meetings.

I would like to thank the colleagues at Arcadis. They offered many professional advices on my research and helped me arrange the experts interviews by their personal resources. Their companies and supports made my stay at Arcadis quite enjoyable. Speical thanks go to colleagues Alice, Hans, Jack and Hendrik-Jan, who shared a lot of time with me and helped me with the research.

Respects go to the experts who I interviewed. I had a good time during the interviews and their opinions on the topic are of great importance of my study.

I would like to thank Myrthe, who helped me with the grammers in writing, even during her busy days. Last but not least, I need to thank my parents, my friends and my boy friend Erik, who gave me lots of support during my study in the Netherlands.

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Summary

The study is to give suggestions on future developments of the Eemshaven, the most northern seaport in the Netherlands. The port locates on the north coastline of the country, opened in 1973 as an industrial port. It is in the charge of Groningen Seaports in the municipality of Eemshaven. By rail, road and inland waterways, the port connects to the rest of the Netherlands, Germany and other west European countries directly or indirectly. Now most port activities happen in the west part, most of which are shipping and warehousing related. The east part will soon be occupied by four power plants, namely Energy Valley. The construction of Energy Valley is considered as the most important development in the coming five years.

The port has been through a rough time. Many proposals and projects failed for all kinds of reasons. The developments in the past show that the activities will not be successful in the Eemshaven unless certain scale is reached. The connections with local industries and the help of the governments make the activities more likely to be successful, while entrepreneurship is another important factor. Compared to the neighbor ports, the Eemshaven has very low throughput. Hinterland connections, port facilities and especially the relation with local industries are not as good as the neighbor ports.

Porter's Diamond Model shows the Northern Netherlands is not a competitive region, compared to the nearby areas. Many traditional strong sectors like agriculture, ship building, are losing their positions. That means the region cannot give many supports for local seaports. The positive factors of the Eemshaven include space and energy supply, competitive price, easy access to gas pipelines and cables. Lack of hinterland support is a serious problem of the Eemshaven. Besides, underdeveloped labor market, living circumstances, limited logistics facilities and shipping routes, lack of comprehensive development approach are negative factors of the Eemshaven as well. The Wadden Sea protected area is always one of the concerns, which gives limitations of the potential activities in the Eemshaven.

Two scenarios are set for different situations with practical reasons. The first scenario focuses on a future 5-10 years, no port expansion is expected. The suggestions are developing energy related industries and improve landside accessibilities. The second scenario foresees a big expansion of the port, in the coming 20-30 years. Industries more than energy are expected to form a cluster in the port area. Upgrading the scope onto a regional level, having integrated plans and measures to avoid port competitions are suggested in this scenario.

Energy consuming industries, fuel related activities, environment protection, clean energy and their related industries are chosen for scenario 1. Food industries and other agriculture related industries, chemical industries, materials, recycling, energy related industries, shipping and warehousing are considered as the suitable sectors for the port industry cluster in the second scenario.

Eleven experts give their comments on the study. The experts are not too optimistic about the future Eemshaven. Half of them think scenario 1 is more likely to be the future for the Eemshaven, which would be done in 10 years without expansion. The others do believe the aggressive scenario may partly happen. According to the experts, the most promising sectors are renewable energy and bio-based industries. Recycling can be very interesting as well. Shipping activities are considered to be the most difficult one to develop.

The facts and the findings of the study shows that the Eemshaven is still a very promising port. Even an ambitious target is reasonable. Groningen Seaports, the port authority and the local governments have a lot to do to make a better future happen.

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1 Introduction

1.1

BACKGROUND

The North Sea Region, where the Eemshaven locates in, is a highly industrialized region with a long history of international trading and shipping activities. To meet the needs of frequent commerce, seaports were densely built in the region. The ports were developed at different ages for different functions and the scales are widely divergent.

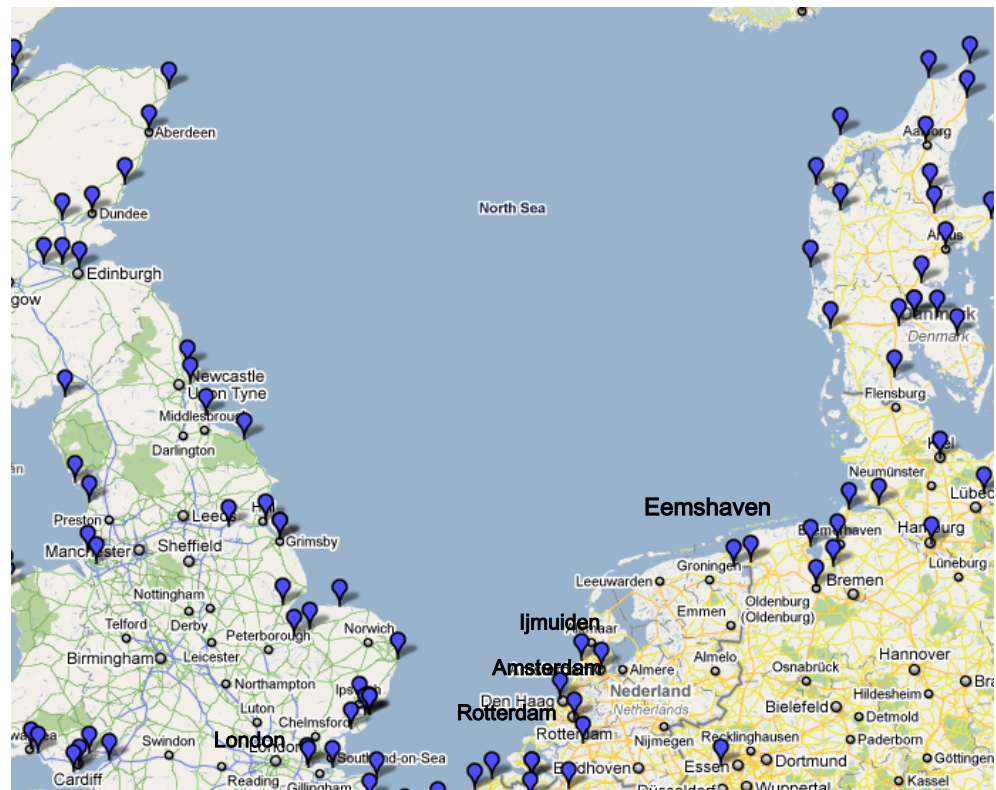


Figure 1-1 Seaports along the North Sea Region

Source: ESPO

During the 16th century, the Dutch and English replaced the Portuguese and Spanish by playing dominant roles in international shipping activities. Large amount of popular exotic products from the east came to Europe through several entrances such as London and Amsterdam. The continental trading volume increased dramatically and the ports of London and Amsterdam rapidly became the main commercial distribution centers in northwest Europe for eastern goods and special products such as spices, porcelain, sugar, tobacco, cocoa, wool, wine, etc (Port of London Authority) (Port of Amsterdam Authority). Gradually, some specialized value-added activities such as weighing, measuring, warehousing and rough processing showed up at the port areas. Since then, the port of London and the port of Amsterdam have been prosperous and important distribution and storage harbors for three centuries.

The port of Rotterdam did not show its advantages of logistics until the 19th century. The bombing of Rotterdam during World War II benefited from the existence of the Nieuwe Waterweg, as well as the rise of the Ruhr and the act of Mannheim (De Nieuwe Waterweg en de groei van Rotterdam 1872). It was a turning point of Rotterdam from a fishing village to a port of transshipment. Later on, international trading volume increased greatly due to economic developments. Rotterdam has an ideal location, good natural accessibilities, both seaward and landward, brought many shipping lines to Rotterdam. All those aspects made the port of Rotterdam become the most important harbor for transit and transshipment in Europe.

In the 20th century another type of port started to develop along the European coasts: industrial ports. With the process of industrialization, people found it was more economical to develop some heavy industries at the port areas due to the easy accessibility of natural resources overseas. IJmuiden and Wilhelmshaven in Germany are typical examples of industrial ports.

Surrounded by all types of well developed seaports, the Eemshaven opened in 1973 as an industrial port for oil-refinery and petro-chemical industries. The plan of a hopeful industrial port was soon dashed to the ground because of the oil crisis in the 1970's and the following economic decline. The Eemshaven did not manage to be a successful industrial port. Meanwhile, without large consuming market, competitive production area or distribution network, it is difficult to be a distribution port or a transshipment port. Recently, a completely new concept of "Energy Port" has been applied to the Eemshaven. It is interesting to see what the current Eemshaven looks like and which way they are going to go in the future.

1.2

PROBLEM ANALYSIS

Outside the Netherlands, the Eemshaven is a nameless port. It is considered as a less attractive site to invest in for entrepreneurs. There are not many activities going on for years since its opening. Although the coming of power plants broke the ice, the Eemshaven still lacks strong development points, such as good hinterland connections and competitive industrial structure in the region. Besides, "Chicken or Egg" is one of the concerns. On one hand, lack of customers makes it unnecessary and unworthy to improve landward connection network, shipping services, industrial structure, labor market, or social activities. On the other hand, these factors make the port less competitive and less attractive to the investors.

1.3

OBJECTIVE

It is certainly a broad topic with a lot of attention of the Eemshaven in recent years. For this study, the main objective is to answer the questions:

- Is there a bright future for the Eemshaven in the next 30 years?
- What activities can be included in the future vision of the Eemshaven?

A bright future is defined as a port with certain shipping activities as well as suitable and sustainable port industries, which will keep growing or help generating new activities.

The study consists of three phases, analysis, proposition and evaluation. Firstly, history of the Eemshaven, the general conditions and development environment are briefly described to profile the port, followed with an analysis of the advantages and the problems which the Eemshaven faces. Secondly, some suggestions on a strategic level will be given for two scenarios, namely conservative scenario and aggressive scenario. Then detailed plans of selected potential activities will be shown in graphs and texts. After that, the suggestions and potential activities will be judged by experts through interviews. The results of the interviews will be given as the evaluation part of the conclusion. Figure 1-2 shows the structure and some scientific tools that have been used during the study.

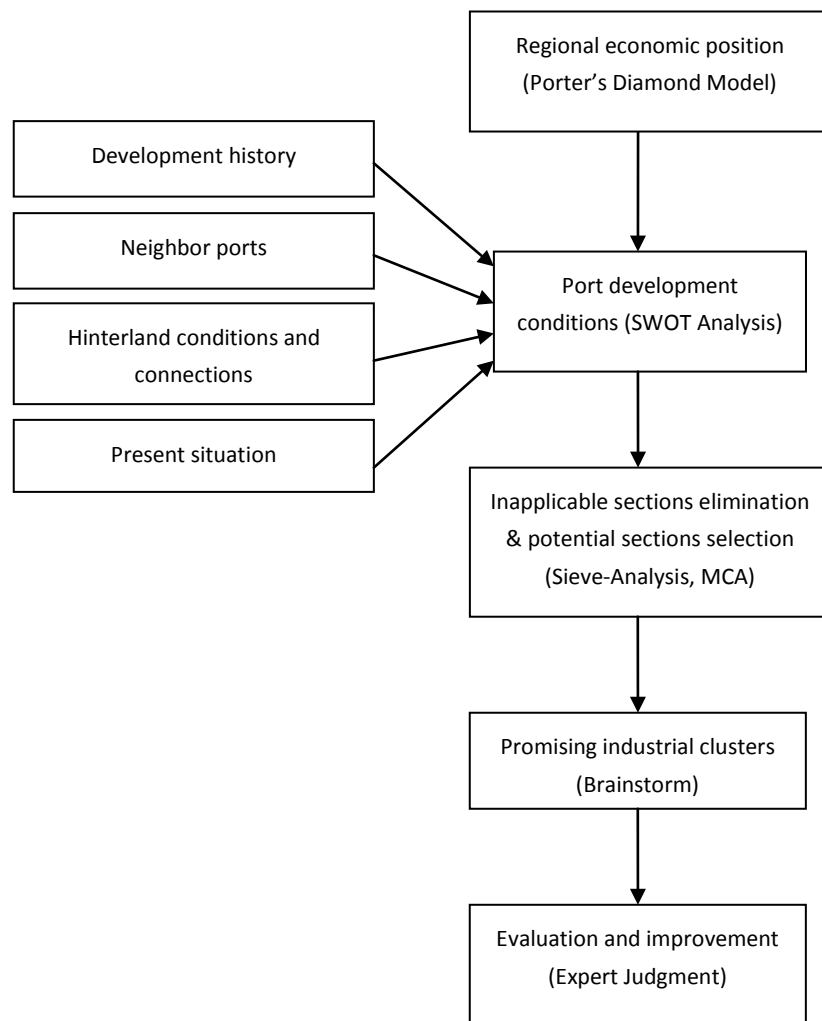


Figure 1-2 Study structure and methodology

In this study, **Porter's Diamond Model** will be used to evaluate the economic conditions of the northern Netherlands region, composed of the three provinces of Groningen, Friesland and Drenthe. Chance factor is not included because it is an uncertain factor which is not easy to estimate for the economic sections in the region. The results are considered as important factors in the SWOT analysis afterwards.

The SWOT analysis will be chosen as an analytical tool for evaluate the present conditions of the Eemshaven in the study. It is based on the research of regional economy, port current activities, hinterland and infrastructure as well as the interviews of the persons of stakeholders. The result of the SWOT analysis is a reference of the criteria setting for possible industries selection in the later stage.

Multi-Criteria analysis (MCA) is divided into two phases. The First stage is called Sieve-analysis. The objective is to remove the irrelevant or inapplicable industrial sections from the original industrial category list, which is made according to the latest European industrial categories. The criteria are set based on the weaknesses and the threats of the previous SWOT analysis. The second stage is Potential Section analysis, which aims at selecting the most promising industrial sections from the remaining activities after Sieve-analysis. The criteria are also based on the SWOT analysis in which strengths and opportunities are considered.

The objective of the **Brainstorm** is to get ideas of potential activities for the Eemshaven within the boundary of the selected industrial sections. In other words, the brainstorm is based on the results of the SWOT analysis and the Multi-Criteria analysis. No session is held for the brainstorm itself. Instead, emailing is chosen because it is easier to organize in this case. It is also a good way to make sure the invited people work on the ideas independently. A background memo is provided, which includes the results of the Eemshaven SWOT analysis, the selection of the potential industrial sections and the features of the sections. The ideas are grouped into harbor-based activities, land-based activities and land-harbor-based activities.

Expert Judgment is a way to obtain experts responding to problems, based on their knowledge and experiences (Keeney, 1991). The method is chosen for judgment of the strategies and the selected potential activities. Through interviewing, 15 stakeholders will give their professional visions on the development of the Eemshaven. The valuable information will be gathered as the evaluation part of the study.

1.5

REPORT GUIDANCE

The chapters are divided into three general phases: analysis, proposition and evaluation.

Chapter 2 – gives an overview of the Eemshaven. The locations, hinterland and connections, brief history, throughput, current port layout and port industries will be described in words.

Chapter 3 – Section 3.1 and 3.2 give the thoughts that the Eemshaven may learn from former development and the conditions of the neighboring ports. Section 3.3 is the analysis of economic competitiveness of the Northern Netherlands. The influences on the Eemshaven caused by local economic conditions are identified. Section 3.4 is the SWOT analysis of the Eemshaven. Positive and negative factors will be given as the output of this part.

Chapter 4 – two scenarios, conservative scenario and aggressive scenario, are set at the first section of this chapter. Suggestions on a strategic level for both scenarios can be found in section 4.2 and 4.3. What they should or should not do is the main output in this chapter.

Chapter 5 – section 5.1 gives a potential cluster for scenario 1, with the explanation of the reasons of choosing these activities. Section 5.2 is the process of industrial sections selection for scenario 2, followed with a potential cluster for the same scenario in section 5.3. Section 5.4 contains three examples of potential activities, showing how to work out each bullet of the clusters in the further phases.

Chapter 6 – Section 6.1 lists the important stakeholders of the Eemshaven for their future development. After that, various aspects of the strategic suggestions and potential activities in the clusters will be evaluated by stakeholders. The general viewpoints of the experts through interviews are given in section 6.2 and an evaluation part can be found in section 6.3.

Chapter 7 – Conclusions and recommendations for three phases are given in this chapter.

2 Site description and port current status

As the basis of this study, site conditions and current development status of the Eemshaven will be look at first. The location of the port will be described, followed by a closer look to its hinterland and accessibilities. A brief introduction of port development history will be given after that. The latter part is the current status of the Eemshaven. It will be presented from four perspectives, namely the current port layout, port industries, throughput and the acts of port authority.

2.1

LOCATION

The geographic coordinates of the Eemshaven are 53° 26' 54" N, 6° 49' 52" E. It is located in the province of Groningen and it is the most northern port in the Netherlands. At the mouth of the River Eems, the Eemshaven is very close to the German border. It faces the waters of the Waddenzee and thus opens to the North Sea.

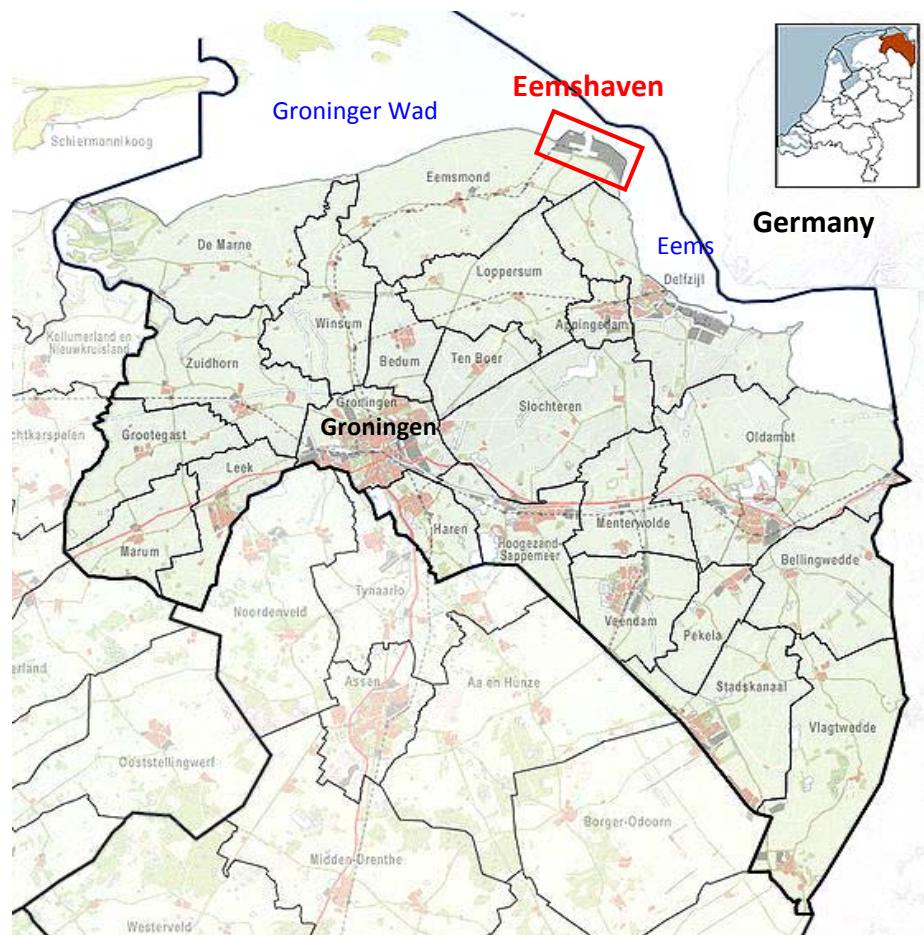


Figure 2-1 Location of the Eemshaven

Source: Wikimedia Commons

The major landward hinterland of the port includes the Netherlands and Northern Germany. As a North Sea port, the Eemshaven naturally has its seaward hinterland of Scandinavia and the United Kingdom. Some specific shipping activities are extended to the Baltic countries, Southern Europe, North America or West Africa.



Figure 2-2 Hinterland connections of the Eemshaven

Source: Groningen Seaports

Road

Two provincial roads, N46 and N33, give access to the Eemshaven. N46 is a direct connection between the port and the city of Groningen. The distance is about 35 kilometers. N33 goes towards another important city in the Northern Netherlands, Assen, via the port of Delfzijl. Both roads connect the national and European highway systems, by a distance of 35 kilometers. Freight from the Eemshaven can reach Amsterdam, Rotterdam, Antwerp, Hamburg and Ruhr Area within 5 hours by road when there is no congestion.

Rail

There is a rail connection between the Eemshaven and the rest of the country via the shunting-yard Onnen, which is very close to the city of Groningen. Rail nodes in Germany and Belgium are also accessible by rail, through Dutch railway network. It takes 7 hours to reach Amsterdam and Rotterdam and 10-14 days to arrive at German or Belgian destinations.

Inland waterway

In the current situation there is no existing inland waterway that directly connects the Eemshaven or other sites in the Netherlands. However, it is possible for barges to enter the Eemskanaal and thus approach Dutch inland waterway system by using the sluice nearby the port of Delfzijl. About 1.5-2 days are needed to get to the Randstad or the Ruhr Area from the Eemshaven.

2.3

BRIEF HISTORY

The port has a relatively short history. It was first opened in 1973, designed for oil-refinery and petro-chemical industries. Unfortunately, the oil crisis came right after its construction and the original blueprint never came true. To change the circumstances, an idea of regular port with logistics activities was proposed. Some piecemeal projects of the terminal and logistics facilities were carried out in the 1980s and 1990s, but none of them really brought success to the Eemshaven.

In the past 10 years, the situation of port development has surprisingly changed. Some industrial companies and organizations such as Theo Pouw and Holland Malt came to the Eemshaven and their plants have been successfully developed. Moreover, a concept of “Energy Valley” has been raised, starting with the plans of three new power plants. An “energy port” with some other stand-alone activities makes up the current situation of the Eemshaven.

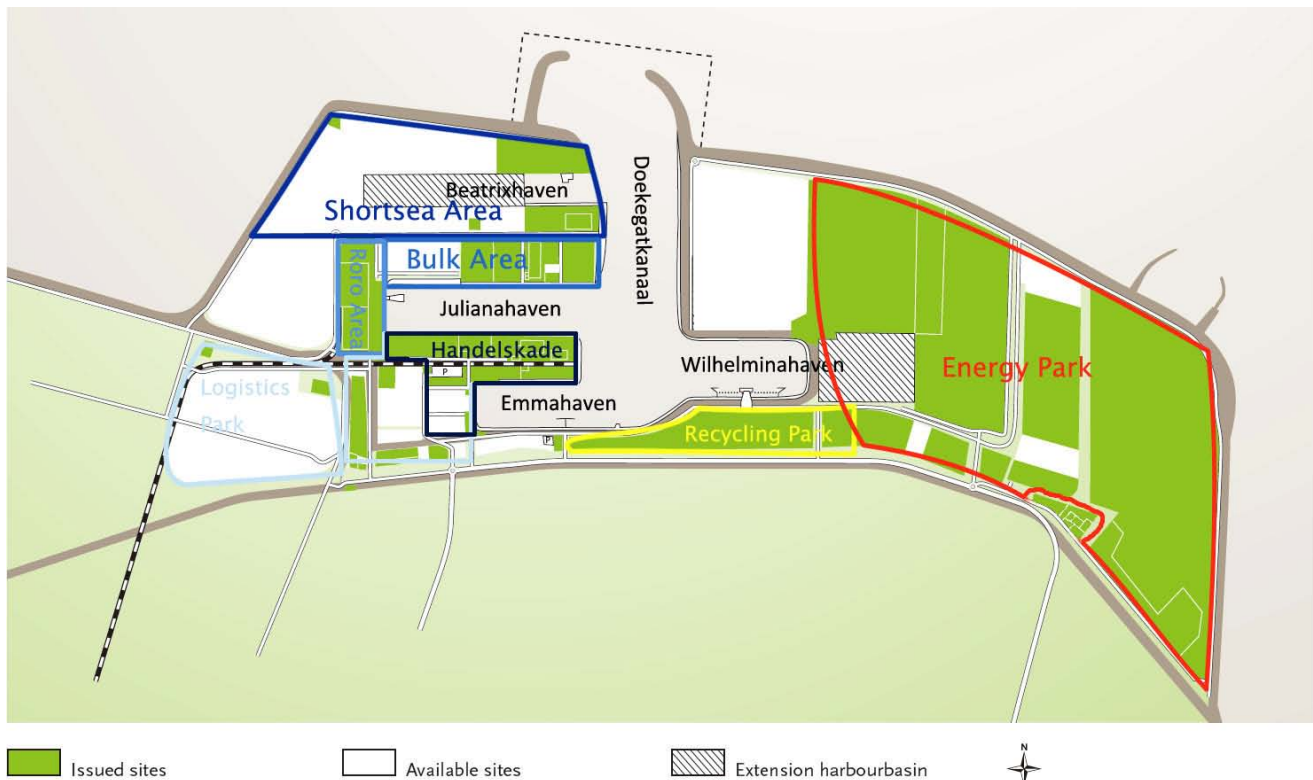


Figure 2-3 Eemshaven layout

Source: Groningen Seaports

The Eemshaven is a small seaport in terms of throughput, size of land and port facilities. It covers an area of 1129 hectares. The land in the Eemshaven can be divided into three parts, handling and logistics area in the west, Energy Park in the east and Recycling Park in the south, which is marked in the Figure 2-3. The water area is composed of five basins namely the Beatrixhaven, the Julianahaven, the Emmahaven, the Wilhelminahaven and the entrance part, the Doekegatkanaal. The Doekegatkanaal is accessible to vessels with draughts up to 10.5 meters. By 2012, the basin will be dug into 17.0 meters to allow vessels with draughts of 14.0 meters.

In the west of the port, the Beatrixhaven is the closest basin to the entrance. It is the Short-sea Area of the Eemshaven. The designed depth is 10.0 meters and further expansion is on the schedule. On the south of the Beatrixhaven, more handling activities are going on along the quays of the Julianahaven. Handelskade, Bulk Area and RoRo Area of the Eemshaven are settled around the Julianahaven. The depth of the basin is between 14.0-17.0 meters. The Emmahaven is also located in the west of the port, chosen by offshore supporting services and other logistics activities. The depth is 10.0 meters. The Wilhelminahaven, with a depth of 17.0 meters is the only existing harbor basin in the east. An expansion is planned for the fuel supply for the power plants in Energy Park behind the quays.

2.5

PORT INDUSTRIES

2.5.1

ENERGY PARK



Figure 2-4 Map of Energy Park

Energy Park Eemshaven is the biggest ambition of the port authority in recent years. It locates in the east part of the Eemshaven with an area of 344 hectares. Four power plants will compose the core part of the energy park. One of the power plants, which owned by Electrabel (No.47, Figure 2-4), has been operated at the easternmost port area for years. As one of the biggest gas-fired power plants in the Netherlands, it has the capacity of 2,400 megawatt per year. The future expansion of the power plant has been taken into consideration already. Two multi-fuel power plants are under construction at the moment. Nuon is building its gas, coal, biomass-based power plant Nuon Magnum (No.51), with a capacity of 1,200 megawatt per year. The other power plant is being built by RWE (No.49), a German energy company. The designed capacity is 1,600 megawatt. It is estimated that both power plants will start to operate in 2012 or 2013. The fourth power plant in the Eemshaven is invested by the Swiss company, Advanced Power (No.48). It is designed as a gas-fired combined cycle power plant (CCGT), with the capacity of 1,200 megawatt. The construction work will start soon. The four power plants will produce 6,400 megawatt per year in total.

Wind energy has been developed in the port area. There are 88 wind turbines operating in the port area, with a capacity of 3 megawatt each. The total capacity is 264 megawatt per year.

Besides electricity generation, other energy related activities include electricity transmission and energy consuming business. A transforming station built and operated by TenneT (No.38) takes the electricity to the national grid. The station of NorNed (No.39) operates the high-voltage electricity transmission between Norway and the Netherlands through the longest undersea cable in the world. Another similar station is planned to transmit electricity between Denmark and the Netherlands, operated by Cobra (No.50). It is estimated that 7500MW/year of energy will be produced in or imported through the Eemshaven in 2012, which can cover half of the total energy demand of the Netherlands.

Requiring a lot of energy, TCN datacenter (No.37) is a company which actually takes the advantage of Energy Park. Google is the biggest client of the datacenter.

2.5.2

HANDLING & LOGISTICS

The traditional shipping activities in the Eemshaven are not large-scaled but very specialized. This part of the port can be further divided into Short-sea Area, Bulk Area, RoRo Area, Handelkade and Logistics Park from North to South.

Short-sea Area

Short-sea Area is newly developed, with only two companies located. Dutch shipping company Wijnne & Barends (No.4, Figure 2-5) handles packed timber, chemicals, aluminum, containers, bulk and wastes in the Eemshaven. The services cover the North Sea, the Baltic Sea and the Mediterranean by tramp shipping. AG Eems (No.3) offers regular passenger lines between the Eemshaven and the German island Borkum (1-2 times per day in winter and 3-4 times in summer), as well as the car ferry services.

Bulk Area

BKV Netherland (No.5) is an importer and supplier of construction materials; it also provides storage area of the materials in the bulk area of the Eemshaven. Cement sales North GmbH (No.6) is an important cement supplier in Northern Germany. Holland Malt (No.7) collects barleys of the farm in the Netherlands and north Germany by truck, produces malt and then ships it all over the world. The closing down company, Biovalue (No.8), produces biodiesel from rapeseed for German diesel cars, which is recently closed down due to financial problems.

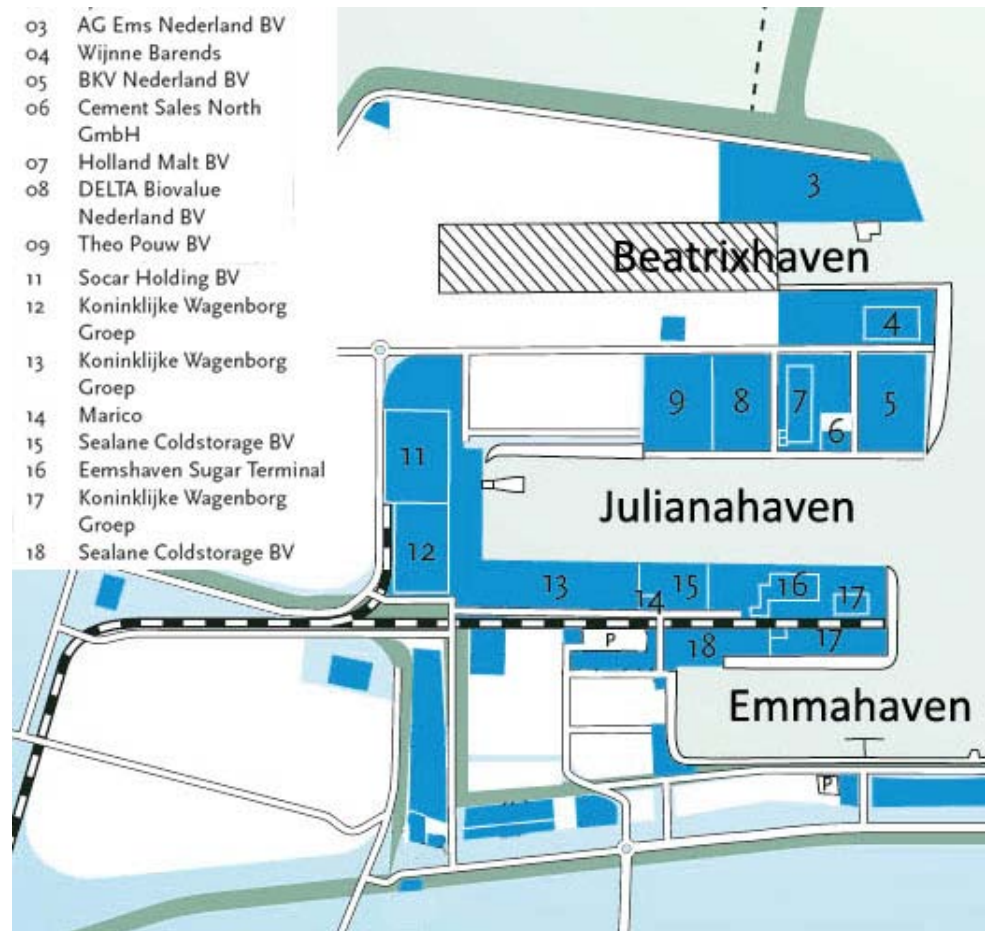


Figure 2-5 Map of handling and logistics area

RoRo Area

Using the RoRo terminal, Socar Holding BV (No.11) transports secondhand cars from the Netherlands to Nigeria regularly. Royal Wagenborg B.V. (No.12, 13, 17) gets involved in many activities in the Eemshaven. The cargoes that Wagenborg handles are timber, paper rolls, other general cargo, container and also military devices.

Handelkade

Handelkade is the first developed area in the Eemshaven. Besides Royal Wagenborg, Sealane Coldstorage's quay and the Sugar Terminal are important components of this area as well. Sealane Coldstorage (No.15, 18) provides regular services of seafood handling, storage and transport. The sugar terminal (No.16) is operated by the company Veem & Factor, handling sugar and chemical products.

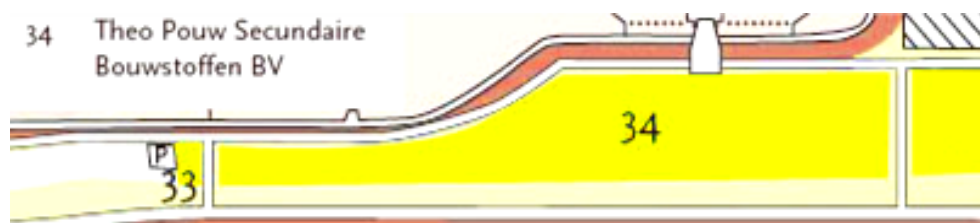


Figure 2-6 Map of Recycling Park

The secondary construction material company, Theo Pouw (No.34, Figure 2-6) occupies the major recycling park of 28 hectares. It has been a crucial contributor to the throughput of the Eemshaven for years. The materials it provided were mainly used for the construction works in the port area. A future expansion of Theo Pouw is decided, the site of which is at the north size of the Julianahaven (No. 9, Figure 2-4).

In 2009, the throughput of the Eemshaven is 2,016,000 tons, about 0.4 percent of the total number of Dutch seaports. The throughput scale of the Eemshaven is about 1/10 of Ijmuiden, Vlissingen or Terneuzen, 1/30 of Amsterdam and 1/200 of the port of Rotterdam.

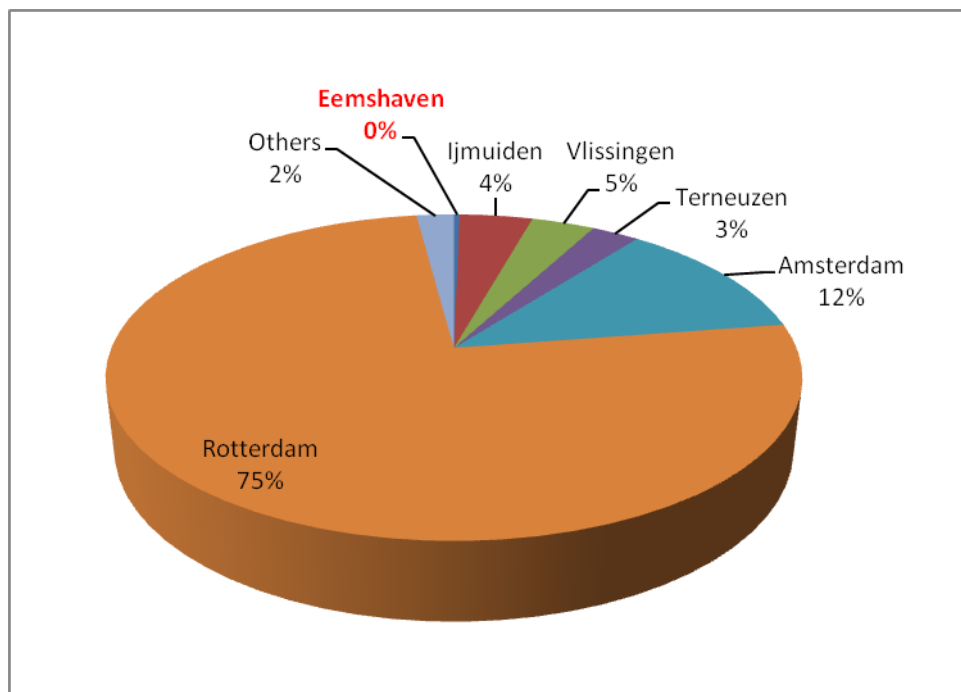


Figure 2-7 Throughput comparison in percentage

Construction materials contributed most to the total throughput of the Eemshaven. Besides, metal and steel, gas and oil products, paper, timber and sugar are also important cargo types handled in the Eemshaven.

As mentioned, the major origins and destinations of the goods are the Netherlands, northern Germany and Scandinavia. North America, the Baltic countries and South European countries are also important concerned regions.

2.7

PORT AUTHORITY

Groningen Seaports, also recognized as the “Delfzijl/Eemshaven Port Authority”, officially came into existence on 1st January, 1998. The shareholders are the Province of Groningen (60%), the Municipality Delfzijl (20%), and the Municipality Eemsmond (20%).

Groningen Seaports takes full responsibility for the development of the Eemshaven, the port of Delfzijl, as well as inland ports Farmsumerhaven, Osterhornhaven and a rail terminal in Veendam. It aims at stimulating economic activities and employment by attracting and selecting activities in the port and the industrial area around the ports; it manages the port affairs, provides port facilities and logistics services, sells or leases land in the port area.

2.8

CONCLUSION

The Eemshaven is a small seaport in terms of throughput, size of land and port facilities. The depth of the port ranges from 10.0 to 17.0 meters. It can be approached by road, rail and inland waterway. The main hinterland of the Eemshaven includes the Netherlands, Northern Germany, as well as the Scandinavia and the United Kingdom. Experienced the phases of oil-refinery and logistics, the Eemshaven is an energy oriented port with some industries and logistics activities now. Energy Park occupies half of the port area, located in the east. Four power plants will be the core of the energy port blueprint. The west part of the port is developed for cargo handling and logistics. Bulk, wood, paper, RoRo cargo and general cargo are handled and transshipped in this area. Groningen Seaports is the port authority not only of the Eemshaven, but also of the port of Delfzijl, two inland ports close to Delfzijl and the rail terminal Veendam. Groningen Seaports is funded by and still works close with the province of Groningen, the municipality of Eemsmond and the municipality of Delfzijl.

The overview of background and current situation of the Eemshaven in this chapter is the basic scenario for the study. Further discussions and analysis in the following chapters are all built on these facts.

3 Port development conditions analysis

This chapter will first discuss what lessons can be learned from the development history of the Eemshaven. After that, a brief comparison of the Eemshaven and its neighboring ports will be given. The economic conditions of the Northern Netherlands are followed, showing how they affect the development of the local port Eemshaven. The results will be partly used in the latter part, SWOT analysis of the port. The first research question will be answered in this chapter.

3.1

LESSONS LEARNED FROM HISTORY

The Dutch economy experienced a high speed growth in the 1950s and 1960s. Heavy industries were seeking for new sites for expansion. Areas around seaports were particularly popular due to the easiness of raw materials and final products transportation. In the Netherlands, the optimal location, Rotterdam itself could no longer meet the large demands of port industrial sites. To solve the problem, several locations along the coast were proposed for new industrial development and the Eemshaven was one of them. The proposal of building a new seaport in the north was officially approved by the province of Groningen in 1968. Then in 1973, the port Eemshaven was opened by Queen Juliana.

Unfortunately, the oil crisis came right after the opening of the Eemshaven. The balance of supply and demand of industrial sites around ports changed dramatically. It became very difficult for the new seaport to make steps by following the original plan. After the second energy crisis in 1979, the idea of a port with oil-refinery industries was no longer believed to happen.

A new idea of developing a logistics center was first raised in 1980s and became popular in late 1980s and 1990s. Some big projects concerning logistics development were carried out, but they did not succeed. The closedown of the fruit terminal was a symbol of the failure of the Eemshaven as a logistics center.

The new port authority, Groningen Seaports, took hand of the Eemshaven in 1996. Couple years after that, the port surprisingly went into a new era. Some unexpected activities were developed quite successfully in the port area and recently the construction of “Energy Valley” becomes the top priority of the Eemshaven.

Since the opening of the port, many proposals have been developed in the Eemshaven. A number of them still exist in the port but some of them did not survive. Anyway, it is a delightful fact that new investments are still going into the Eemshaven in recent ten years. The port keeps going forward.

The major developments ever happened in the Eemshaven are listed in the table below.

Table 1 Successes and Failures of the Developments

Year	Successful development	Failed or terminated development
1976	AG Ems started Borkumlijn, regular ferry services to Borkum Construction of power plant Epon (taken hand and extended by Electrabel in 1996)	
1977		The Butterfahrten, the tax free mini cruise, started being operated by shipping company Kamstra (ended in 1999 due to European rules)
1979	Sealane Coldstorage BV started its business (construction of Julianahaven wharf started in 1978)	
1986		Opening of the fruit terminal (taken by Wagenborg in 1999)
1987	Opening of the sugar terminal	
1990		Construction of the potato plant (moved to Zeeland in 1997)
1991	Building of the first wind park (second one in 1995)	
1994		Opening of the floating shipyard Pattje (Closed down in 2006)
1996	Meyer Werft chose the Eemshaven to complete their large cruise ships	Planning for a new outside-dike shipyard for shipbuilding by Meyer Werft (failed in 1999)
1999	Wagenborg established in Eemshaven	
2001	Tyco came to the Eemshaven	
2002	Socar settled in the port (Con-ro terminal started its construction in 1999 and expanded in 2004)	
2003		Plan for ship-breaking yard Ecodock (cancelled in 2007)
2004	New construction material recycling site for Theo Pouw	
2005	Building of Holland Malt factory by Bavaria brewery and Agrifirm	
2006		Plan for a LNG terminal (blown off in 2010)
2007		BioValue started biodiesel production (closed down in 2010)
2008	Opening of Beatrixhaven, AG Ems moved and Wijnne & Barends started a new container terminal NorNed started its operation of undersea cable Opening of TCN data center, with Google as its customer	
2009	Construction of the power plant of RWE and the power plant of Nuon	
2010	Construction of Vopak oil tanks started The power plant of Advanced Power and Siemens approved	

Source: eemshaven-energy.com, Wikipedia, company websites

As seen in Table 1, the successful developments include energy generation, ICT facilities, (re)production and shipping related activities. The cases share some common features. First of all, the Eemshaven is a suitable place for these activities due to cheap land, easy access to water, etc. Secondly, the successfully developed activities more or less have relations to local resources, social activities or economic activities. However, the industrial chains of the activities concern bigger areas, which may help achieve economies of scale. For example, the power plants use gas produced locally and import other input materials such as coal and biomass, but serve electricity for at least one third of the country or even half of it. Holland Malt gets half of the barley from local farmers and another half from the Baltic States. The product malt is hundred percent transported all over the world by sea. Theo Pouw receives used or contaminated materials by sea vessel or by barge from the rest of the Netherlands, Scandinavia or Germany. After processing, the secondary materials are served for local constructions. Shipping companies that are located in the Eemshaven are mostly originated from local areas. The shipping activities are concentrated in the North Sea Region. In addition, the Baltic, the Mediterranean and North America are important origins and destinations of transshipment activities. It seems the activity areas of the successful developments at least include the whole Netherlands, part of Germany and Scandinavia.

It is not difficult to see another phenomenon from the examples above that most successful cases in the Eemshaven hardly rely on large-scaled overland transportation outside the local area. The phenomenon is probably because the connections between the port and the major urbanized area and industrial area in Western Europe are not very well. It might also be one of the reasons that the potato plant left from the Eemshaven and a few other activities never come to the Eemshaven.

Projects of ship building and ship scraping were proposed several times but such activities never came to the Eemshaven. To reach a certain scale, large investment, skilled workers, big range of upstream industries and suppliers are necessary for these activities, which made it difficult to start in the Eemshaven.

The lack of demand of a specific market could be another important factor that leads to unsuccessful development. At the same time, governments are of great importance as well. Some new policies may completely end an existing activity or break the market balance, for example, the failure of the tax free mini cruise. Moreover, the governmental supports, especially financial supports, can have crucial influence on the performance of budding industries, such as bio-diesel industry.

As mentioned earlier, some of the developed businesses were not expected to stay in the Eemshaven, such as the malt factory, construction material processing yard, etc. But because of the enthusiasm of the new port authority and the activeness of particular entrepreneurs, these activities settled down in the Eemshaven and were well developed. On the other hand, the existing developments did not show much relation or a clear clue of what kind of port the Eemshaven would turn to be. A potential energy cluster is expected, but so far no industry cluster forms, which makes it hard for other related industries to build upon.

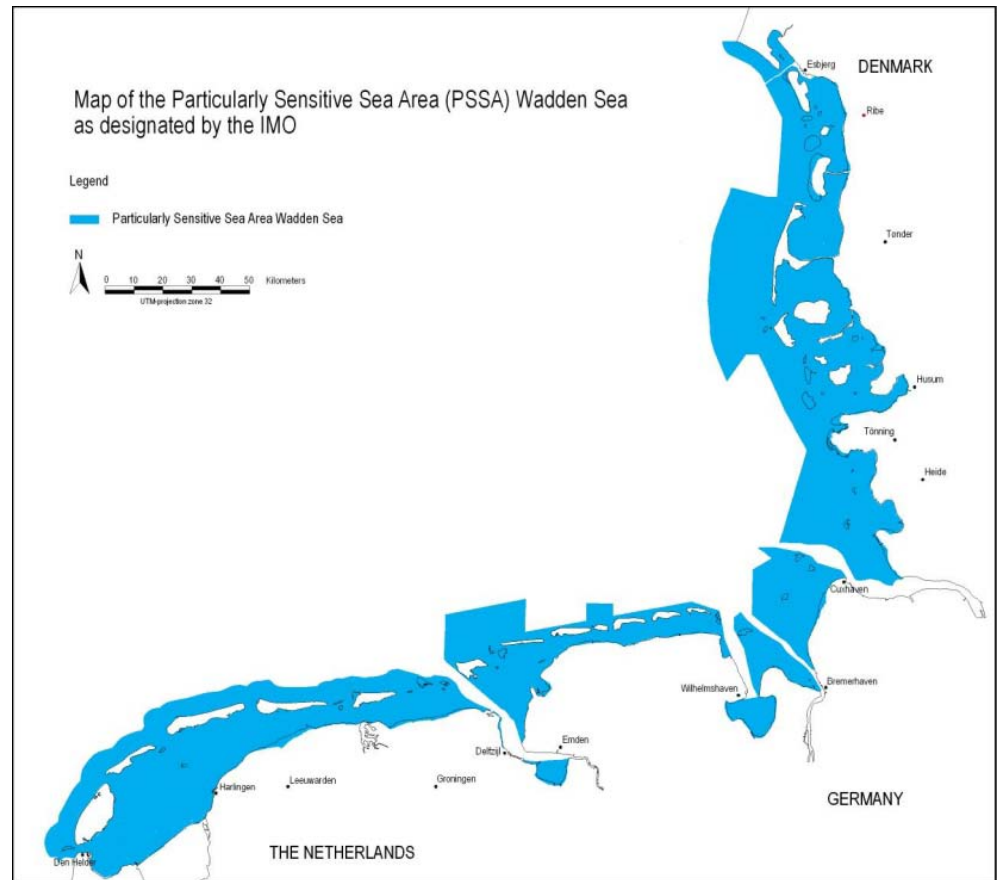


Figure 3-1 Locations of the Eemshaven and the Neighboring Ports

Source: Wadden Sea Ecosystem No.25-2009

The Eemshaven is located along the Wadden Sea, an important environment protected area in the south-east of the North Sea Region. The Wadden Sea is adjacent to the heavily-loaded shipping routes between north and west Europe. Not only large ports like Bremen-Bremerhaven and Hamburg, but also numbers of small-medium-seaports are using the accesses through the Wadden Sea. Such ports include: the other seaport of Groningen Seaports, Delfzijl, the only Friesian seaport, Harlingen, three German ports, namely Emden, Wilhelmshaven and Cuxhaven, and the Danish port Esbjerg. The Eemshaven shares the hinterland and the responsibilities of the protection of Wadden Sea ecosystem with these six ports. As competitors, partners or models, these ports are important references to the development of the Eemshaven.

Table 2 Comparison of port conditions

Port	Size	Draught (m)	Hinterland connection			Throughput (1000 ton)	Main cargoes	Port facilities
			Road	Rail	Water			
Eemshaven	Small	11,0	Moderate	Limited	Moderate	2.190 (2008)	Construction materials Paper/ wood Chemicals Sugar/barley/fish	Moderate
Harlingen	Very small	7,5	Moderate	-	Good	2.582 (2008)	Container Salt and food Marine sand	Limited
Delfzijl	Small	9,0	Moderate	Limited	Good	5.790 (2008)	Chemicals Aluminum minerals Salt	Moderate
Emden	Small	10,7	Good	Good	Good	6.150 (2006)	Automobiles Forest products Minerals Container Wind energy parts	Good
Wilhelmshaven	Medium	20,0	Good	Good	-	40.512 (2008)	Oil products Coal Building Materials Chemicals Project cargo	Good
Cuxhaven	Small	14,5	Good	Good	Moderate	No data	RoRo cargo General cargo Building materials Automobiles Fish Heavy lifts	Moderate
Esbjerg	Small	10,5	Moderate	Limited	-	4.589 (2007)	RoRo cargo Container Coal Chemicals Mineral oil products	Moderate

Source: Seaports of Niedersachsen, websites of the ports, Google Map

Except for the port of Harlingen, the reference ports are all industrial ports. No matter by the standard of port size, infrastructure, throughput or the amount of activities, German ports are more competitive in this region. The advantages of German ports show in port facilities, infrastructure and connections with local industries. Cargo generated by local industries has crucial contributions to throughput.

The Eemshaven has low throughput among these seven ports. The seaside accessibility of the Eemshaven is not bad compared to the reference ports. The port facilities and infrastructure of the port are moderate but not attractive for large volume of logistics from or towards the economic centers. The biggest problem is lack of the supports of local industries, which may give many opportunities for the port.

3.3

REGIONAL COMPETITIVE POSITION — PORTER'S DIAMOND MODEL

The Porter's Diamond Model is used to identify the competitive position of the northern Netherlands in the competition with other regions close to it. The region which is studied on includes three provinces of the Netherlands, Groningen, Friesland and Drenthe. According to Porter, four determinants: factor conditions, demand conditions, related and supporting industries and firm strategy, structure and rivalry, decide the competitive position of the nation together. Two other factors can influence the competitive position besides the four determinants, which are the role of government and chance. The chance factor is not going to be included in the following elaboration.

3.3.1

FOUR DETERMINANTS AND GOVERNMENTAL SUPPORT

Factor conditions

The three provinces of the northern Netherlands cover a total area of 8982 km². It is about 22 percent of the whole country. More than 70 percent of the land use in the region is for agriculture. The population of the region is 1.7 million in 2010, which is 10.2 percent of the national population. The density of residents is relatively low compare to the national average.

The region, especially the province Groningen, has rich natural resources of gas and rock salt. The biggest gas field of the country is located in Slochteren with other smaller gas field around. In Veendam and Heiligerlee, salt fields were found. Although the resources are valuable, most of the fields have been exploited already. Like many places close to the open sea, the region has remarkable wind energy resource both on the land and in the waters around it.

The labor power is modest in the region but the distribution is not balanced. More than 30 percent of the workforce is concentrated in the Groningen-Assen area. Major skilled labor and universities/research institutes also gather in this area. Still, the density of the academic institutes as well as the capitals invested in the region is a lot lower compared to other parts of the country.

The infrastructure density of the railways is a lot below the average of the whole country. The quality of the infrastructure around big northern cities is high but when it comes to remote areas, the infrastructure is not sufficient.

Demand conditions

Lacking of a big consuming market, the local demand for production depends on the main industries in the region. The major industries in the northern Netherlands are energy industry, chemical industry, food industry, metal industry, paper industry, machinery manufacturing, ship building, construction, trade, repairing and other services. The regional demand for production is a mixture of fuel, chemicals and minerals, food, steel and other metal products, timber, machinery components, construction materials, etc. Due to the limited scale of the local industries, the demand is not high.

Related and Supporting Industries

Energy industry and chemical industry have some support industries in the region, such as natural gas exploitation, extraction and transportation are the upstream industries, paper industry, steel and metal industry, etc. Unfortunately, the scale and the variety of the related industries are not worth mentioning. Similarly, the region is one of the main areas for production of agricultural products such as milk, sugar and potatoes in the Netherlands. However, most of the related, high value added activities are being done in the west part of the country. Some traditionally strong industries like ship building are losing the importance in the regional economic structure due to the bottlenecks of leveling up.

Firm Strategy, Structure, and Rivalry

Besides several large companies, there are numbers of small-medium enterprises in the northern Netherlands. The boundary of the countries is not sharp in the region which means the companies compete not only with the rivals in the same region, but also with other European companies.

Governmental support

The core task of the provincial governments is to strengthen the spatial planning as well as the economic structure of the region. A program called "North Netherlands" for the period 2007-2013 with a total budget of €373 million was approved by European Commission (European Commission, 2007). The project aims at connection the region with the national economy structure and making the region into a corridor links the economic centers in west-Netherlands with those of northern Germany and Scandinavia. The governments are investing in promising, innovative sectors such as water technology, energy, agribusiness and life sciences (SNN). A pack of projects are undergoing to improve the infrastructure of the region, including building new rail connections, constructions of pipelines, widening the provincial roads and inland waterways.

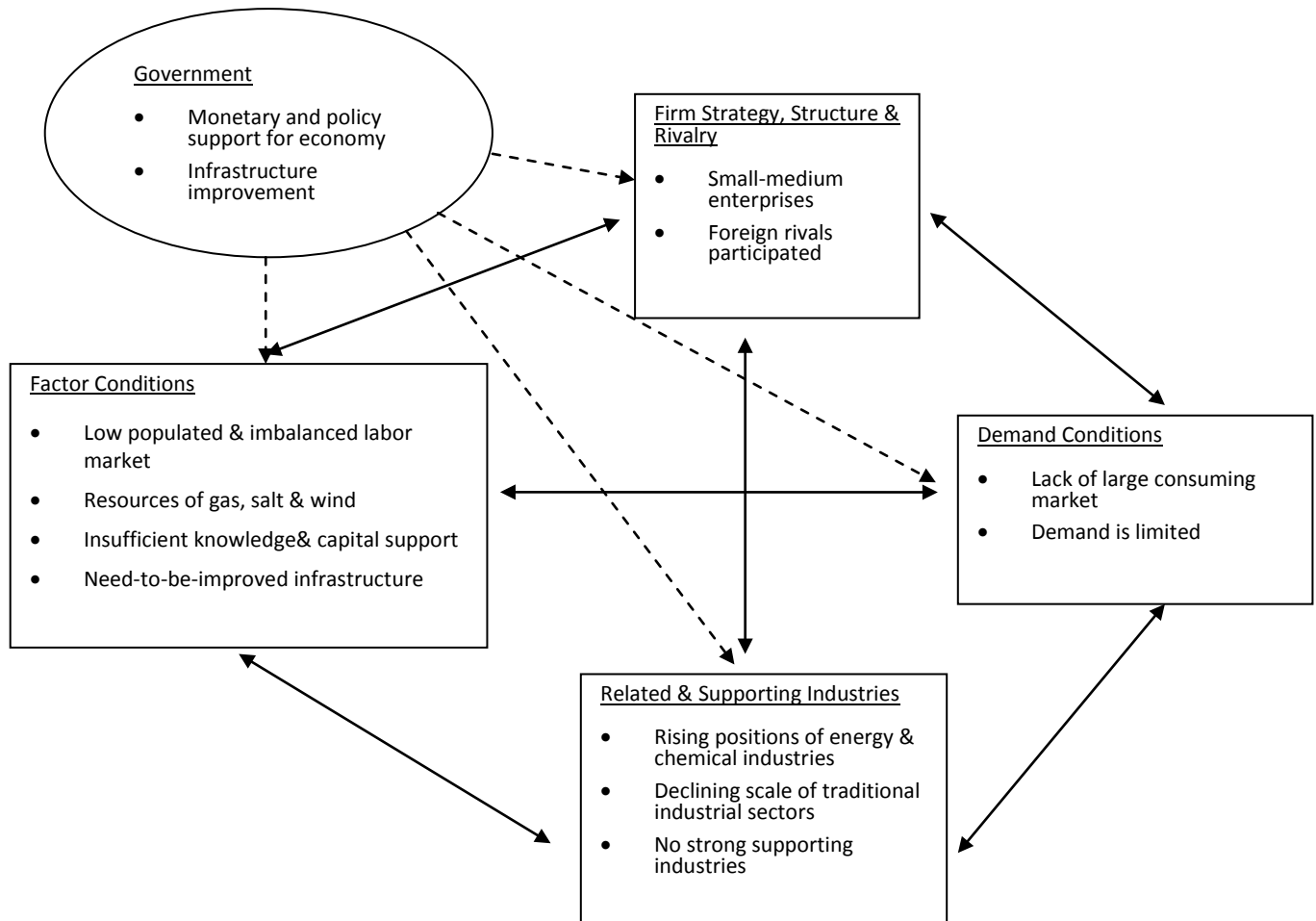


Figure 3-2 Results of regional competitiveness analysis

The region is not far away from the most developed zones in west Europe. According to the result of Porter's Diamond Model, almost all the determinants are weak so that the Northern Netherlands does not have big advantages in the competition of the nearby regions. In general, the region is not even attractive to domestic entrepreneurs. Industries in this region are not largely scaled. There is no dominant industry that can lead an economic leap. Also, the region lacks for comprehensive supporting industries and services for any industry. It is not easy to develop business which needs a lot of related and supporting activities. It is also unwise to propose many activities which do not have relations with each other at the same time. Furthermore, because of the limited demands for consumption, market orientated activities such as marketing, sales and other logistics activities are only prosperous in big cities like Groningen. From these points of view, a port in this region cannot benefit much from the local region. Luckily, the governments play a positive role in the development of the region and roles of the governments will remain a key factor of future development of the region as well as regional gateways.

The SWOT Analysis of the Eemshaven is aiming at achieving a small or medium sized seaport with logistics and value-added port industries, which has regional economic importance in the Northern Netherlands.

Adequate capacity of space and relatively cheap price

The area of the available land in the Eemshaven is 132 hectares by the end of 2009. Since the project of the LNG terminal is withdrawn, the total available area will be around 200 hectares. There are still several pieces of land each of similar size around the current port area that are possible for use in future development. The land price as well as the house prices in the north is relatively cheaper than the prices in the Randstad.

Stable energy supply

The northern Netherlands, especially the province of Groningen, is the biggest natural gas production area of the country. The recoverable volume of the largest gas field Slochteren alone is about 2700 to 2800 billion cubic meters (NAM), which can meet the needs of more than 15 million household for 100 years. Due to opening to the North Sea, the wind energy along the coast in the northern Netherlands is bountiful to be used for commercial electricity generation.

Industrial clusters are emerging in the Eemshaven. The most important cluster is that of energy related activities. Four power plants (three of them are under construction) together with the onshore wind turbines and electricity import capacity can provide 7500MW/year in total. That means a big volume of electricity can be achieved in the region and the supply is stable and reliable. The construction of Energy Park in the Eemshaven also gets a lot of support by local government, the port authority and extensive attention from the companies.

Low traffic congestion and competitive price for port dues

There is no congestion of vessels at the port as well as on the roads and railways towards the Eemshaven. In addition, the port due is based on the amount of cargo handled at the port instead of the total amount vessels carried, so that the costs of using the port is relatively low, but with good services.

Easy access to gas pipelines and cables

TenneT owns a transformer substation connected to the national electricity grid in the Eemshaven. Because of the natural gas field in the province of Groningen, the infrastructure in this region is well connected to the national grid. Through the pipelines in Groningen, gas supplies the Randstad area as well as export to the neighbor countries. There are two Tyco data cable stations and the TCN data center in the port area. Their facilities form a data cable network on regional level as well as on European level.

Traditional agricultural sector in the region

Agriculture and fishery in the northern Netherlands play an important role in the Netherlands. The regional production of milk, potatoes, sugar, fruits, flowers and sea food is remarkable.

3.4.2

WEAKNESSES TO OVERCOME

Lack of strong hinterland support

The distance between the Eemshaven and the Randstad, the major market of the Netherlands, exceeds 200 kilometers and the conditions of the network are not really attractive to large-scale transport activities. The road connections are single lane on each direction. All the cargoes transported by rail and inland waterway have to make detours to reach other parts of the country.

The only regional economic center is the city of Groningen, about 35 km away from the Eemshaven. The demand of Groningen is limited, and thus the cargo flow it generates is not significant.

There is no industry strong enough to lead the prosperity of the regional economy, not to mention the upstream and downstream industries. Some traditional industries in the region are gradually moving to the south because they can achieve better supporting services there.

Underdeveloped labor market and knowledge support

Labor force and knowledge support are centralized in Groningen – Assen corridor in the Northern Netherlands. In other areas, both quantity and quality of manpower are due to the limited population and opportunities for personal development.

Relatively poor logistics facilities and limited shipping routes

Probably because of low cargo flow, in the Eemshaven, facilities for logistics such as container handling facilities, stack and storage areas, intra-port transport facilities etc, are not as comprehensive as large seaports, which may not be attractive to logistics based business. It is not a junction of important regional shipping routes and definitely not a remarkable node of international shipping network.

Lack of comprehensive development approach

Selling or leasing land and bringing in companies are major targets of the port authority. The attentions were paid to the port area. Other factors, such as the introduction of new shipping routes, upgrading of infrastructure, improvement of labor market, are more or less neglected.

Increasing demand of shipping and offshore activities

With the development of economy and globally distribution of production line, the demand of shipping activities is continuously increasing. The increasing transport volume and freight rates prove the shipping market keeps growing, which gives positive effects on port development. Same trend shows in a regional level. At the same time, ambitious targets of offshore wind farms in the North Sea Region generate a lot of related activities for seaports.

Attention to clean energy

Concerned about the increasing greenhouse gas emissions and the shortage of fossil fuels, people pay more attention to renewable energy and other replaceable resources these years. Related industries including wind power industry, solar power industry, hydropower industry and nuclear power stations are seeking for new development sites. The Eemshaven has large open areas, low population density and good accessibility to the sea so that it can be an interesting location for the clean energy business.

Congestions in the main ports

Large ports in Western Europe like Rotterdam and Hamburg are facing the problems of capacity limit. Congestions occur and it will take some time before new spaces as well as facilities are ready to solve the problems. The European organizations also suggested developing alternative shipping routes to make the facility use more efficient. The policies may incline to the ports such as the Eemshaven.

Requirement of entrepreneurship freedom

Large companies, especially global companies, show their interests in each part of the logistics chain in order to improve their competitive power. The Eemshaven may offer more freedom to specific enterprises than large seaports.

Stricter environmental policies and tighter legislation

Stricter environmental policies give a lot of pressure on emission reduction of the port activities and set boundaries of human activity areas. The population density around the Eemshaven is rather low. Compared to other port areas and industrial areas, the influence on the policies is lower and it is more likely to bring NIMBY (Not in My Back Yard) activities to the Eemshaven.

Shrinking demand for industrial sites in North-west Europe

Due to cheap labor costs and easy accessibilities of raw materials, it is more economical to move the traditional heavy industries to developing countries. Those labor intensive industries, resource intensive industries and capital intensive industries are shrinking in Europe. As an industrial site in Western Europe, the Eemshaven is less attractive to invest.

Fast development of neighbor ports

The ports that are located nearby with similar scale, such as Emden, Wilhelmshaven and Harlingen are developing rapidly, not to mention the strong competitors such as Bremerhaven, Hamburg and Rotterdam. The activities like natural gas and oil storage, chemical industries, automobile transportation, wind energy related industries are being focused on by the port authorities. The competition can be very severe in the future.

Eliminating subsidies

The central and provincial governments tend to offer policy supports rather than monetary supply recently. Instead of gaining subsidies from the government, now the port is operated from the support of the company investments. With the reduction of available land, the port development will be dependent on entrepreneurship and shipping activities in the future. From another point of view, some potential sectors, like renewable energy production, quite rely on subsidies at this moment. The eliminating amount of subsidies on the particular fields may bring certain limits to the port development as well.

Environmental sensitivity of the Wadden Sea

As a site on World Heritage List, the Wadden Sea is considered to be one of the last remaining natural, large-scale, intertidal ecosystems (UNESCO). Therefore, environmental groups will pay close attention to all the activities concern the Wadden Sea area. The constructions of the three new power plants in the Eemshaven and fuel transportation through the Wadden Sea already brought a lot of discussions. The concerns of environment protection in this area may give limitations to the future development of the Eemshaven on a considerable level.

The SWOT analysis of the Eemshaven can be summarized as:

Table 3 SWOT Analysis of the Eemshaven

Strengths <ul style="list-style-type: none"> • Adequate capacity of space and little traffic congestion • Stable energy supply • Competitive prices • Easy access to gas pipelines and cables • Traditional agricultural sector in the region 	Weaknesses <ul style="list-style-type: none"> • Lack of strong hinterland support • Underdeveloped labor market and knowledge support • Relatively poor logistics facilities and limited shipping routes • Lack of comprehensive development approach
Opportunities <ul style="list-style-type: none"> • Increasing demand of shipping and offshore activities • Attention to clean energy • Congestions in the main ports • requirement of free entrepreneurship • Stricter environmental policies and tighter legislation 	Threats <ul style="list-style-type: none"> • Shrinking demand for industrial sites in North-west Europe • Fast development of neighbor ports • Eliminating subsidies • Environmental sensitivity of the Wadden Sea

The condition of the Eemshaven will not be notably improved by taking the advantage of a single strength/opportunity or overcoming a single weakness/ threat. The Eemshaven only has a growing future when the plans consider several factors together.

Some strengths of the Eemshaven like cheap and available land, high agricultural production remain for a long time. However, compared to those strengths, weaknesses are more significant. They make it difficult to make the best use of the strengths. Therefore, in this case, how to deal with the weaknesses is more important. Most of the weak points are not only confined in the port area. The problems like hinterland support, labor market, infrastructure etc. need to be solved on a higher level.

In general, the port does not have a very attractive investment environment yet, but it has resources to develop and opportunities to seek in the future. It has potential for the future booming if the efforts are put in a right way.

Energy related industries particularly remain to be very interesting to the Eemshaven not only because of the forming cluster and the future needs, but also because of the support of local government and the port authority.

Unlike the dying development zones, the Eemshaven still has potential to grow. One of the proofs is the continuous investments in recent years. The former successful developments in the Eemshaven have connections with local activities. Almost all of them reach a certain scale, with neighbor countries involved, but they obviously do not depend on long distance overland transportation. Both roles of the governments and local entrepreneurs are important for port development, which may successfully realize some unexpected business in the port. There is no industrial cluster so far that the port can count on so having one maybe the next step.

The Eemshaven has very low throughput among the Wadden Sea small and medium sized seaports. The Eemshaven has relatively good accessibility from the sea but problems show in hinterland connections, port facilities, and especially the interactions with local industries.

The Porter's Diamond Model for the Northern Netherlands shows the limited economic competitiveness of this region. Within the region, the area between the city of Groningen and Assen gathers the major labor force, knowledge, social and economic strengths. Governments play a positive role in the regional development. The role of governments remains an important force of the future development.

Stable energy supply, adequate space for additional activities, competitive price, easy access to pipelines and cables, regional agriculture production are the main strengths of the Eemshaven. The weaknesses include lack of hinterland support, underdeveloped labor market and knowledge, limited shipping routes and current unbalanced development approach. The demand of shipping and offshore activities is increasing, while the scale of traditional industries in North-west Europe is shrinking. Some congestions show up in large ports at both landward accesses and seaward accesses, which may bring the Eemshaven more opportunities. Other positive factors include the requirements of clean energy and free entrepreneurship. At the same time, fast development of neighboring ports and eliminating subsidies may have negative influences. The Wadden Sea is a sensitive area due to human activities, but the Eemshaven as a port adjacent to the Wadden Sea, allows activities with all environmental levels. It will be a big challenge in the future development.

It is not easy to change the negative factors mentioned in the SWOT Analysis, especially for factors concern a bigger region than the port area. There is no dominant factor so that the development should aim at improving several negative factors simultaneously. Energy is an important section in port industries due to the going on power plants projects and the expectations of the government and the port authority.

The Eemshaven will have a bright future but under some conditions. The service life of a power plant is around 30 years. The idea of an "energy port" will only be successful if the site is not replaceable. That means a certain amount of energy related value-added industries come to the port and the electricity generation activities remain in the port area. A more ambitious way is to improve the negative factors actively. It is a more sustainable way, but a lot of support is needed from the government and co-operations between stakeholders will be very important.

The suggestions of Chapter 4 and the industrial section selection in Chapter 5 are based on the results of this chapter.

4 Strategic proposals

This chapter starts with the description of two scenarios, the conservative scenario and the aggressive scenario. Then some suggestions on a strategic level will be given for the two scenarios.

4.1

SCENARIOS

According to the stakeholders, it is possible that Groningen Seaports will not have a considerable area in addition in the future because there are plenty of better development proposals in the region. If that happens, the Eemshaven will be fully occupied in five to ten years. Based on this fact, two scenarios are considered.

Scenario 1 – a conservative scenario

For this scenario, no expansion or expansion for a piece of land less than 200 hectares can be expected. No additional plans for quay expansion. It is a vision of short-term development, which is set for 5-10 years. After 10 years, the scale of the port remains the same. The target is to introduce value-added activities to the available port area, make the best use of the current port facilities and figure out a sustainable way of development for the port.

Scenario 2 – an aggressive scenario

Scenario 2 is based on the assumption that another piece of land of 500-1000 hectares is authorized. It is possible to build new terminals and areas adjacent to water. The concerned period is 20-30 years. The target is as the SWOT analysis, a medium sized seaport with logistics and value-added port industries, which has regional economic importance in the Northern Netherlands.

4.2

SUGGESTIONS

4.2.1

SCENARIO 1

- Focus on energy related industries only

Four power plants with regional electricity production capacity of 7500MW/year are definitely pioneering work. It is self-evident that energy sector has big importance of the region as well as the whole country. Therefore, almost all the attention of local government and the port authority is paid on energy sector and the situation is not expected to change in the short term. It is logical to develop energy related industries in the port area. Currently, the Eemshaven still has about 200 hectares available left. Within 10 years, there is no space for large industrial clusters and no possibility of seaward expansion for shipping activities. Achieving energy cluster with selected activities is sufficient to fill the land in the short term.

- Improve land-side accessibilities

As elaborated in the SWOT analysis, the hinterland connection of the Eemshaven is comprehensive but none of the three approaches is ideal for freight transportation or

commuting. As one of the biggest concerns of entrepreneurs of location choice, good accessibilities also help attract further investment of the preferable port activities.

4.2.2

SCENARIO 2

- Upgrading the scope of the development

Since the negative factors in the SWOT analysis cannot be simply improved in the physical area of the port, the scope should be raised to a regional level. An idea of merging the Eemshaven, the port of Delfzijl and the city of Groningen is raised for upgrading the consideration scope. It also helps branding the region, with two specialized seaports and an economic center.

- Integrated plans

There is no factor in the SWOT analysis so dominant that dealing with it can solve the whole problem. Therefore, only a plan aiming to improve several aspects may be successful. The plan should not only contain measures to get investments to the port area but also consider the introduction of new shipping services, improvement of hinterland connections, development of regional living circumstances and social conditions, etc.

- Industry clusters

It is true that energy plays an important role in regional and national economy. It might also be true that power plants can bring some maritime activities to the port due to the demand for larger quantity of fuel. However, during the operational phase, power plants give very limited contribution to the labor market or other port activities. Other industries should be encouraged to make the port develop sustainable and less vulnerable to the risks.

Categorize the port industries into three groups, land-based activities, harbor-based activities, and land-harbor-based activities¹. A combination of all the categories helps raise the usage rate of current port facilities and infrastructure and benefits from the logistics services.

- Avoid port competitions

The scale of the Eemshaven is limited, even in the long term. Well selected, specialized port activities help the port survive from the severe competitions with neighbor ports. To avoid internal competitions, for each selected activity it is wise to cooperate with one company only. The scale of the Eemshaven is limited, even in the long term. It is almost impossible for the Eemshaven to form large industrial clusters such as the port of Rotterdam. On the other hand, freedom for entrepreneurship is one of the advantages the Eemshaven has compared to other ports. For some activities, competition may have negative effects on the situation.

¹ Harbor-based activities are defined as those which need of cargo handling and storage; land-based activities are those which do not necessarily require port logistics; land-harbor-based activities are not harbor-based activities but (part of) the support industries have port logistics involved.

Two scenarios are set due to two possible situations in the future. If the government and the port authority do not foresee good projects in the Eemshaven, there will be no additional land for future development. Under this situation, Scenario 1 conservatively focuses on the future 5-10 years and expects no expansion of small expansion of the port. Scenario 2 is more aggressive, looking at 20-30 years with a large expansion.

Based on the conclusions of the analysis part, suggestions for Scenario 1 is to achieve an energy cluster in the port area and at the same time, improve land-side accessibilities. The proposals for Scenario 2 include upgrading the port development scope, raising integrated plans, form industry clusters and avoid internal competitions.

5 Industrial section selection & potential activities

A cluster with energy related industries is being proposed for scenario 1. Industrial sections for potential clusters for scenario 2 have been selected, using sieve-analysis. Then an outcome of a brainstorm is shown in the graph of potential clusters of scenario 2, followed by three examples of the chosen activities, showing the expected scale, demands for facilities, risks and possible economic effects.

5.1

POTENTIAL CLUSTER FOR SCENARIO 1

As mentioned in the previous chapter, an energy cluster is expected for scenario 1. As the upstream industries of energy production, fuel related activities are considered. Similarly, downstream industries of energy consuming industries, environment protection activities, as well as their related industries are thought about. Sharing infrastructure or facilities, clean energy industries are also included. These parts build up a potential energy cluster, see Figure 5-1.

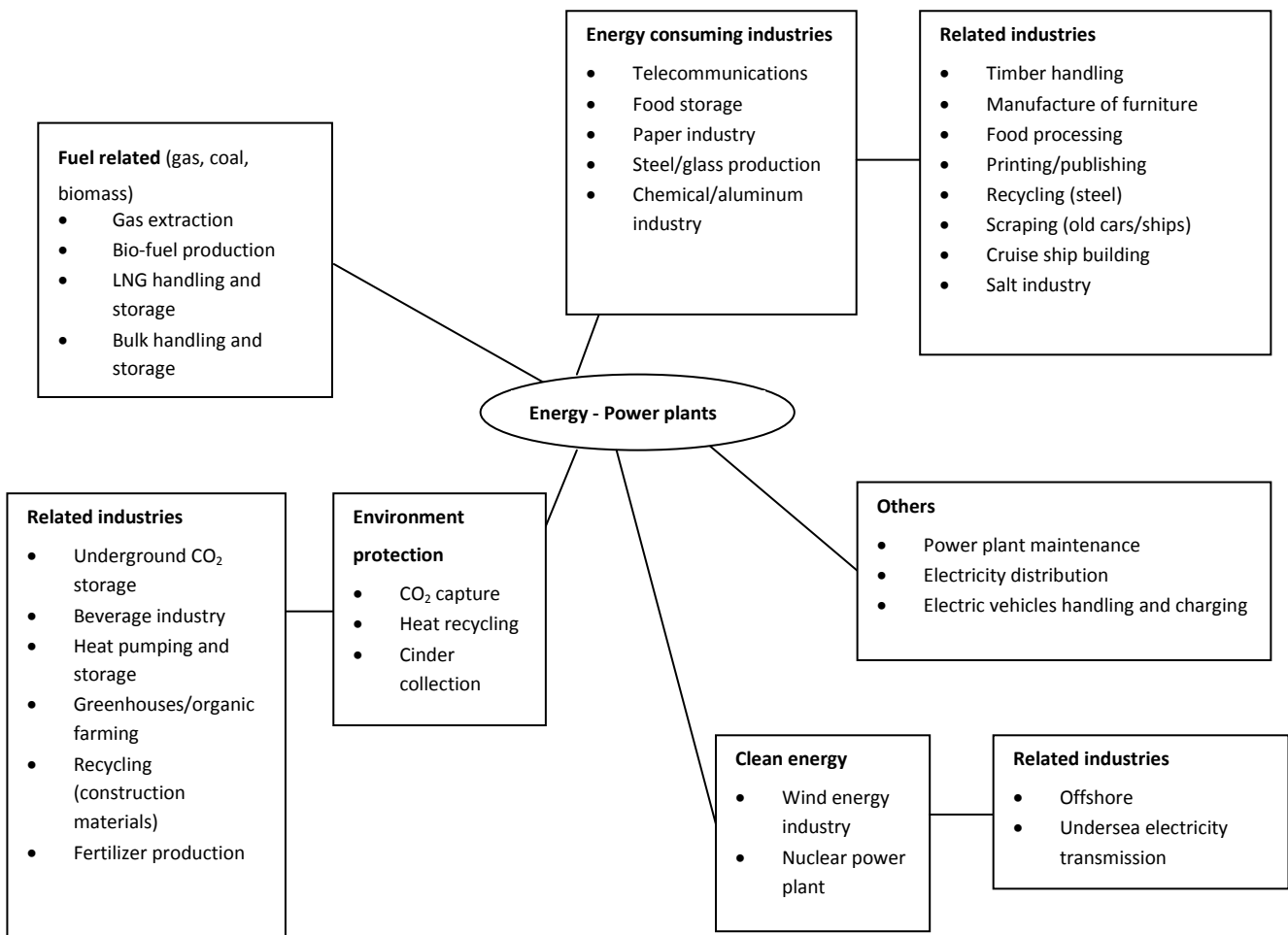


Figure 5-1 Potential energy cluster for Scenario 1

5.2

INDUSTRIAL SECTIONS SELECTION FOR SCENARIO 2

Two phases of the multi-criteria analysis are used for potential industrial sections selection, namely sieve-analysis and potential sections analysis. The criteria for the first phase are based on the negative factors of the SWOT analysis, while the criteria for the second stage are according to the positive factors of the previous analysis.

5.2.1

SIEVE-ANALYSIS AND POTENTIAL SECTIONS ANALYSIS

Sieve-analysis aims at excluding the activities from consideration which do not fit in the profile of the Eemshaven. If an activity strongly needs:

- being close to a large consuming market or the activity is on a basis of other social activities;
- efficient port logistics or high-standard transport infrastructure, except for pipeline and cable;
- natural resources or other upstream products that the port area does not provide at this moment as well as in the near future;
- support of a large labor market;
- regular support of knowledge, high technology or professional services;

The Eemshaven is not an attractive industry. The industrial sectors in the check-list were categorized based on Statistical Classification of Economic Activities in the European Community, Rev. 2 (European Commission, 2008). Table 1 in Appendix 1 gives the results of the sieve-analysis.

The potential activities for the Eemshaven have been selected from the industries which remain after the sieve-analysis. Five criteria are chosen to judge whether these remained activities can take the advantages of the port features and whether they can make the best use of the port facilities. The criteria are:

- a lot of space (long-term);
- stable energy supply;
- usage of quays, pipelines or cable;
- the input or output of the industry involves agriculture products that have been produced in the area;
- Environment-friendly level (VNG, 2009), numeral indicator;

The results of the analysis are shown in Table 2 in Appendix 1.

5.2.2

SELECTED INDUSTRIAL SECTIONS

Recycling is not an individual category in this statistical classification. Some recycling activities do not necessarily need the market support while they need space and energy. The section recycling fits the profile of the Eemshaven, so it is chosen as one of the potential activities of the Eemshaven as well.

The potential activities for the Eemshaven are:

Land-harbor-based

- Food industry and other agriculture related industries
- Chemical industry and pharmaceutical industry
- Non-metallic materials production
- Recycling

Land-based/Land-harbor-based

- Energy related industries

Harbor-based

- Shipping activities
- Warehousing and storage

5.2.3

FEATURES OF THE SELECTED SECTIONS

Food industry and other agriculture related industries

Due to the lack of market support, industries in the Eemshaven do not include consumer oriented activities, such as promotion, sales, marketing, products distribution, etc. In other words, manufacturing of final products is not suitable in the Eemshaven. There is less environmentally friendly business in the region, so that the food industries with strict requirements for environmental conditions do not fit in the Eemshaven.

Besides food industries, agriculture based materials for industries and other intermediate products are possibilities as well. Such industries that are based on import/export, regional output (potato, milk, sugar), or those energy related are more promising.

Chemical industry and pharmaceutical industry

It is less likely to have large-scale chemical industries in the Eemshaven, because of the forming chemical and metal clusters in Delfzijl. For some chemical industries, which are export oriented and need heat, natural gas for production, perhaps the Eemshaven is more attractive than the port of Delfzijl. Pharmaceutical industry has higher added-value, but it does not have the background in this region.

Non-metallic materials production

Similar to agriculture related products, those consumer-market-oriented products are not recommended. The production which needs heat, electricity or relates to recycling can fit in the port circumstances.

Recycling

Collecting, sorting and inland transporting of household waste is not taken into consideration, in this case owing to the location of the Eemshaven.

The recycling should be within a certain scale. The activities use the port facilities for transport or have upstream/downstream industries in the region are preferred.

Energy related industries

With the operation of the new power plants, energy consuming activities, fuel production and storage, maintenance and electricity distribution business may be developed in the port area. Clean energy industries will get involved to meet the needs of fossil fuel replacement. Regional co-operation and competition of energy related industries is a trend.

Shipping activities

The throughput does not rely on the hinterland demand. The scope of the shipping activities is within the North Sea Region and the Baltic Region; liner shipping should be considered to improve the current shipping services. The cargo amount is limited. For container ships, the capacity will not exceed 500 TEU.

The shipping activities will be specialized in several types of cargo and regular regional services are needed for local industries. The Eemshaven can hardly compete with the neighboring ports for the current shipping market, so new markets will be the target of the shipping activities of the Eemshaven.

Warehousing and storage

The turnover time of the storage should be relatively long to avoid the disadvantage of the unattractive hinterland connection. Products with high value and small volume are not suitable in the Eemshaven. The cargo type of the storage depends on the local industries and port logistics and cold storage will be highly considered.

5.3

POTENTIAL CLUSTER FOR SCENARIO 2

A brainstorm has been launched at this stage of the study. The objective of the brainstorm is to dig the most promising activities out of the selected sections, making use of people's intelligence and experience. A brief description of the previous study has been provided as the background information of the brain storm. Only the ideas who agree with the features of the selected sections have the possibilities to be combined with current regional activities and ideas that will make the port booming will be chosen.

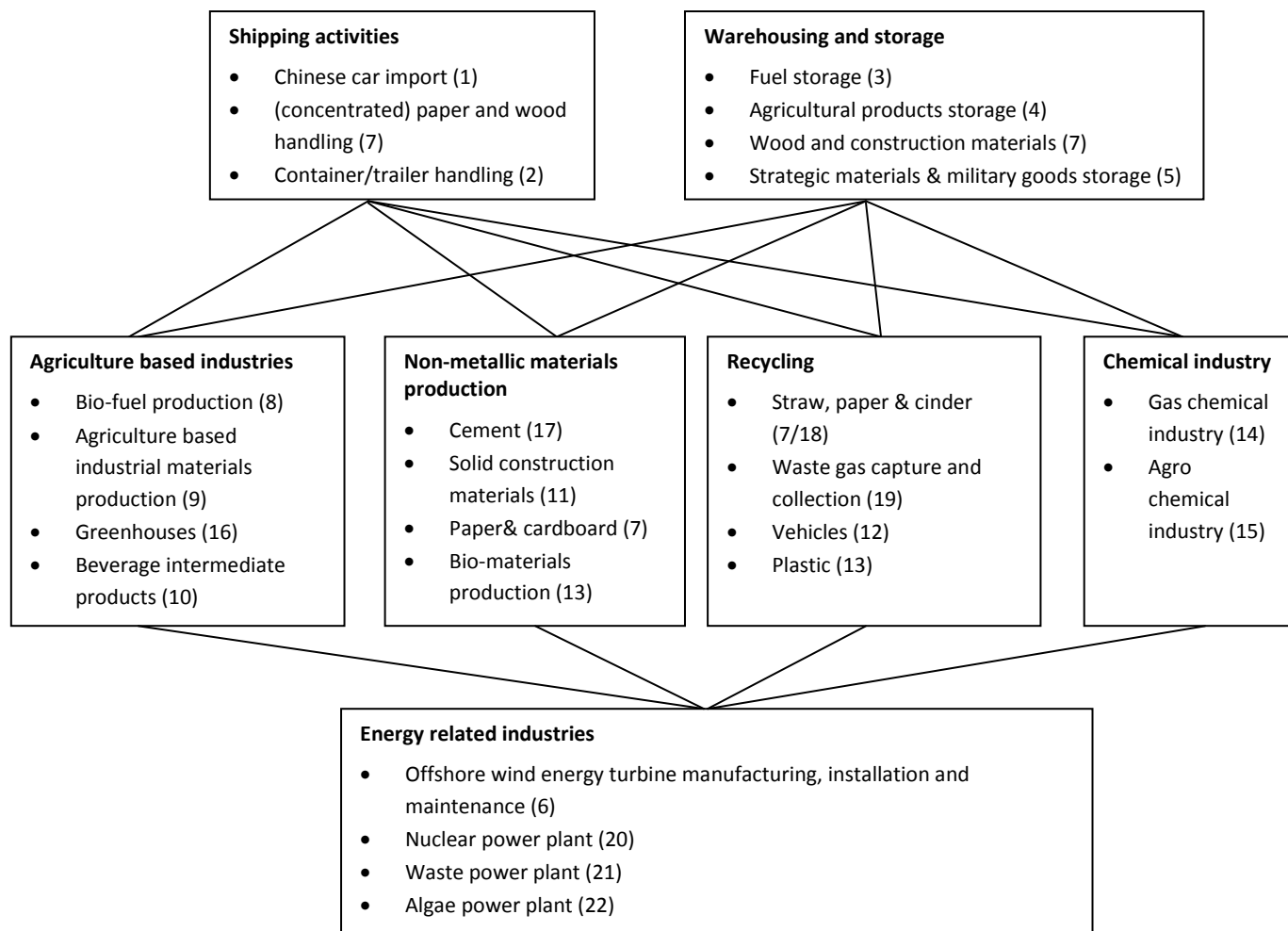


Figure 5-2 Potential industry clusters for Scenario 2

Harbor-based activities

(1) Chinese car import

Nowadays, Japan and Korea are important car manufacturers in the world but in the near future China may replace them in the medium-grade car manufacturing. At this moment, Chinese companies are looking for cooperation opportunities in Europe and are preparing for entering the European market. Car handling does not need much investment in port facilities, but it can be a good chance for the Eemshaven.

(2) Container/trailer handling

Container and trailer transportation play an irreplaceable role in regional economy. The conditions of the Eemshaven are suitable for regular container and trailer shipping services. If the companies can be encouraged to use containers and trailers for their

goods, the source of supply is no longer a serious problem. With the services, the Eemshaven will be more attractive to other port industries.

(3) Gas, coal and biomass storage

Natural gas, coal and biomass are major input of power plants in the Eemshaven. Shipping cannot provide the goods continuously, so temporary storage is necessary for incessant electricity generation.

(4) Agricultural products storage

Fuel, production and transportation may have time difference. Storage plays a role of solving the problem. One of the advantages of the Eemshaven is stable electricity supply. It can be a pleasing factor for agricultural products because cold storage may be needed.

(5) Strategic materials and military goods storage

Strategic materials and military goods do not have to be transported every once in a while. The Eemshaven has possible space for storage and the port facilities can be used for transportation when the goods are needed.

(6) Offshore wind energy turbine settle and maintenance

There are many offshore wind-park projects in the North Sea region. Based on the locations, the Eemshaven is very competitive to be a base port for assembling and maintenance, especially for western German wind-parks.

Land-harbor-based activities

(7) (Concentrated) paper and wood handling, storage and processing

Scandinavia is an important timber and paper supplier in Europe. The Eemshaven has been a site of timber and paper import in the region. The scale of handling can be expanded as part of the specialized shipping services. Other services like storage- and rough processing and cardboard manufacturing may be interested in the Eemshaven as well.

(8) Bio-fuel production

Sunflowers, rape and soybeans are extensively used for bio-diesel production; while maize and potatoes are used for bio-ethanol. According to the local production, bio-ethanol is more realistic for the Eemshaven. With the help of rail and water transportation, bio-diesel is possible as well. Although the first bio-fuel production plant, Bio Value, has just been closed down due to the high production costs, it is still a promising industry in the long run.

(9) Agriculture based industrial materials production

The northern Netherlands is one of the largest potato production area in the country. Since potatoes can only stay fresh for a few days, cold storage and transport will be needed for the whole process. The area also produces large amount of maize, beet and wheat. Together with potatoes, they can be important resources for industrial products. As an intermediate industrial product, raw starch made of potatoes, wheat and maize can

be used to produce glucose, plastics, ethanol, etc. It may be a promising business to develop. Both food products and industrial products which are made of food grain can be important export oriented products in the Eemshaven.

(10) Beverage intermediate products

Holland Malt is a successful example of such industries in the Eemshaven. It takes an advantage of the location of the Eemshaven, which is close to the farm crops and convenient for malt transport. Similar business pattern can be used for syrup and carbon dioxide for soft drinks.

(11) Construction materials recycling, production and storage

Theo Pouw is a forerunner of such industries in the Eemshaven and it contributed the most to the port's throughput. It produces primary materials and the secondary construction materials by recycled elements. Those recycled materials include stones, grit, brick, tiles as well as concrete, asphalt and contaminated soil. Shipping facilities, the availability of large storage areas, energy supply and the recent local demand for construction materials give many support to the activities.

(12) Vehicles recycling

There are about 10.4 million (CBS, 2010) passenger cars in the Netherlands. Assuming the scraping rate of 3%, there will be a need of more than 300 thousand car to be recycled. It is a big market and it can be combined with current second-hand car export activities to reduce the transportation costs.

(13) Bio materials production, plastic recycling and reproduction

A lot of plastic waste is being transported to developing countries from Western Europe. It might be economical to recycle some of the waste and process it at the port area for reuse or for waste power plant. At the same time, non-metallic materials, especially plastics, are widely made of biomass to protect the environment.

(14) Gas chemical industry

Gas chemical industries are mainly developed in the port of Delfzijl at this moment. Considering the heat and energy use during the production process, the Eemshaven might be more attractive for new chemical business.

(15) Agro chemical industry

Fertilizer and pesticide have a big market in the north of the Netherlands for agricultural use. They can be the byproducts of the industrial oriented chemicals or made of recycled agricultural waste.

Land-based activities

(16) Greenhouses

It was considered a lot in the brainstorming, because greenhouses can make use of the carbon dioxide and heat which power plants release. It does not need any investment of port facilities and are relatively easy to organize.

(17) Cement

Cement production is a high power consuming industry with high environmental classification level 5. It fits the circumstances of the Eemshaven.

(18) Straw & cinder recycling

Farming wasted materials, old wooden furniture and ships can be collected and used as biomass for gas based power plants. After being burned, the residue can be recycled again for fertilizer production. Similarly, cinder of coal fired power plants can be applied to make adsorbent, fertilizer and construction materials.

(19) Waste gas capture and collection

The Electrabel power plant releases about 7.7 million tons carbon dioxide annually (CARMA). With the operation of other power plants, the emissions will exceed 30 million tons in the future. The greenhouse gas is harmful to the environment, while it could be used for carbonated drinks production, soda industry, greenhouses, gas extraction, fire control, etc. It will be a popular industry in the future.

(20) Nuclear power plant

Fossil fuels are going to be exhausted, nuclear power and renewable energy will inevitably be the future energy resources. The Eemshaven Energy Park allows industries with the environment classification 1-6, which makes the establishment of a nuclear power plant (environmental classification 6) possible.

(21) Waste power plant

Waste power plant is based on the recycling of garbage. The plan of a waste power plant in Harlingen was objected by the residents, which naturally makes the Eemshaven an attractive place because of its low population density.

(22) Algae power plant

The growth of Algae needs a lot of space, water, carbon dioxide and heat. Algae can be used for energy generation as well as the bio-material for chemical industry and pharmaceutical industry.

I. Overview

World major automobile manufactures started moving some of their production lines to countries such as China, India and South Africa to reduce the production costs. At the same time, Chinese domestic car manufacturers have been growing very fast and have the ambition to join the leading companies. It is expected that the car production amount in China will increase to at least 12 million units by 2015 and 15 million by 2020 (ESPO, 2006-2007). Nowadays, about 65 percent of Asian cars are being exported to European countries. Europe will remain one of the biggest markets of Asian cars in the future. The Eemshaven does not have much experience or mature distribution network on car logistics. However, compared to larger seaports, the Eemshaven can provide relatively cheap space and services, as well as for entrepreneurs and their businesses. Figure 5-3 shows the logistics chain of car industry; the red box is the scope of this case study.

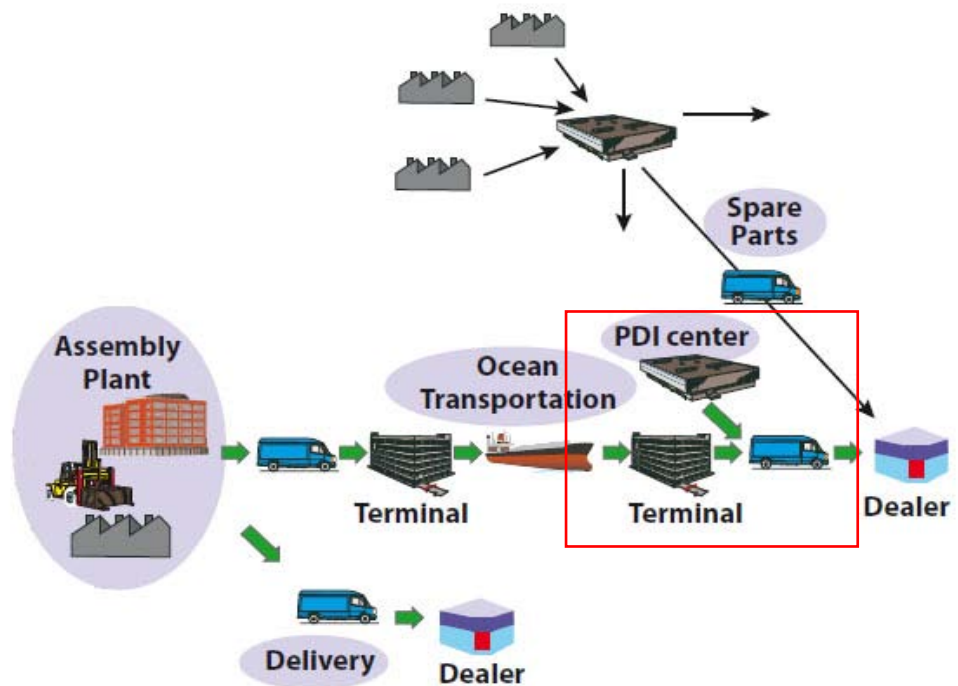


Figure 5-3 CBU (Complete Build Up) Automotive Logistics

Source: NYK Logistics

II. Scale

Capacity

The targeted market is passenger cars with relatively low prices but high amounts, while small amounts of special vehicles are also possible. If you focus on the market of passenger cars in the Netherlands, the estimated market size is about 30.000 units per year. Another 35.000 units can be added if the demand of neighbor countries, such as

Germany, Belgium and the Scandinavian countries, is conservatively estimated. The design capacity of the terminal has been chosen as 80.000 CEU² per year. The detailed calculation can be found in Appendix 3.

Vessel size

The capacity of the car carriers, which are currently used for international vehicle shipping ranges from 4000CEU to 8000CEU, see table below. From the 1990s until now, just like container ships the capacities of car carriers keeps increasing. It is estimated that in 20 years, 6000CEU and 8000CEU PCC³ and PCTC⁴ will be the main carriers in the fleet composition. The ship size is about 200m*32.3m*10m for 6000CEU carriers and 230m*32.3m*11.5m for 8000CEU carriers.

Table 4 Car Carrier Fleet in 2007

Year	1-1999CEU	2000-2999CEU	3000-3999CEU	4000-4999CEU	5000-5999CEU	6000+CEU	Total ships	Total capacity	Avg. size
2007	47	37	95	153	135	113	580	2.639.945	4.552

Source: Fearnleys, February 2007

Frequency

The current car shipping route of East Asia – Europe has 3-6 discharging ports in Europe. With the carriers of 6000CEU-8000CEU, a weekly liner service is expected.

III. Terminal

Functions and site choice

The activities in the port area include mooring and vehicle unloading, parking, custom entering, inspection- and value added activities and loading for further transportation. Two sites will be proposed: option A is to use the northwest quay of the Julianahaven by relocation of current activities, while option B is to develop a new area, see figure 5-4.

When Site A will be chosen, no additional land or no new basin is needed. The depth of Julianahaven is between 15.00 and 17.00 meters, which is sufficient for the expected vessels. A small extension of railway is expected. The total construction costs of the terminal will not be high, because the current infrastructure can almost meet the needs of the activities. The cost of the land may be higher, because the port authority has to relocate the current second-hand car export business. However, there is no possibility of expansion in the future for car handling activities or related value added activities. It may have space for only one berth.

² Car equivalent unit, approx 850 kg weight; Engine size about 1.6 liter; annual mileage about 12,500 km, fuel consumption in oil or oil equivalent about 6 - 12 liters/100 km. Average fuel consumption during use: about 8 liters/hour, or 9 barrels/year (JUNO ME Asset Management, 2007)

³ Pure Car Carrier

⁴ Pure Car and Truck Carrier

The south part of the Emmahaven is chosen for Site B, since the seaward expansion is not available. There is more freedom to organize the activities. The expansion also gives opportunities for other industries, who can share the new facilities and infrastructure. Two berths are to be expected, one for large deep-sea vessels (about 72.000GT) and the other for smaller scale second-hand car business or feeder vessels (less than 10.000GT). Future expansion is possible; however, the construction costs are rather high because all the infrastructure and facilities have been newly built.

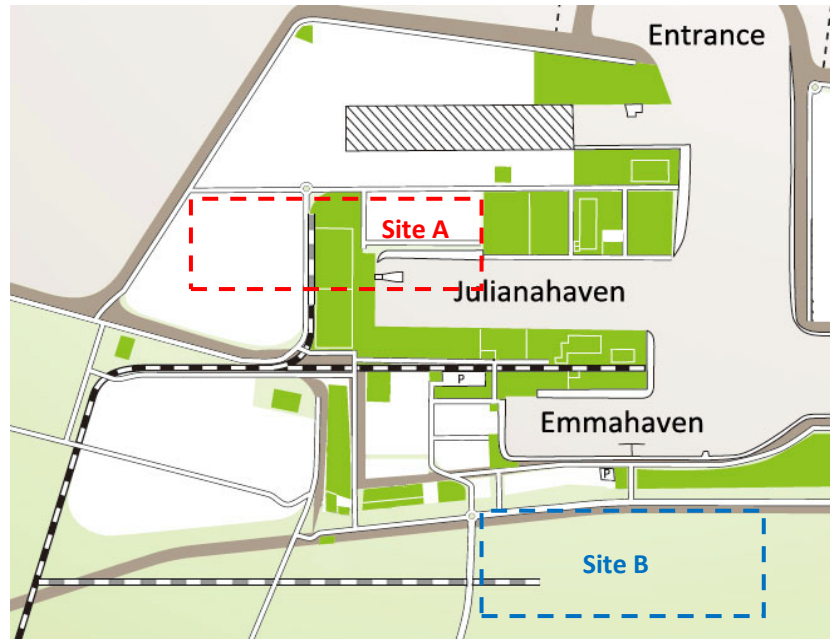


Figure 5-4 Possible sites for car import

Design parameters

The criteria have been chosen according to the existing car terminals. The references include the auto terminals of Bremerhaven, Emden, Halifax, Tianjin and Shanghai. The detailed information and calculation are shown in Appendix 3.

Table 5 Design Parameters of the Auto Terminal

Traffic	Estimated throughput	65.000 vehicle
	Capacity	80.000 CEU
	Avg. weekly scale	1.500 CEU
	Delivery to truck	85%
	Delivery to train	15%
Berth	Vessel size	230m*32.3m*11.5m
	Quay length	500m
	Number of berth	1 or 2
	Top elevation	6 – 6.5m
Storage	Parking capacity	4.000 CEU
	Facilities	Forklift*5 Mobile crane*1 Tow tractor*2 Other vehicles

Further transport	Unloading time per week	250 person*hour
	Number of truck	142
	Number of rail car	19
Others	Area for PDI, customs, offices, etc.	-

Layout

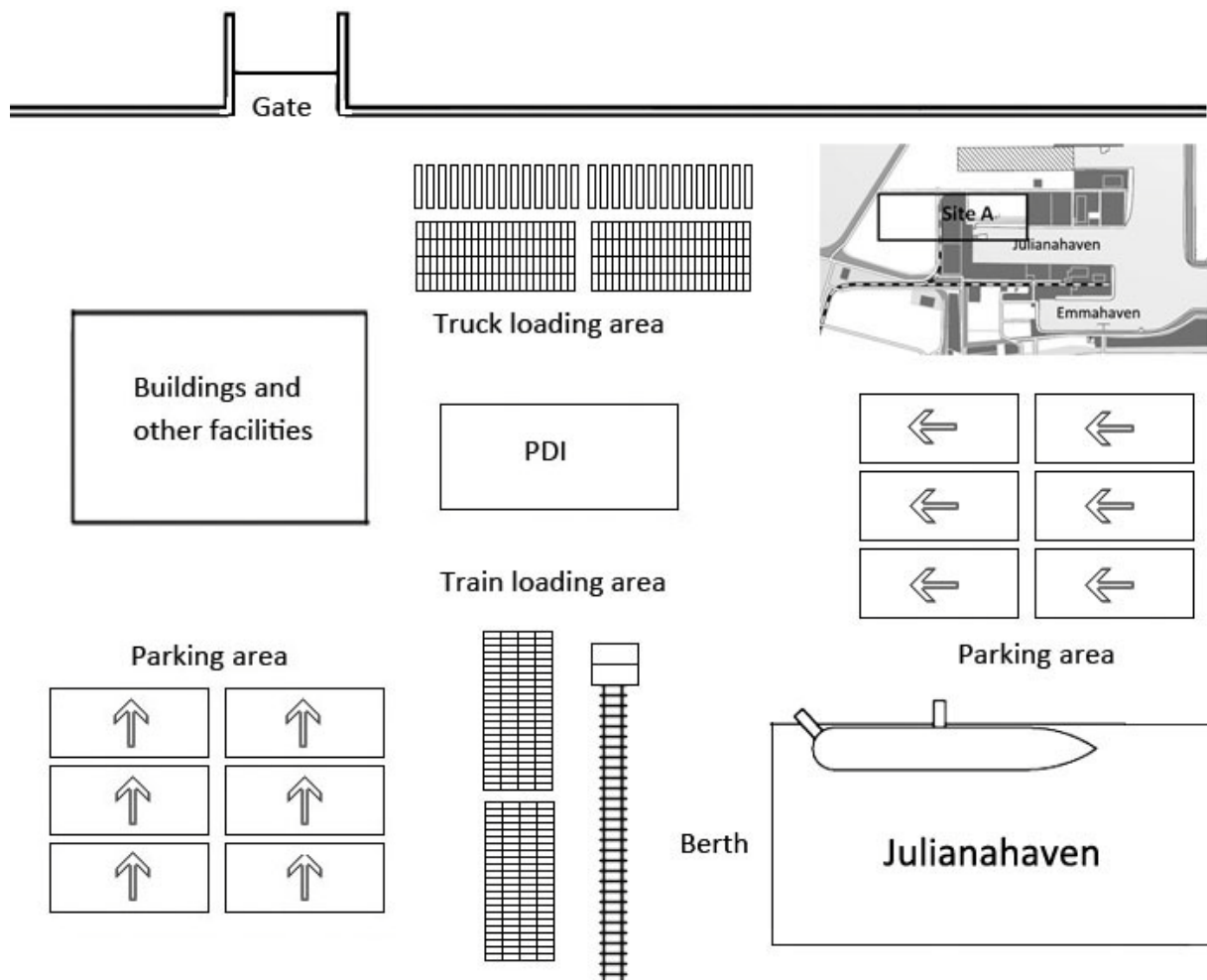


Figure 5-5 Terminal Layout of Site A

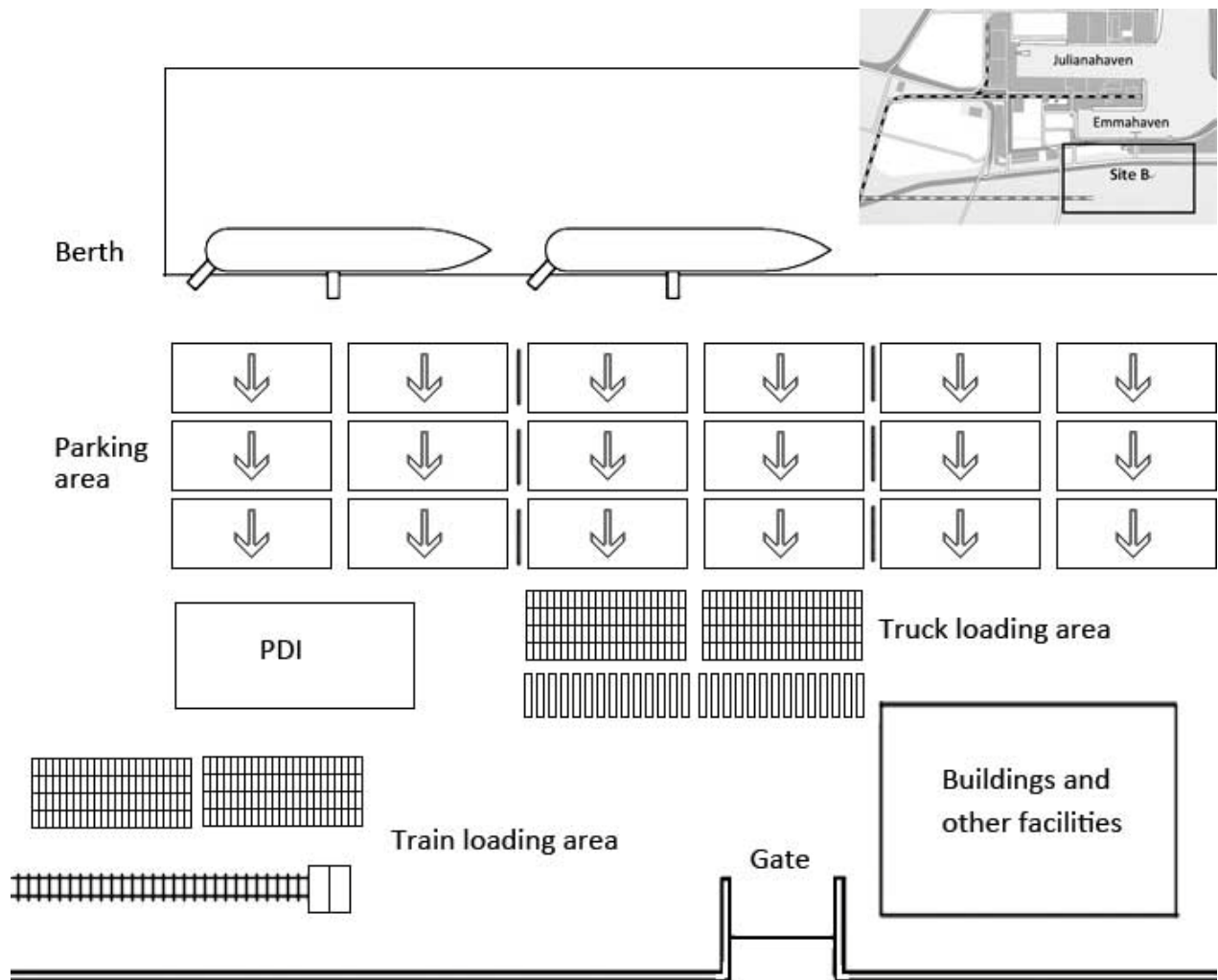


Figure 5-6 Terminal Layout of Site B

Construction Cost

Site A is almost ready for car handling activities, so that the construction cost is a lot less than that of Site B, though the company may pay additional fee for using the quay and for using other infrastructure and facilities.

Table 6 Construction Cost of the Auto Terminal

Price level, 2010		Quantity		Estimated cost (euro)	
		Site A	Site B	Site A	Site B
Land	Total expansion area	18ha	54ha	630.000	1.350.000
Terminal and infrastructure	Quay wall, pavement and infrastructure	-	500m; 5ha	-	21.500.000
	PDI, customs, buildings and offices	3ha	3ha	10.000.000	10.000.000
	Other fee	-	-	1.000.000	-
Facilities	Forklift	5	5	180.000	180.000
	Mobile crane	1	1	100.000	100.000
	Tow tractor	2	2	140.000	140.000
	Other vehicle	-	-	500.000	500.000
Dredging	Dredging, dumping and preparation for construction	-	5.040.000m ³ ; 36ha	-	11.160.000
Total				12.550.000	44.930.000

Annual cost in operational period

This part includes operational cost, depreciation and capital cost.

The general assumptions are:

- the lifetime for operations of the terminal is 30 years;
- the construction investments are counted on the first year of operation;
- inflation is not considered;
- annual interest rate is 4,5%;
- linear method will be used for depreciation estimations and investment repayment.

For other assumptions and calculation please see Appendix 3.

Table 7 Annual Costs of Two Options

	Year 1	Year 2	Year 3	Year 4	Year 5
Annual cost Site A	2.436.685	2.414.095	2.391.505	2.368.915	2.346.325
Annual cost Site B	4.957.881	4.877.007	4.796.133	4.715.259	4.634.385
	Year 10	Year 15	Year 20	Year 25	Year 30
Annual cost Site A	2.233.375	2.120.425	2.007.475	1.505.475	1.505.475
Annual cost Site B	4.230.015	3.825.645	3.421.275	1.624.075	1.624.075

For option A, the average cost is about €25/CEU, ranging from €30/CEU for the first year, to €19/CEU in the last 10 years. Assuming the main price of the vehicles is € 15.000; the cost per car for handling is far less than 1 percent.

For option B, the average cost is about €42/CEU, ranging from €62/CEU for the first year to €20/CEU in the last 10 years. Under the same price assumption, the cost per car is also less than 1 percent. From this point of view, the business is financially feasible.

Other indirect costs

The cost of rail and road extension in the port area is expected to be €2 mln for option A and €27 mln for option B. If further improvement of rail and road connections is required, it may cost additional €50 mln or even more to reduce the time and cost of further transportation.

Both sites of auto terminal need relocate some current activities. Site A includes current RoRo terminal of Socar, second-hand car export activity. It is about 12 hectares. Site B needs relocation part of Theo Pouw's activities for the new basin. About 10 hectares land will be bought from the company. The relocation expenses are estimated as €420.000 for option A and €350.000 for option B.

Benefits

If the activity can be successfully introduced to the port, it will be the start of a new era of the Eemshaven. It may be the second development line of the port besides energy supply. There will be many related activities such as PDI⁵ and value added processing. Regular work like car handling, truck driving, inspection, as well as that for VPC⁶ and other related work will generate many job opportunities. The activity may also push the improvement of the infrastructure, which will attract other value-added industries to the region.

Competitors and Risks

The biggest risk is whether the Eemshaven can win the competition of this market. There are strong potential competitors such as Bremen and Emden, which are important car import seaports already in Western Europe. German seaports have better hinterland rail connections with a bigger consuming market. Besides, many Chinese car manufacturers have cooperation with German car companies. That may make the German ports more likely to be chosen.

⁵ Pre-Delivery Inspection

⁶ Vehicle Process Center

Shipping activity typically shows economies of scale and current car vessels for international shipping can be even bigger than 10000 CEU, such as the trend of container vessels. Whether it is economically feasible to stick to the current scale is unknown.

Another risk is the labor force. The port is not close to the labor market. The loading and unloading task necessarily needs a part-time working team. Whether a stable crew of such services can be formed is not sure.

Other related activities

It is logical and possible to combine the Chinese car import activities with the car export activities. In 2009, China imported at least 137000 passenger cars⁷ from Germany (China Automobile Trading Co.,LTD). The Chinese market of premium cars and luxury cars is big and increasing. If the import activities can be gained, it will be economical to loading export cars for the backhaul. Another option is to combine the suggested activity with second-hand vehicles exports. The destination of the second-hand cars exported from the Eemshaven is Africa. It happens to be one of the biggest markets of Chinese economical cars. It is possible to make the car shipping more efficient.

It is also possible to create a link of the suggested activity with short sea shipping. The North Sea Region and the Baltic Sea Region can be extended hinterland of the transshipment of cars from Asian countries.

5.4.2

OFFSHORE WIND FARM ASSEMBLING AND MAINTENANCE

Reasons of choosing the plan

The European Wind Energy Association targets to increase the total capacity of offshore wind turbines to 40GW by 2020 in order to reduce CO2 emissions (EWEA). The North Sea is the most important region for offshore wind farm plans. There is a large market of wind turbine installation and maintenance in the next decennia for the promising industry.

The Eemshaven, a deep seaport with easy accessibility from the North Sea, is relatively close to the German offshore wind farms (about 20 – 65 nm). It has plenty land and quay capacity for offshore projects. The low commercial traffic around the port and the accessibility to the subsidized undersea electricity grid may make the Eemshaven attractive for offshore wind farm supporting activities as well.

Scale outlook

Due to distance, the Eemshaven is a potential base port for most of German offshore wind farms and three authorized Dutch wind farms, BARD Offshore NL1, EP Offshore NL1 and GWS Offshore NL1 (See Figure 5-7).

⁷ Only Mercedes, BMW, Volkswagen and Audi are counted

vessels, tugs as well as helicopters (Deutsche Energie-Agentur GmbH), but they will not be used on a regular basis. The current used jack up vessels, catamarans and cable laying vessels are about 100-140 meters of length, 30-90 meters of beam and 4-6.5 meters of draught. Maintenance vessels and other multi-purpose offshore support vessels can be of similar size as the vessels mentioned above, but are usually much smaller. Therefore, it will be sufficient if the quays and waterways can meet the need of ship sizes of 140m*80m*6.5m.

Since large wind turbines and other components are hardly transported by railway or inland waterway, it is not necessary to improve the infrastructure of transport network.

Labor force and support industries

It is estimated that the industry can generate at least 600 direct jobs and hundreds more of indirect jobs. It requires a relatively big labor market and the workers need to have specialized knowledge and skills. Training and research are important for the activities. Owing to the big size and high weight of the wind turbine and components, the logistics activities are crucial for the industry.

Competitors



Figure 5-8 Locations of the offshore wind farm competitors

As shown in figure 5-8, the potential competitors are the port of Emden, Bremerhaven, Cuxhaven and the port of Esbjerg. Bremerhaven is the most competitive opponent. In the past few years, about half of the investments in the German offshore wind farms went to Bremerhaven (Vries, 2009). Bremerhaven has already developed herself as one of the largest wind turbine manufacture centers in Northwest Europe. Manufacturers such as Multibrid, REpower, Powerlades and PowerWind all have construction and assembly facilities in the port area. Knowledge and training centers of wind industries also makes Bremerhaven very attractive to become a base port of wind farms. The port of Emden is chosen by BARD and Enercon as a base port. It is better for the Eemshaven to seek co-operation with Emden instead of competition, because the Eemshaven has better accessibility and more available space while Emden has the base of manufacturing.

Risks

The lack of support industries is the biggest shortcoming of the Eemshaven. There are no co-operated manufacturers, no knowledge and training centers so far and no specialized vessels provided in the Eemshaven. It is possible that these negative factors lead to a limited scale of the activities and unworthy investments in port facilities.

The German government extended the plan of nuclear power plants which made energy suppliers keep investments in nuclear industry. This may call off some constructions offshore wind farms because of large investment and risks.

Key players

The key players of installation and maintenance of offshore wind farms include developers, energy sectors, turbine and component manufacturers, investors, port authority, logistics and other service providers. Other stakeholders are technology and research institutes, consultants, environment and other interest groups. Developers and manufacturers are important customers for a base port to look for business opportunities. The most potential clients of the Eemshaven can be E.ON, RWE and BARD.

Other related activities

Manufacturing is important for installation and maintenance activities owing to the cost of transportation. Future dismantling, recycling and reinstalling of the wind turbines may give the port other opportunities. Other supporting activities such as education, training, accommodation and other services for the workers can be considered as well.

It is possible to combine the manufacturing industry with other steel based industry and to look for other offshore projects for sea exploration, natural protection and research, in order to make the best use of the port facilities, crew and vessels.

Table 8 Offshore Windfarm Assembling and Maintenance

Reasons of plan choice	a big market in 20 years (for Eemshaven)
	20-65nm to the sites, connected with electricity grid (for clients)
	deep seaport with available land and quay capacity (for clients)
	low commercial traffic (for clients)
Scale	100 turbines of installation and 400 of maintenance per year
Facilities and infrastructure	8-10 ha area for assembling and storage
	200-300 meters quay capacity
	terminal for ships of 140m*80m*6,5m
Labor force	600 skilled workers
Risks	competitors of German ports
	lack of related industries, knowledge and vessels
	high investment in other energy sections
Key players	developer/energy sector - E.ON and RWE
	manufacturer - BARD
	logistics companies
Other related activities	supporting industries - manufacturing, education and training, etc.
	steel based industries
	other offshore related activities

Reasons of choosing the plan

About 71 percent of the land in the northern Netherlands is used for agriculture. Agriculture plays an important role in the local economic structure. The total production amount of arable crops such as potatoes, grains and beet are high, which exceeds food demand for the relatively small consuming market. It is economical to process the raw products and add value to them. Here starch is chosen as an example for elaboration.

The Eemshaven can provide space and electricity for normal and cold storage, as well as the services of water bound logistics. These factors make it a suitable place for intermediate agriculture based production such as starch.

Facilities and infrastructure

The scale of the starch production relies on the size of the companies. The industry needs land factory and storage area. The most likely used means of transportation are by truck, barge, container or trailer shipping. Therefore the land close to terminals will be more pleasing; otherwise vehicles for short distance transportation are needed in the port area. No special handling facilities are required.

It will be attractive if road condition and inland waterway connections are improved, but it is not necessary.

Risks

Low costs of similar products in developing countries may endanger local industries, which makes it unprofitable to open another starch factory in northwest Europe.

The current shipping service of the Eemshaven is not satisfactory. It may increase the export costs and turnover time of the companies.

Key players

Starch production companies, logistics companies and potato suppliers are key players in this case. Potential clients are Dutch starch manufacturer Avebe, German company Emsland Group (Emsland-Stärke GmbH) and Danish AKV Langholt and KMC. It is possible to co-operate with the regional potato farms such as Bakker Bierum, who chose the Eemshaven as one of the storage area.

Other related activities

Starch can be widely used as food ingredients, as well as raw materials of paper and cardboard industry, organic chemical industries, pharmaceutical industries, bio-fuel industries and bio-material industries. There are many possible downstream industries which fit the port's circumstances. Bio-industries may be the most promising which can be combined with starch production in the future.

Table 9 Summary of Intermediate Agricultural Materials Production

Reasons of plan choice	high production and low consume
	existing export market
	space, electricity, port facilities and services
Facilities and infrastructure	land and accessibility to the terminals
	hinterland connection improvement
Risks	threat of low cost production in developing countries
	unsatisfactory shipping services
Key players	starch production companies - Avebe and Eemsland
	potato suppliers - Bakker Bierum
	logistics companies
Other related activities	paper and cardboard industries
	organic chemical and pharmaceutical industries
	bio-fuel and bio-material production

5.5

CONCLUSIONS

Following the results of the analysis, there are still a lot of future opportunities for the Eemshaven for both Scenarios. An energy cluster concerning energy consuming industries, fuel related activities, environment protection business, clean energy sectors and other related industries is chosen for Scenario 1, see 5.1.

Seven industrial sections: food industry and other agriculture related industries, chemical industry and pharmaceutical industry, non-metallic materials production, recycling, energy related industries, shipping activities, and warehousing and storage are selected according to the SWOT analysis. The industry clusters for Scenario 2 can be found in 5.3. Chinese car import is chosen as an example on how to tackle the potential activity. The calculation of the annual cost happens in the port shows the financial feasibility of the activity. A further elaboration of offshore wind farm assembling and maintenance and starch production gives a clear idea of the scenario. The examples show the possibilities of having some out-of-box proposals for the Eemshaven. However, to work these projects out, the stakeholders have a lot to do in the future.

6 Plan evaluation & improvement

The stakeholders concern about the development of the Eemshaven will be first identified in this chapter. Based on the judgment of the experts, an evaluation part is given for the study approach, the strategies and the potential activities.

6.1 **STAKEHOLDERS**

The stakeholders of the Eemshaven development include:

- port authority – Groningen Seaports
- local and central government – the municipality of Eemshaven, department spatial planning and economic development of the province of Groningen, Ministry of Transport, Public Works and Water Management of central government
- local company, organization and company unions – SBE (Samenwerkende bedrijven Eemshaven), BBE (Bedrijfsbelangen Eemshaven) and the companies and organizations which concern of economic development in the Northern Netherlands
- scholars and consultants – universities and research institutes, consultancy companies

6.2 **EXPERT JUDGEMENT**

6.2.1 **INTERVIEW LIST**

Port authority

Theo Smit – Manager strategic development, Groningen Seaports

Local and central government

Marijke van Beek – Mayor, the municipality of Eemshaven

Wytske van der Mei – Head Maritime Ports Division, Ministry of Transport, Public Works and Water Management

Local company, organization and company union

Erik Baar – Financial director, Wijnne Barends/President, BBE

Sander Oosterhof - Investment Manager, NOM

Lambert Zwiers – Director, VNO NCW Noord

Scholars and consultants

P.H. Pellenbarg – Professor Economic Geography, RUG

J.C. van Ham – Assistant professor Transport and Logistics, TU Delft

K.J. Noorman – Director, ProDO Consult/Researcher Energy and Environmental Studies, RUG

Frank Heezen – Director Ports & Waterways, Water, Arcadis

H.J. Bakhuizen – Director Industry, Business Development, Arcadis

6.2.2

EXPERT JUDGEMENT

Theo Smit – Manager strategic development, Groningen Seaports

The construction of the “Energy Valley” is the target of the Eemshaven at this moment. No possibility of seaward expansion is one of the problems it is going to face for the future development. That is also why landside developments are more preferable in the short term. It turns to be more like a value-added industrial site with accessibilities from the sea than a traditional industrial port.

Labor market is not a big problem of the Eemshaven, because the travel time between the Eemshaven and the city of Groningen is rather short, about half an hour. The local living conditions may have bigger influence on the development. It is a good point to brand the Eemshaven on a regional level, as is the idea of integrated plans.

Offshore wind farm installation and maintenance is a promising activity and together with energy related industries they are the main issues in the near future. A cluster including agriculture, chemical, recycling and energy related industries can be chosen for the developments in the long term. It has been proved already that it is not easy to develop something new in the Eemshaven, so the future plans should be based on what has been developed already. Although ideas such as Chinese car import are nice, it is not thought to be achievable. It is a better opportunity for the traditional car handling ports, such as Emden than the Eemshaven. The demand of shipping and warehousing is not believed to increase rapidly, and pure logistics has fewer added values. Therefore, the expansion of shipping and warehousing facilities may not consider in 10-20 years. For similar reason, the improvement of landward accessibility is not considered in the short run.

Marijke van Beek – Mayor, the municipality of Eemsmond

The Eemshaven started in the middle of nowhere. There are definitely some negative factors to improve and it will not be easy. It is good to see the developments of the Eemshaven in the last couple years. Now there are more companies want to settle in the Eemshaven. There are two thoughts about the future developments, bio-based and energy based.

Working with the stakeholders is very important because the steps can only make when all the stakeholders share the same goal. It is true that there are many factors need to be improved, labor market, infrastructure, knowledge, living circumstances, developing

approach, etc. The population keeps shrinking. The infrastructure and facilities can always be improved but that is something relates to upfront investment. It costs a lot of money and it is really a risk. The municipality already started thinking of ways to communicate and cooperate with neighbor areas. The integrated plan for development is a good idea.

It is preferable to have industries which generate employment. The power plants and oil storage do not exactly meet this need. Also the wishes of the national government and the port authority are also important. The cluster of shipping, warehousing, chemical industries, recycling, agricultural activities and energy related industries is quite good. Some ideas, like greenhouses, are already being worked on. However, the results depend on the opinions of all the stakeholders.

Wytske van der Mei – Head Maritime Ports Division, Ministry of Transport, Public Works and Water Management

People in the west think the Eemshaven is so far away, small and isolated. On one hand, the future of the Eemshaven is supposed to have a variety of industries and a certain number of shipping activities. On the other hand, it is also true that the risk of introducing new activities is quite high. What the port authority should do is to continue the energy blueprint and develop more plans for other possibilities at the same time. It is always good to have ambitions.

It is correct that available capacity, energy supply and competitive price are the strengths of the Eemshaven. However, the weaknesses are not so important. The Eemshaven is an energy hub so there is no need for strong hinterland connections. The lack of knowledge and technology is not exactly true because the University of Groningen is a good regional resource for that. It is a good idea to raise the development plan to a regional level, cooperates with the city of Groningen, and to make integrated plans for the future port.

Regional shipping activities are important for the Eemshaven, which is the also the reason that the national government approved the dredging project for the shipping route expansion. It is not wise to develop activities that already have fierce competitions like car import, due to high risks. Greenhouses and data centers are not favorable activities for the Eemshaven as well.

Erik Baar – Financial director, Wijnne Barends/President, BBE

As a harbor, the Eemshaven is supposed to be active in logistics, where good are transported. In the short term, energy seems to be a nice choice, but in the long term, the development will be hard, really depending on entrepreneurs. What the port authority and the government can do is to set attractive surroundings and then people with business background may do their investments on their own risk. Based on the current situation, it is very likely that when energy related developments are done, the Eemshaven is done.

The port is not easily connected to the rest of Europe. Infrastructure is very important for a harbor but it is not easy to change. People who are unemployed in the region cannot meet the needs of current activities like power plants. It is important to improve the attractiveness of the area and leave the rest to entrepreneurs. Port development is not like turning on one button then everything will be solved; it is a combination of many improvements.

Focus only on energy may make the port lose the interests in other activities, such as those in the west part of the Eemshaven now. Bio-based industries and recycling are

opportunities in the future. Shipping activities of certain scales are possible but the Eemshaven is not attractive at the moment. Agriculture is no longer a labor intensive sector, and greenhouses especially, does not make sense. In general, niche markets are more suitable for the Eemshaven.

Lambert Zwiers – Director, VNO NCW Noord

There will be a good future for the Eemshaven but it has to specialize in and to focus on certain markets, as niche player. Intensive cooperation with Amsterdam or Rotterdam will bring the port more opportunities. The future opportunities will be in the sphere of energy, bio-based industries and perhaps waste.

Good connection to the Scandinavia is considered as one of the advantages of the Eemshaven. However, the port has more problems to tackle. One of the problems is lack of scale, which can be partly solved by cooperation with ports of international importance. Infrastructure is another major problem. The better the infrastructure is, the better the economic possibilities will be for the future. Lack of people and unattractive living circumstances are weak points as well, which is the conditions in the north.

Energy, bio-based industries, recycling and chemical industries may form the port industries, but there are always some opportunities that cannot be foreseen. It is difficult to attract new activities because there are no facilities at this moment and the improvement requires for capitals. The chance of developing something like car import is very small under the pressures of environmental groups. A cluster with all kinds of industries and logistics is not going to happen in the Eemshaven.

Sander Oosterhof - Investment Manager, NOM

The Eemshaven is important to regional economy. The target of the development is to be an energy port with a lot of value added logistics. The activities in the Eemshaven are very capital intensive. The port is not expected to get any bigger and it is about to be ready in 10 years.

The shipping routes, facilities and infrastructure are relatively limited but they are sufficient for the Eemshaven as a port, no more expansion is necessary. Other factors like living circumstances, the development approach, are also fine at the moment. Labor market can be a problem in the future because the population is shrinking. The fast development of neighbor ports is always a threat, while the shifting of global industries and eliminating subsidies are not. Setting up interconnections between the Eemshaven and the city of Groningen is a good suggestion.

One billion investments in the power plants can generate 30-40 million per year and 800 indirect jobs. The power plants also created numbers of shipping movements. Energy and bio-based industries, especially those relate to chemical industries, are promising. Offshore wind farm is an opportunity but the government needs to make policies to make avoid competition from foreign rivals. Agriculture is not an increasing market and it is difficult to resettle the related activities. Some other activities like car import are probably not going to happen in the Eemshaven but there is no reason to exclude them. Nevertheless, the port will not change much in the future from what it is now.

P.H. Pellenbarg – Professor Economic Geography, RUG

The Eemshaven was meant to be an industrial port but it never became one. Dutch entrepreneurs have rather negative feelings about the area. Now energy sector is

developed quite well now and it still has opportunities for future development. People should be happy about this and do not expect too much of it. There will be a big chance to fail if other new things are added to the Eemshaven.

The Eemshaven is a good location for industries which need a lot of space, stable energy supply, certain shipping facilities and ICT facilities. However, the port also faces all kinds of negative factors, especially the environment issues of the Waddenzee. It is a good idea to advertize the Eemshaven as the port of Groningen to have a regional scope of the development.

Chemical industries, agriculture based industries and ship building are no longer growing markets. There will not be reinvestment in these sectors. Planning to have them is returning to “the future of the past”. The potential energy cluster includes companies who produce energy, who explore resources, companies do services, knowledge related activities. Underground storage, recycling, fuel related industries, and environmental protection seem to be interesting. Food, fertilizer production and energy consuming industries are not expected to be promising activities.

J.C. van Ham – Assistant professor Transport and Logistics, TU Delft

The port has only regional importance. Because the location is not perfect, the activities are limited. There is no potential growth for activities like shipping and warehousing, as expected in other ports. The future port can be an “energy+” area, with power plants, energy related activities and several other industries.

Mr. Harm Post leads a port authority with entrepreneurial spirit, which creates positive development environment. Another advantage is the local shipping companies make the port a point in their shipping routes. Infrastructure in the port and for hinterland transport is not a problem from a practical point of view.

Alternative energy, especially biomass, and coal transshipment could be the promising activities for the Eemshaven, because both markets are growing. Other possibilities are innovative ship scraping, greenhouses, recycling, agricultural storage, and cement industry. Shipping activities are probably not going to happen.

K.J. Noorman – Director, ProDO Consult/Researcher Energy and Environmental Studies, RUG

The economic development is accelerating in the north. The structure of the hinterland is as important as the current port activities for the development of the Eemshaven, in a proper and sustainable way. The port leads to further regional development by infrastructural means. The Eemshaven, as well as the whole region needs the support from the government. Whether the customs are willing to pay the price is the key point of the port development.

Space, energy supply, and freedom for entrepreneurs are advantages of the Eemshaven, while cheap price perhaps is not. It is also true that the living area is not attractive, labor market is a bit under developed but all these negative factors are improving. The improvement of infrastructure and shipping routes are under debate and the debate will continue for the next couple years. Branding is important for the Eemshaven, so as a integrated development approach. Foreign hinterland like the Scandinavia, north Germany and the Baltic States need to be focused on.

Energy supply in the Eemshaven has regional importance for sure, but some other industries which contribute to the economy are expected as well. In the long term, renewable energy is one of the very promising tracks for the future. Environmental protection, heat reviving, offshore wind power, all can bring opportunities for the Eemshaven. Food production may also have possibilities in the Eemshaven. Cars may not ever come via the Eemshaven because the Netherlands is not a big market. The Eemshaven can be a first mover of new sustainable entrepreneurship, but then the government has to give a lot of support.

Frank Heezen – Director Ports & Waterways, Water, Arcadis

First it should be clear whether the Eemshaven is used as a port or a quay to load and unload energy. Different answer gives different view of future development. Three points should be considered when choosing potential activities: is the port in favor of the characteristics of this activity? Are there already other nearby ports already have a position in the current competition? Is there any interest of investment?

The political cloud is limited in the region so the port is more living on its own. The environmental issue of the Wadden Sea definitely limits the freedom of operations. The area does not have the support of large number of professional services, but it is not a big problem since it is not too far away from universities and institutes. Due to the location, the port should have a strong relation with Germany.

Fuel related industries, especially gas related ones; energy consuming industries, and environment protection are logical for future developments. Knowledge should be added into the expected energy cluster. Other activities like car import basically depend on price. If there are commercially attractive prices, they are possible. It is good to have a number of these activities which are might be lucky shots but have some volume behind it, but they are not something in a strategic line.

H.J. Bakhuizen – Director Industry, Business Development, Arcadis

The Eemshaven is absolutely not a hopeless area. The future will be energy related industries because it is important to focus on what already exists and what the stakeholders already invested in.

The Eemshaven does have some disadvantages but do not overestimate the negative influences of them. For instance, people who work at the port of Rotterdam spend much time on traveling as well. From this point of view, local labor market is not a big problem of the Eemshaven compared to Rotterdam. Branding is another important issue. The port of Groningen is a better brand than two small ports because it shows more values.

Gas fields and energy industries are highly invested in the northern Netherlands. Further energy related activities, such as offshore wind farm installation, coal and biomass transportation, and renewable energy, will be possible in the region. It is not easy to work on “big idea” like car import in the Eemshaven, though the idea is nice. Agriculture has its regional importance. As long as it relates to energy, storage, and non metallic production can be possible. Recycling may be interesting but chemical industries do not see a future. Normal storage, greenhouses and nuclear power plant are not considered to settle in the Eemshaven, while offshore wind farm installation and maintenance, offshore platform decommission and data transmission could be interesting. There will be a future for the Eemshaven but the possibility of building further on with something completely new is quite low unless there is an obvious strategic advantage compared to other ports in the region.

About half of the experts think the future of the Eemshaven will be an energy port with a few other activities, which is not too different from how it is now and no expansion is expected. Others think there is still chance for developing a second strategic line, by planned activities or lucky shots. No one questioned the approach of the study, but the opinions on the results are very different.

Almost every expert mentioned the importance of infrastructure and port facilities of a port, but it was not easy to improve in the case of the Eemshaven, due to large investments and high risks. Under the assumption of an energy port, some experts do not think hinterland is important to the Eemshaven. Also some experts do not consider the quantity and quality of local labor market a problem, because overall the Netherlands is a small country. The limitations that the environmental issues of the Wadden Sea may bring to the Eemshaven are what experts are concerned about. The relatively weak political influences of local governments have been mentioned as well.

It is widely agreed that the port needs cooperation either with the city of Groningen, the port of Amsterdam or Rotterdam, or the German ports and economic centers. The experts also favored the idea of integrated plans which combine developments in the port area with other factors, such as living circumstances, labor market, shipping routes and hinterland connections. The importance of the roles of governments and entrepreneurs is emphasized by several experts.

Energy, especially renewable energy, and bio-based industries are particularly considered the most promising activities in the Eemshaven, as well as the whole north of the Netherlands. Recycling and offshore related activities also have many supporters. The thoughts about chemical industries and agriculture related industries have a big difference. There are a lot of discussions about greenhouses and the results are polarized. Generally, the experts are quite pessimistic about shipping and warehousing. Some of them still believe shipping and warehousing have certain possibilities to be well developed under certain circumstances, but others do not think there is a future for these traditional port activities in the Eemshaven. It seems that most experts do not like the ideas which are out of box.

According to the results of the expert judgment, some projects are more likely to happen in the Eemshaven, such as offshore wind energy turbine manufacturing, installation and maintenance, renewable energy plants (wind, modern biomass, bio-fuel, blue energy, etc.), data center, coal and biomass transshipment, greenhouses and recycling of decommissioned vehicles, ships, offshore platforms.

Some other ideas, on the contrary, are not that impressed by the experts, including Chinese car import, agricultural intermediate production, all kinds of storage and warehousing, chemical industries, nuclear power plant and so on.

Eleven experts from Groningen Seaports, the local and national government, local companies and organizations, consultancy companies and universities share their different thoughts about the Eemshaven and give precious remarks on the topic. Although most of the experts agree that the Eemshaven is supposed to be more than an energy port, only half of them think the port will have other activities with economic importance besides energy.

The experts emphasized that the factors such as infrastructure, port facilities, labor market, living and investing environment are not easy to change. That is one of the reasons that the experts do not believe a big booming of the port. Some proposals about renewable energy, bio-based industries and recycling are widely agreed. Some other ideas like car import, intermediate products plants are considered unpractical.

7 Conclusions & recommendations

7.1

CONCLUSIONS

Two research questions were raised in the introduction chapter. They are going to be answered by using the findings of the study. The findings will be summarized by three phases, analysis, proposition and evaluation.

Analysis

- I. In recent ten years, new investments in the Eemshaven kept going on. The port is still an interesting place for some activities. The situation of the Eemshaven is actually better than the image in people's minds.
- II. There are already some good examples of developing "unexpected" business in the Eemshaven. For the future development of the port, thinking out of box is very helpful.
- III. The outline of the developing plan had been changed for several times. The Eemshaven lacks a clear long-term vision. So far there is no cluster which can be founded on in the future.
- IV. The governments play crucial roles in the previous developments and will keep being important in the coming years.
- V. The quality of hinterland connections has a lot to do with the performance and the scale of the port. The Eemshaven has room for improvements of hinterland connections.
- VI. The Eemshaven is attractive to the activities which are more or less connected to local economic activities or local resources. However, according to the results of Porter's Diamond Model, the local economic situation cannot give great supports to the port. Besides, the region has not got as much attention as other places in the country by entrepreneurs.
- VII. Port industries can hardly survive without a certain scale in the Eemshaven.
- VIII. Environment issues need to be well considered. They can be big barriers for the future port development but they can also bring a lot of opportunities to the port.

Proposition

- IX. The Eemshaven has potential to develop further in the fields of energy related industries, shipping and warehousing, recycling, agriculture related business, (re)production and chemical industries.
- X. One of the proposals of the study, Chinese car import, has been proved to be financially feasible by a step-forward study. Similar studies can be done for other proposals as well.
- XI. The realization of the proposals needs the involvement of various stakeholders, especially entrepreneurs. Broad communications and cooperation need to be

arranged. The governments and the port authority have a lot of work to do to create an attractive investment environment.

Evaluation

- XII. The experts had very different opinions on how far the Eemshaven would go. Their comments on the results were of great difference as well though they mostly agreed on the approach of the study.
- XIII. Some experts, especially scholars, were quite passive about the future of the Eemshaven. The experts focused on practical problems a lot when they talked about what should be done.
- XIV. Most experts were in favor of the ideas of bringing the development topic onto a regional level and raising integrated plans on this level.
- XV. In general, the experts prefer the proposals of renewable energy, bio-based industries, recycling industries and other traditional energy related industries rather than something relatively new for the Eemshaven, such as global logistics services and agriculture related activities.
- XVI. Experts of the province of Groningen are not easy to reach during the study period.

The research questions:

Is there a bright future for the Eemshaven in the next 30 years?

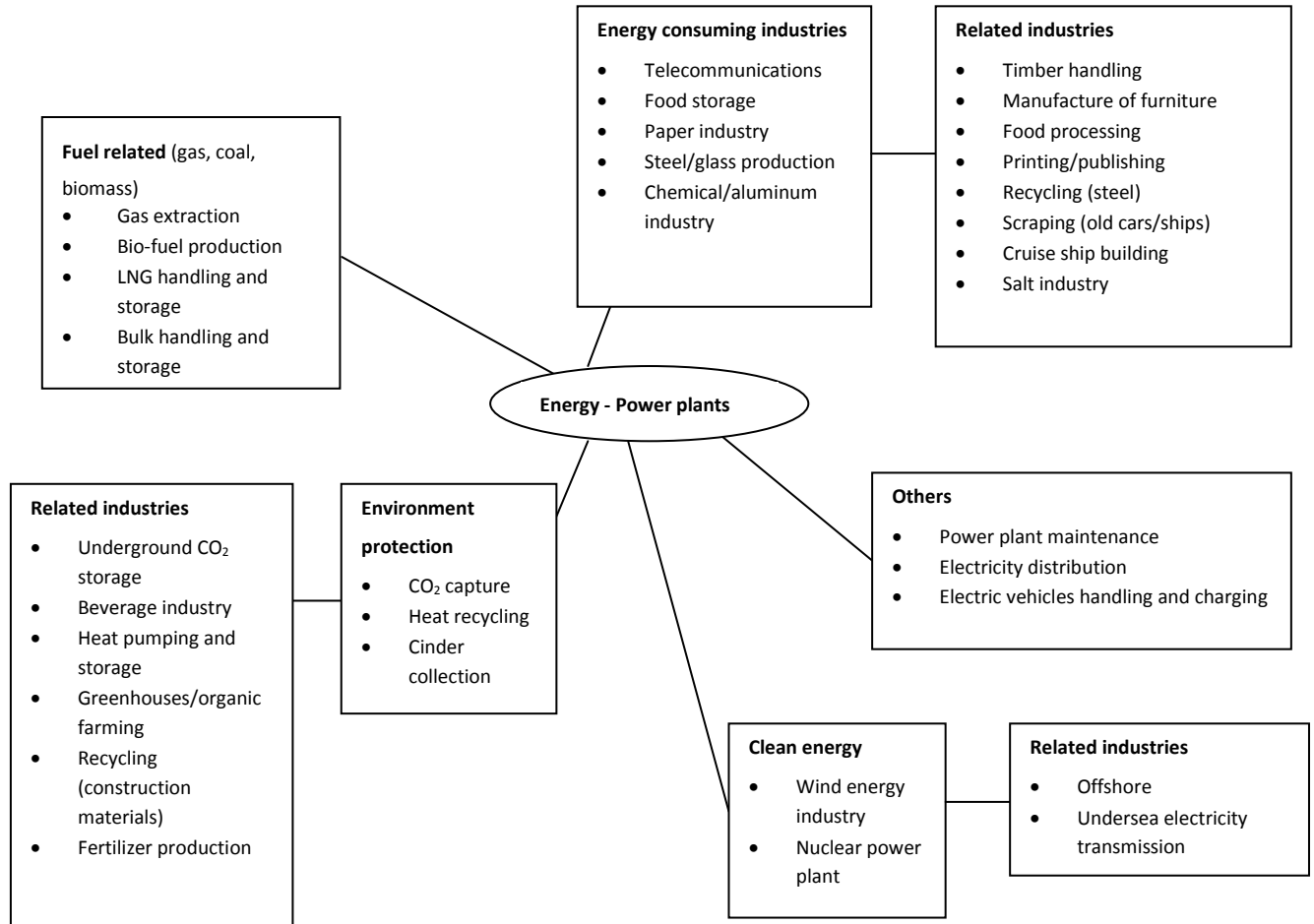
Yes.

The Eemshaven is definitely not a hopeless area. The investments in recent years proved that. Local governments and Groningen Seaports still have active attitude towards the issue and are working hard on it. The comings of power plants and the projects in the North Sea Region will bring new opportunities to the port. The future of the Eemshaven is full of possibilities. Of course, lots of efforts need to be made to realize a new vision in the future, especially those by the governments and the port authority.

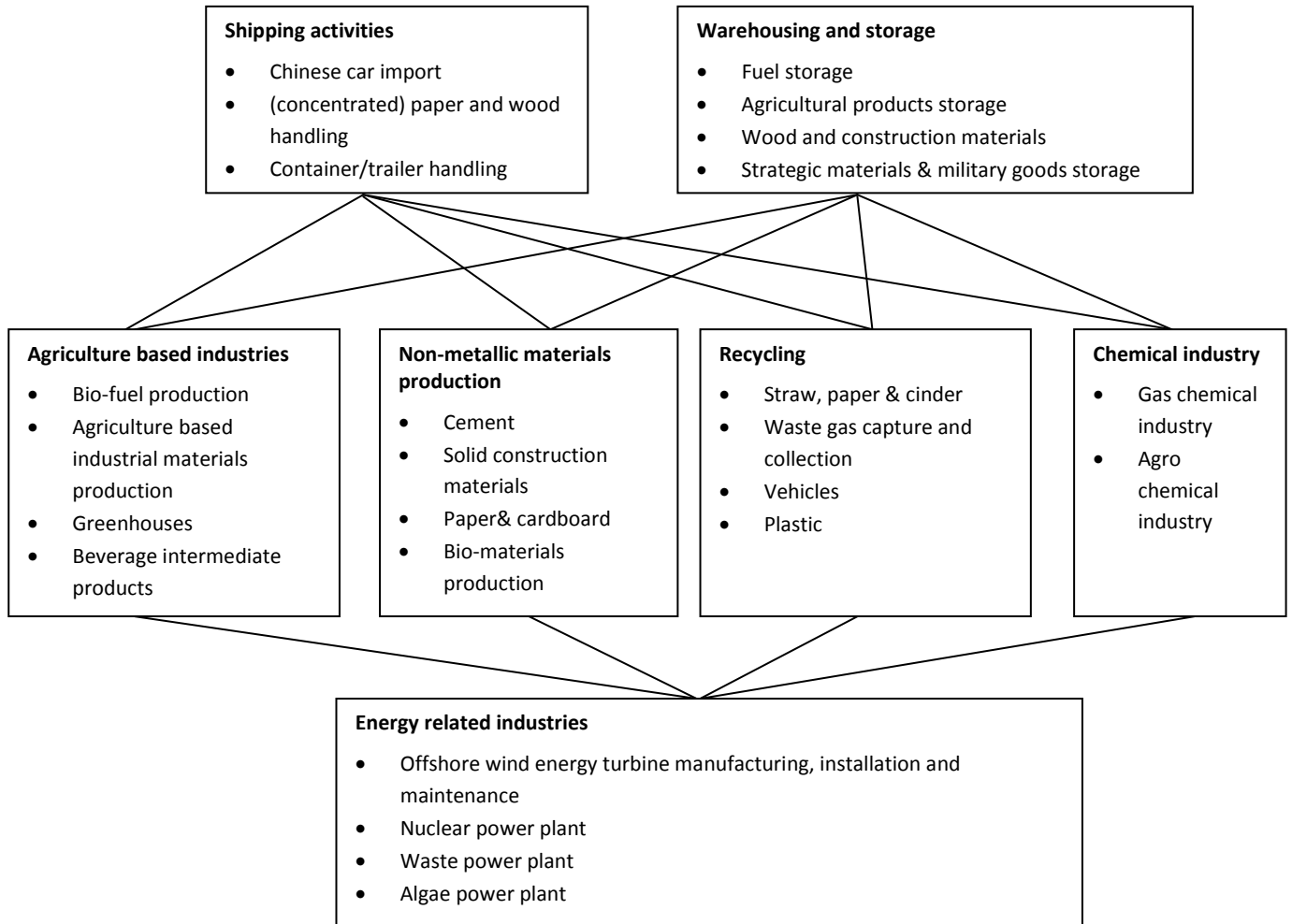
What activities can be included in the future vision of the Eemshaven?

The activities which have local connections, which use current port facilities and which can reach certain scales are promising for the Eemshaven. The popular, widely accepted proposals should certainly be included, so as those wild but reasonable ideas.

If future expansion is not available, as expected in Scenario 1, an example of potential activities is:



Otherwise, another example is given for a more aggressive scenario:



The recommendations will be given regarding two subjects, the follow-up suggestions based on the findings of this study and the improvements which can be done in similar studies in the future.

Follow-ups

- I. Both the stakeholders and the public should keep being optimistic about the future for the Eemshaven.
- II. The port authority, Groningen Seaports, should not only work close with the local governments but also with entrepreneurs at all phases. It is also important for the stakeholders to reach a consensus on a clear future vision. Therefore, bringing experts and other stakeholders together at the early stage and then sharing the same outlook by discussions is necessary.
- III. The competitiveness of the region influences the development level of the Eemshaven. The governments play important roles in creating an attractive investment environment. They should not dare to take risks, to put efforts, sometimes large investments when they are necessary.
- IV. The standpoint of province of Groningen has big influences on the future strategic line. It will definitely helpful to have better results of such studies if the politicians and the researchers of the province can be more actively involved.
- V. Hinterland connections, environmental issues and scales of certain activities should be particularly considered. Good quality of hinterland connections is very valuable for port development, so at least the transport services can always be improved by the governments, if infrastructure upgrading is not applicable. Long term relationships with environmental organizations and entrepreneurs help solve the latter problems.
- VI. The stakeholders need to consider the future possibilities with an open mind and to encourage innovative ideas. More quick evaluations can be done to check the feasibilities of the proposals, as the example of car import given in section 5.4.1. After that, Groningen Seaports may invite consultants and potential partners to do further studies on the ideas which are feasible by quick check.

Future studies

- VII. The Eemshaven and the port of Delfzijl are considered as a group in many cases. This study focuses more on the Eemshaven itself rather than two ports as one subject. More interesting results may show up to treat the two Groningen ports as a whole.
- VIII. The studies can be done on a higher regional level. The level can be extended to the North Sea Region. The connections between the Eemshaven and the region may bring new ideas of the future developments.

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1 Sieve-Analysis and Potential Activities Analysis

Table 10 Sieve-analysis

Code	Description	Criteria				
		Consuming market	Logistics facilities & infrastructure	Other resources	Large labor market	Knowledge & technology
01~03	Agriculture and Fishing				*	
05~09	Mining and quarrying			***	*	
10~11	Manufacture of food products and beverages				*	
12	Manufacture of tobacco products			**	***	
13~15	Manufacture of textiles and clothes			**	***	
16,31	Manufacture of wood and of products of wood and cork, furniture				**	
17	Manufacture of paper and paper products				*	
18	Printing and reproduction of recorded media	*			*	
19	Manufacture of coke and refined petroleum products			**		
20~21	Manufacture of chemicals and pharmaceutical products					
22~23	Manufacture of rubber, plastic and other non-metallic mineral products				*	
24~25	Manufacture of basic metals and metal products, except machinery and equipment			**	*	
26~27	Manufacture of computer, electronic, optical products and electrical equipment	*		**		
28, 32	Manufacture of machinery, equipment and other manufacturing				*	*
29~30	Manufacture of motor vehicles, trailers and other transport equipment				*	*
33	Repair and installation of machinery and equipment					*
35	Electricity, gas, steam and air conditioning supply	*				

36	Water collection, treatment and supply					
37~39	Sewerage and waste management services					
41	Construction of buildings	**			*	
42	Civil engineering	**			*	
43	Specialized construction activities	**			*	**
45~47	Wholesale and retail trade and repair of motor vehicles and motorcycles	***	**			
49-1	Land transport		***			
49-2	Transport via pipelines					
50	Water transport					
51	Air transport		***			
52	Warehousing and support activities for transportation					
53	Postal and courier activities	***	**			
55~56	Accommodation and food services	***				
58~60	Publishing, programming and broadcasting activities	***				
61	Telecommunications	***				
62	Computer programming, consultancy and related activities	**				***
63	Information service activities	**				**
64~66	Financial and insurance activities	***				
68	Real estate activities	***				
69~75	Professional, scientific and technical activities					***
77~82	Administrative and support services activities	***				
84	Public administration and defense; compulsory social security	***				
85	Education	***				***
86~88	Human health and social work activities	***				
90~93	Arts, entertainment and recreation	**				
94~96	Other service activities	***				
97~98	Activities of households	***				

99	Activities of extraterritorial organizations and bodies	***				
*** The factor is necessarily required by the activity.						
** The factor is important to the activity.						
* The factor is one of the concerns of the activity.						

The industries showed in grey cells will not be considered as attractive industries in the Eemshaven. The rest will be the input of the following selection.

Table 11 Potential activity selection

Code	Description	Criteria				
		Space	Energy supply	Current infrastructure	Agriculture products	Environmental level
01~03	Agriculture and Fishing	***			***	2~3
10~11	Manufacture of food products and beverages		**		***	3~5
17	Manufacture of paper and paper products		**			3~4
20~21	Manufacture of chemicals and pharmaceutical products		**	**		3~5
22~23	Manufacture of rubber, plastic and other non-metallic mineral products	**		***		3~5
33	Repair and installation of machinery and equipment			*		2~3
35	Electricity, gas, steam and air conditioning supply			***		5~6
36	Water collection, treatment and supply		**			3~4
37~39	Sewerage and waste management services		**			3~4
49-2	Transport via pipelines	*		**		3
50	Water transport	**		***		1
52	Warehousing and support activities for transportation	***	*	**		3~5
*** The factor is necessarily required by the activity.						
** The factor is important to the activity.						
* The factor is one of the concerns of the activity.						

The cells in yellow are potential industries selected at last.

2 Hinterland Connection and Port Facilities Comparison

The port of Esbjerg mainly relies on Danish market, while the rest six ports more or less share the same hinterland for logistics. Three economic hot zones are identified in the hinterland, the Randstad, the Ruhr Area and Bremen-Hamburg region.

Table 12 Hinterland Connection Comparison

Port	Hinterland connection			
	Road	Rail	Inland waterways	Remark
Eemshaven	<ul style="list-style-type: none"> • N46 to Groningen (30km) • N46+A7+A6 to Amsterdam (110km)/Rotterdam (280km) • N33+A7+A28 to Bremen (195km) • N33+A7+A31 to Ruhr Area (300km) 	<ul style="list-style-type: none"> • Delfzijl – Groningen (single track)– Amsterdam/ - Rotterdam/ - Germany 	Via Ems - Delfzijl	Moderate Limited Moderate
Harlingen	<ul style="list-style-type: none"> • A7 to Amsterdam (115km) • A7+A4 to Rotterdam (180km) 		Directly connected, IJsselmeer	Moderate - Good
Delfzijl	<ul style="list-style-type: none"> • N360 to Groningen (30km) • N33+A7+A6 to Amsterdam (220km)/Rotterdam (290km) • N362+A7+A28 to Bremen (165km) • N362+A7+A31 to Ruhr Area (275km) 	<ul style="list-style-type: none"> • Delfzijl – Groningen (single track)– Amsterdam/ - Rotterdam/ - Germany 	Directly connected	Moderate Limited Good
Emden	<ul style="list-style-type: none"> • A31+A28 to Oldenburg (85km)/Bremen (130km) • A31 to Ruhr Area (275km) • A31+A7 to the Netherlands 	<ul style="list-style-type: none"> • Emden– Oldenburg – Bremen • Emden – Ruhr Area 	Directly connected	Good Good Good
Wilhelmshaven	<ul style="list-style-type: none"> • A29 to Oldenburg (60km) • A29+A28 to Bremen (100km) • A29+A1 to Ruhr Area (290km) 	<ul style="list-style-type: none"> • Wilhelmshaven - Oldenburg - Bremen / - Ruhr Area 		Good Good -
Cuxhaven	<ul style="list-style-type: none"> • A27 to Bremen (100km)/Hannover (220km) • B73 to Hamburg (110km) • A27+A1 to Ruhr Area (365km) 	<ul style="list-style-type: none"> • Cuxhaven – Hamburg – Maschen • Cuxhaven – Bremerhaven – Bremen – Ruhr Area 	Via Elbe – Hamburg	Good Good Moderate
Esbjerg	<ul style="list-style-type: none"> • E20 to Copenhagen (290km) • E20 + E45 to Hamburg (300km) 	Connected to north and east Denmark		Moderate Limited -

Sources: Seaports of Niedersachsen, websites of the ports, Google Map

Table 13 Main Cargo Type, Port Facilities Comparison

Port	Main cargoes	Handling facilities	Storage facilities
Eemshaven	Rubble/stones Barley/malt Sand/gravel/bitumen/cement/contaminated soil Paper and wood Chemicals Fish Sugar	Cranes for the transshipment of containers and bulk cargo RoRo ramp Bulk facilities Reach stacker Passenger services Possibilities for the building and repair of ships	Roofed and open facilities, including cold storage
Harlingen	Container Salt Potatoes and fish Marine sand/gravel	Quays of 1.500m 50-ton crane for offshore activities	Roofed and open facilities available
Delfzijl	Chemicals Aluminum Gypsum/clay/limestone Salt fodder	Cranes for the transshipment of containers and bulk cargo RoRo ramp Bulk facilities Reach stacker Passenger services Possibilities for the building and repair of ships	Roofed and open facilities, including cold storage
Emden	Automobiles Forest products Liquid chalk/Kaolinite Mineral substances Container Wind energy parts	Container terminal with total length 1410m, draught 10-11,9m, with 2 container cranes and 6 gantry bridges, numbers of reach stackers and straddle carriers 12 RoRo berths, with draught 7-9,12m 1 floating RoRo ramp Oil Port quay length 500m, draught 5-10,5m, with bridges for handling Other quays total length over 2.000m, with cranes and mobile facilities	Roofed storage 2,8ha Dockside storage 36,8ha Open storage 54,1ha
Wilhelmshaven	Crude Oil/Mineral Oil (products) Coal Building Materials Break bulk Chemical products Project cargo	2 quays for chemical products, draught 8,5m, with storage capacity 42.000cbm 5 quays for tankers, loading facilities for tank wagons, draught 18-20m, with storage capacity 1,3 M.cbm 3 bulk quays with ship unloading facilities and conveyor belt (1.300t/h) North Port total quay length 1.210m, draught 10-12m, with RoRo ramps, up to 60t multi-purpose cranes and mobile devices Other quays total length 1.830m, draught 6-10m, with RoRo ramp and mobile cranes Shipyards services provided	Roofed storage 2ha Open storage 3,4ha
Cuxhaven	General cargo/RoRo Sand/grit/gravel/stones Automobiles Fish products Container heavy lifts Wind energy parts	Europa Quay length 690m, draught 15,8m, with 1 container gantry crane, 2 RoRo ramps, 4 reach stackers, 1 mobile crane (100t) America Port, 5 quays with total length of 940m, draught 6-7m, facilitated with RoRo ramps, gantry cranes and mobile crane Other quays, total length 700m, draught 8.5-14m, with 3 gantry cranes Two fishing port and a ferry port with cranes, RoRo	Roofed storage 9,8ha Cold storage 10ha Open storage 22ha

		bridge and other facilities	
Esbjerg	RoRo cargo Container Coal Chemicals/liquid bulk Mineral oil products	Bulk quay length 290m, draught 10,5m, with 2 gantry cranes 5 quays for general cargo, RoRo/LoLo cargo and container handling, total quay length 1.615m, draught 8,4-10,5m, 5 RoRo ramps, 1 gantry cranes and 1 mobile crane available 5 offshore quays with total length 2.000m, draught 6,7-11,5m, unloading equipment and reefer facilities are provided 2 liquid bulk quays, draught 7.5m/10.5m 2 passenger terminals and fish handling quays available	Not available

Sources: Seaports of Niedersachsen, websites of the ports

3 Case Study – Chinese Car Import

Demand calculation and capacity estimation

Table 14 Market Share of Asian Cars

Brand	Current market share (percentage in NL) ⁸
Toyota	9
Honda	2,5
Suzuki	3,5
Mazda	1,5
Hyundai	4
KIA	3,5
Subtotal	24
Chinese brands (expected)*	7,5

*Korea companies can be good models of Chinese domestic car manufacturers, in the European market. They started selling cars in the Netherlands since early 1990s. The current market share of Hyundai and KIA is about 7.5 percent in total. According to the statistics of Autoweek, on the average of the last five years, Hyundai and KIA totally sold 31.450 cars in the Netherlands per year. Chinese cars may reach similar number in 15-20 years.

Table 15 Sales Figures in Neighbor Countries

Country	Sales 2008	Sales 2009 ⁹	Sales estimated	Expected market share
Belgium	535.947	476.194	500.000	10%
Netherlands	150.197	387.679	500.000	50%
Germany	3.090.040	3.807.175	4.000.000	10%
Denmark	499.918	112.271	150.000	10%
Sweden	253.982	213.408	250.000	10%
Norway	110.617	98.675	100.000	10%

Assume the total market share of Japanese and Korean cars will shrink 10 percent and about 20 percent will be manufactured in China, half of which is imported through the Eemshaven. The market did not show obvious increasing trend in 20 years. Average yearly sales volume is about 500.000 units.

Expected amount in the Netherlands: $(24\% \cdot 90\% \cdot 20\% + 7,5\%) \cdot 50\% \cdot 500.000 = 29.550$ units

To reach larger scale, neighbor countries, namely Belgium, Germany, Denmark, Sweden, Norway, can be considered as extended hinterland of the Eemshaven. Assume in these countries, about 7 percent of total sales are Chinese cars and the Eemshaven can gain 10 percent of the market.

⁸ <http://www.autoweek.nl/verkoopcijfers.php?merk=hyundai&viewjaar=2006>

⁹ <http://www.raivereniging.nl/markt%20informatie/statistieken/europese%20statistieken.aspx>

Expected amount in the neighbor countries:

$$7\% * 10\% * (500 + 4.000 + 150 + 250 + 100) * 1.000 = 35.000 \text{ units}$$

The average size of passenger vehicles sold in the Netherlands is about 1.7 meter wide, 1.5 meter high, and the mean weight is about 1.012 kilogram¹⁰. Assume most cars imported via the Eemshaven are small passenger cars, about 1 CEU per vehicle.

Total volume is between $29.550 + 35.000 = 64.550$ CEU and $64.550 * 1.012 / 850 = 76.860$.

An annual capacity of 80.000 CEU should be sufficient for the start.

Frequency calculation

The current car shipping route of East Asia – Europe has 3-6 discharging ports in Europe. For the vessels with the capacity between 6.000CEU and 8.000CEU, about 1.500 vehicles need to be handled per call. Thus the frequency will be $80.000 / 52 / 1.500 = 1$ call/week.

Design parameters

The design figures are estimated according to the existing RoRo port for international automobile shipping. The reference terminals are terminals of Bremerhaven (total capacity over 2 million units) and Emden (total capacity over 1 million units), Autoport of Canadian port Halifax (100.000 units) and newly built Tianjin Port RoRo Terminals (10.000 units and 40.000 units) and Shanghai Haitong International Automotive Terminal (12.000 units). The resources are mainly websites of the terminals and operational companies¹¹.

Modal split

In the Netherlands, barge is widely used for inland transport. However, concerning the conditions of the Eemshaven and the cargo type of new automobiles, barge is not taken into consideration. In 2008, road transport is dominant, compared to railway, about 0.95:0.05. With the influences under the environment protection policies, the use of trucks may reduce to a certain level. The North Sea Mission report of modal split trend shows that in 2020, the ratio of the usage of truck and train is about 0.85:0.15. The figure is used in this case.

Table 16 Modal Split of Inland Freight Transport

The Netherlands									
TRA_MODE/TIME	2008	2007	2006	2005	2004	2003	2002	2001	2000
Railways	5,4	5,5	4,8	4,4	4,2	3,8	3,3	3,4	3,7
Roads	59,9	59,4	63,1	63,6	64,7	64,6	63,3	63	63,4
Inland waterways	34,7	35,1	32,1	31,9	31,1	31,6	33,4	33,5	32,9

Source: Eurostat, modal split of inland freight transport

¹⁰ <http://www.bovagrai.info/auto/2009/2.5.html>

¹¹ <http://www.bremen-ports.de/>, <http://www.haitongauto.com>, <http://www.tjroto.com/>, <http://www.blg.de/>, <http://www.portofhalifax.ca/>, <http://www.emden-port.de/>, <http://www.emden.de/>

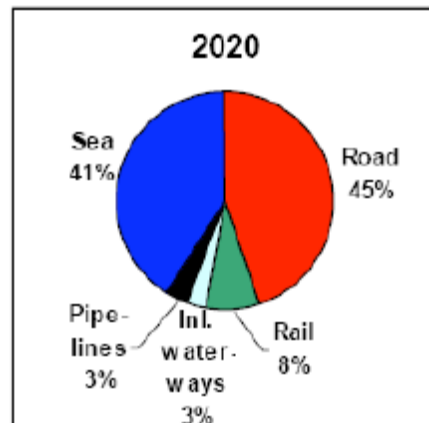


Figure 7-1 Modal Split Prediction in the North Sea Region

Source: North Sea Mission; DGTREN memo June 2006

(Un) loading time

Assume one worker can handle 6 cars per hour. There will be 1.500 units of vehicles per call, the loading/unloading time will be $1.500/6=250$ person*hour. Total handling time, from Ship to shore then to further transport vehicles, will be about 10 hours of 25 workers.

Costs

The rough estimation of the construction costs, with the price level of 2010. Some unit prices of the construction costs refer to the estimation of the feasibility study of the Port of Poti in 2009.

Total expansion area

The water related area, including the basin and extended waterways, is about 36 hectares (500m*300m+300m*700m), terminal area 5 hectares, parking area 7 hectares (4.000*16m²), truck and train loading area and waiting area 3 hectares, customs, PDI, offices and other buildings and faculties, 3 hectares in total. The land area is about 18 hectares and total expansion area is about 54 hectares.

Land cost

According to the statics of CBS, in 2007, the average land price of Bouwhoek en Hogeland is 24.639 euro/ha¹². Assume the price in 2010 is 25.000 euro/ha for expansion, the total land cost of Site B is €1,35 million.

For Site A, the area belongs to Groningen Seaports. Part of the area is paved and ready for new activities. Total land area is 18 hectares, with the estimated unit price of 35.000 euro/ha. The land cost of Site A is €0,63 million.

¹² <http://www.cbs.nl/en-GB/menu/themas/landbouw/publicaties/artikelen/archief/2003/2003-1130-wm.htm>

Table 17 Prices of Agricultural Land of the Dutch Wadden Sea Region

61. Koopprijzen van onbedekte, onverpachte grond per groep van landbouwgebieden
Prices of land

	2003	2005	2006	2007
	Euro/HA			
Bouwhoek en Hogeland	23671	24603	22399	24639

Source: CBS; Normen LEI BIN en voor Nederland DLG

Quay wall and pavement, port infrastructure

For Site B, the total quay wall is 500 meters long. According to the Deurganckdok in the Port of Antwerp, the construction cost is about 38.000 euro/m¹³. This part will cost about €19 million.

The port pavement and infrastructure costs are estimated as 2,5 million (0,5 million*5ha).

Handling and assistant facilities

Three forklifts of 3T and two of 10T will cost €260.000 (3*20.000+2*60.000). One 80T mobile crane, €100.000, two tow tractors €140.000, pickup trucks, patrol vehicles, rescue vehicle and other vehicles €500.000. In total, the costs are €920.000.

Dredging costs

The dredging of channel and basin cost about 7.560.000 (360.000m²*14m*€1,5/m³), which is the biggest part of the construction cost. The preparation for terminal area needs about €3.600.000 for 36ha land.

Labor force

Major labor force is needed for car loading and unloading. Weekly, 375 person*hour is needed. Assume the hourly payment per person is €15. With additional 30% of other charges, the annually cost is €234.000 (250*15*52*1.3).

Other staff is estimated around 10 persons. The average Transport-Communication gross income is 23.800 euro/year in 2005¹⁴. Additional expenses of training, bonus, social charges, etc, are set as 30% of the salary. The labor cost of this part is €312.000 (24.000*10*1.3).

Total labor cost is estimated as €546.000.

Operational cost and maintenance cost

The operational costs include electricity and fuel cost, customs, PDI and office cost, marketing, insurance costs, etc. The insurance cost is 1% of the facilities and vehicles, while the rate is 0.5% for infrastructure; other costs are counted in the unit cost of €4 per CEU.

¹³ www.vliz.be/imisdocs/publications/134483.pdf

¹⁴ <http://www.worldsalaries.org/netherlands.shtml>

Annually operational cost is €409.700 ($1.500 \cdot 52 \cdot 4 + 920.000 \cdot 1\% + 17.700.000 \cdot 0.5\%$).

Annually operational cost is €428.700 ($1.500 \cdot 52 \cdot 4 + 920.000 \cdot 1\% + 21.500.000 \cdot 0.5\%$).

The estimated rate of maintenance costs are:

Table 18 Maintenance Rate of the Auto Terminal Operation

	Investment (euro)		Maintenance rate
	Site A	Site B	
Quay wall, pavement and infrastructure	(17.700.000)	21.500.000	1%
PDI, customs, buildings and offices	10.000.000	10.000.000	2%
Facilities and vehicles	920.000	920.000	4%
Dredging	-	11.160.000	1%

The annual maintenance cost of Site B in total is €563.400.

Using the facilities for Site A, the maintenance rate of Dredging and infrastructure is similar to that of Site B. However, for option A, the concerned area is smaller. By estimation, the total maintenance cost for Site A is €463.800.

Depreciation

Assume the lifetime of port facilities is considered as 15 years and that of other vehicles is 8 years, with the salvage value rate of 5%. Linear method is used, so annual depreciation rate of facilities is 6,3% and 11,9% for vehicles. The yearly depreciation is € 85.975.

Capital

Commercial financing rate of construction investment is 80% and own equity is 20%, payback terms is 20 years, linear. The interest rate is 4,5% annually. Additional investment for facilities is not considered as part of commercial finance.

Table 19 Capital Costs of Option A for Auto Terminal

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Capital remain	9.538.000	9.036.000	8.534.000	8.032.000	7.530.000	7.028.000	6.526.000
Capital Repayment	502.000	502.000	502.000	502.000	502.000	502.000	502.000
Interest	429.210	406.620	384.030	361.440	338.850	316.260	293.670
Capital cost	931.210	908.620	886.030	863.440	840.850	818.260	795.670
	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14
Capital remain	6.024.000	5.522.000	5.020.000	4.518.000	4.016.000	3.514.000	3.012.000
Capital Repayment	502.000	502.000	502.000	502.000	502.000	502.000	502.000
Interest	271.080	248.490	225.900	203.310	180.720	158.130	135.540
Capital cost	773.080	750.490	727.900	705.310	682.720	660.130	637.540

	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
Capital remain	2.510.000	2.008.000	1.506.000	1.004.000	502.000	-	
Capital Repayment	502.000	502.000	502.000	502.000	502.000	502.000	
Interest	112.950	90.360	67.770	45.180	22.590	-	
Capital cost	614.950	592.360	569.770	547.180	524.590	502.000	

Table 20 Capital Costs of Option B for Auto Terminal

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Capital remain	34.146.800	32.349.600	30.552.400	28.755.200	26.958.000	25.160.800	23.363.600
Capital Repayment	1.797.200	1.797.200	1.797.200	1.797.200	1.797.200	1.797.200	1.797.200
Interest	1.536.606	1.455.732	1.374.858	1.293.984	1.213.110	1.132.236	1.051.362
Capital cost	3.333.806	3.252.932	3.172.058	3.091.184	3.010.310	2.929.436	2.848.562
	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14
Capital remain	21.566.400	19.769.200	17.972.000	16.174.800	14.377.600	12.580.400	10.783.200
Capital Repayment	1.797.200	1.797.200	1.797.200	1.797.200	1.797.200	1.797.200	1.797.200
Interest	970.488	889.614	808.740	727.866	646.992	566.118	485.244
Capital cost	2.767.688	2.686.814	2.605.940	2.525.066	2.444.192	2.363.318	2.282.444
	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
Capital remain	8.986.000	7.188.800	5.391.600	3.594.400	1.797.200	-	
Capital Repayment	1.797.200	1.797.200	1.797.200	1.797.200	1.797.200	1.797.200	
Interest	404.370	323.496	242.622	161.748	80.874	-	
Capital cost	2.201.570	2.120.696	2.039.822	1.958.948	1.878.074	1.797.200	

Total annual cost

Table 21 Annual Costs of Option A for Auto Terminal

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 10	Year 15	Year 20	Year 25	Year 30
Labor cost	546.000	546.000	546.000	546.000	546.000	546.000	546.000	546.000	546.000	546.000
Maintenance cost	463.800	463.800	463.800	463.800	463.800	463.800	463.800	463.800	463.800	463.800
Other operational cost	409.700	409.700	409.700	409.700	409.700	409.700	409.700	409.700	409.700	409.700
Total operational cost	1.419.500	1.419.500	1.419.500	1.419.500	1.419.500	1.419.500	1.419.500	1.419.500	1.419.500	1.419.500
Depreciation	85.975	85.975	85.975	85.975	85.975	85.975	85.975	85.975	85.975	85.975
Capital cost	931.210	908.620	886.030	863.440	840.850	727.900	614.950	502.000	-	-
Total annual cost	2.436.685	2.414.095	2.391.505	2.368.915	2.346.325	2.233.375	2.120.425	2.007.475	1.505.475	1.505.475

Table 22 Annual Costs of Option B for Auto Terminal

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 10	Year 15	Year 20	Year 25	Year 30
Labor cost	546.000	546.000	546.000	546.000	546.000	546.000	546.000	546.000	546.000	546.000
Maintenance cost	563.400	563.400	563.400	563.400	563.400	563.400	563.400	563.400	563.400	563.400
Other operational cost	428.700	428.700	428.700	428.700	428.700	428.700	428.700	428.700	428.700	428.700
Total operational cost	1.538.100	1.538.100	1.538.100	1.538.100	1.538.100	1.538.100	1.538.100	1.538.100	1.538.100	1.538.100
Depreciation	85.975	85.975	85.975	85.975	85.975	85.975	85.975	85.975	85.975	85.975
Capital cost	3.333.806	3.252.932	3.172.058	3.091.184	3.010.310	2.605.940	2.201.570	1.797.200	-	-
Total annual cost	4.957.881	4.877.007	4.796.133	4.715.259	4.634.385	4.230.015	3.825.645	3.421.275	1.624.075	1.624.075

Rail and road work

The construction costs of railways are within a big range, depending on the conditions of the construction sites, the usage of the railways, speed, etc. Based on some construction projects, the prize is about 6 million euro/km.

Option A needs a bit extension of the railway and minor reorganization of the road connections in the port area. An estimation of 2 million euro is expected for the infrastructure. The terminal of option B needs a railway extension of about 2 kilometers. With other rail facilities cost, the cost is estimated as 25 million euro. An additional 2 million of road work is expected for the car transport.

4 Interviews

Hendrik-Jan Bakhuizen

HJB: Could you tell me a little bit more about your study, like your objectives, your assignments, etc? I read this (background materials) very quickly and made some remarks.

C: My study, as you can see in the structure part, is based on the current situation. The objectives are giving strategic suggestions on the future Eemshaven and some examples of how and what to develop. I used SWOT Analysis to identify the advantages and disadvantages. The advantages include energy supply, space, none congestion, and freedom for entrepreneurs, probably also the regional agriculture sector. The disadvantages are lack of hinterland support (There is no strong economic structure, no related and supporting industries, and labor market), insufficient shipping services and landward infrastructure.

HJB: When you look at the population of north part of the Netherlands, it might be poor for the labor market. When I compare it, by myself, to the port of Rotterdam, where there are a lot of people living also a lot of competition between several companies for qualified labor, there are always plenty of labor available. The port authority and the province of Groningen said that as well. What do you mean about the labor market problem?

C: I read a report of labor market study of the Northern Netherlands. Unemployed people in the region are mostly low-educated. Labor force of high quality is in Groningen-Assen region, which means the commuting time will be around an hour if they work in the Eemshaven.

HJB: I agree on this point but don't overestimate the influence of that (the situation of the labor market). Because when you look at the port of Rotterdam, there are traffic jams almost all day. You even have to travel at 4 o'clock in the morning to make sure you go to work on time or 7 pm to come back. You should put that in the labor market evaluation as well.

C: Okay. Based on the current situation, I give some suggestions. A cluster is needed to form part of the local economic structure because the SWOT Analysis shows there is no industry in this area of dominant effect on local development. In addition, integrated plans are needed to overcome several weaknesses. Labor market, shipping routes, infrastructure, social activities, should be considered besides the investments in the port. For each activity, I suggest that the port should co-operate with one big company, unlike the situation in the port of Rotterdam. Because the scale is limited and freedom of entrepreneurs is one of the advantages.

HJB: I can imagine.

C: After the suggestions, sieve-analysis is used for industrial section selection. Seven sections: agriculture based industries, chemical industries, non-metallic materials production, recycling, energy related industries, shipping and warehousing, are selected. A brainstorm is raised afterwards. The results are shown in the materials at your hand.

HJB: OK. What are the questions for me?

C: My first question is: What do you think of the results of the SWOT Analysis?

HJB: Branding is one of the issues you could take into account. On an international level, or a regional level, north-west Europe, the Eemshaven has no possible branding. Making it simple, no one knows the Eemshaven, while everyone knows the city of Groningen, because of the university, well educated people, good health care system, etc. For the Eemshaven and the port of Delfzijl, you can brand it as the port of Groningen on an international level, similar to the port of Bremen. In my

point of view, the port of Groningen is a better brand than two small ports. Like a brand of Arcadis shows more value than several companies. For the ports, the situation is similar.

One of the threats you mentioned about fast development of neighbor ports. I think you can learn something from the benchmarking or success.

Agriculture related industries; I can imagine the relations between agri-business/food industries and ports. You also mentioned pharmaceutical industry?

C: It is because in the standard classification, chemical industries and pharmaceutical industries are in the same category.

HJB: OK, OK. You mentioned no dominant industry in the economic structure, but you should see nowadays four power plants are being built. There are increasing attentions to energy. In the North Netherlands, many investments are focused on the gas fields and energy. In the future, it is possible to add more energy related industries to the port, such as transportation of coal and biomass.

Decommissions of offshore platforms could also be a chance for the long-term activities.

Are three ideas the examples or priorities?

C: They are just examples of how to make the ideas work for the next step.

HJB: OK. About Chinese car import, the Netherlands doesn't have well-known companies of car production. Germany does and they have the network (of distribution) and right communication channel, etc. It is more likely that Germany is successful than the Netherlands. And probably Belgium could be successful. As far as I know, there are some facilities already in place for car importing and distribution in Antwerp. Some time ago, probably one of the first companies which were located in the Eemshaven was a local Russian car import company, Gremi. The company imported Lada and it was a disaster.

C: The example of Chinese car import also hints the possibilities of "big ideas" for harbor activities.

HJB: ...which is not easy for such activity. Have you already spoken about these (ideas) with Groningen Seaports?

C: No, not yet.

HJB: Because I can imagine they have an opinion completely on the other side, which is also a right opinion. When you look 10-15 years back, there is no activity at all. The Eemshaven is a big empty desert with almost nothing. When you look at it now, it is not a big harbor, but you see a lot of activities, because of the power plants, wind mills, Theo Pouw and the malt factory. Compared to big harbors, it is still probably nothing. But when you compare it to the situation of 10 years ago, it is quite a revolution.

C: I also made a potential cluster for energy related industries.

HJB: Yes. Those activities maybe are not as out-of-box as importing Chinese cars, but on the other hand, the stakeholders focus much more on what already exists and what they already invested in. I think some kind of energy related activities, offshore wind park installation, offshore decommission, biomass activities or logistics for power plants, they are much easier to develop than starting something completely new. Renewable energy can be interesting for the harbor, for instance. You can use import those renewable energy and use them in the Eemshaven. Algae, or other renewable energy supply needs space, some activities, and probably reuse the heat of the power plants. I am just thinking what would be possible, but my main issue is not the solutions or what types of industries. My point is building further on what already exists or what already starts in the energy market, which also stimulated by the government or other stakeholders. You'd better a second pillar in parallel, so you are not only depended on the energy market. As you might know, the LNG

terminal is not coming, which is not surprising at all. There is no bigger market for another terminal at the moment.

C: Do you agree on the cluster of the potential activities?

HJB: I agree on the cluster, but when I look at the region, agriculture can be a very important one, recycling as well. In Delfzijl, there is already a chemical cluster. I am not sure in the global market is growing. If I have to invest, I won't invest in chemical industries. And I think energy industries are quite important. In brief, I would say energy activities combined with shipping.

C: Within the cluster, could you please give some comments on the bullets?

HJB: Chinese car import, I think it's a nice idea, but whether it will work, I don't know. Paper and wood handling, might be possible and can also be fuels for power plants. Container and trailer handling, I am not sure, especially there are so few people in the region. Fuel storage, for me, it is also a part of energy related industries. When it is more or less related to bio-fuel, I think it is possible. But normal storage, I don't think it's a good idea. Agricultural products storage might be. Construction materials, incidence. Strategic and military storage, you can also make a military region in the Eemshaven. Agriculture sector, I don't think they will develop greenhouses there. They've already tried several times, but those people don't want to move. Non metallic materials production, if energy and heat is necessary, it could be an opportunity. Recycling, might be; chemical industries, I don't believe they will grow in the future. Offshore wind turbine installation and maintenance might be a good idea. Nuclear power plant, I don't think it will settle in the Eemshaven. I mentioned platform decommissions. It is difficult for me to choose it right now, at this level, but I will choose energy related industries as No. 1. I think Groningen Seaports will help you more on this.

I don't think it is a hopeless area, absolutely not. I have seen a lot of things happened in the last ten years. But the possibility of building further on that region with something completely new is not high unless there is an obvious strategic advantage compared to other ports in the region.

C: Do you have another other ideas that are not included?

HJB: I already discussed offshore platform decommission and what I missed here a little bit about the data transmission, maybe also related to the health care center in Groningen. Then you have a big market to talk about.

Wyske van der Mei

C: My study is to answer the questions whether there is a future for the Eemshaven; if there is a future, what we can do about it. The study is divided into three parts. The first part is the analysis of current situation, the second part is the suggestions on a strategic level and later some potential activities are raised. The last part is evaluation by experts, which is what I am doing now.

In the current situation part, I used two methods, Porter's Diamond Model for regional economic circumstances and SWOT Analysis for the port development conditions. The results are on page 3 and page 4. In brief, the positive factors include energy supply, relatively cheap price for land and shipping services, sufficient space and none congestion roads, support of government, freedom for entrepreneurs. The negative factors are lack of hinterland support, no big consuming market as well as no industrial area. Port facilities and infrastructure, harbor market and living circumstances in the port area are not that attractive compare to main ports, like Rotterdam and Amsterdam. Do you agree on the results?

WM: Would you like me to give some reactions on the SWOT Analysis and the other points in your study structure?

C: Yes, please.

WM: First I have a question. Have you visited the port and spoken to Groningen Seaports?

C: I have been there and I talked to people from Groningen Seaports as well as BBE.

WM: OK, fine. So you spoke to Mr. Post of Groningen Seaports?

C: No, not yet. We are trying to make an appointment with him but he is quite busy. I talked to the manager of strategic development department of Groningen Seaports.

WM: Fine. Let's see. I can't say I have read it but I have taken a look at it so I can have response to your questions, especially on the SWOT Analysis. Let's see. I do agree on the strengths. Like you said capacity, energy supply, competitive price, they are all okay. This is also in our analysis. About the weaknesses, first point is lack of hinterland support. Well, this is a question mark for me. Because the need for hinterland support for the Eemshaven is not that big. It is an energy hub; energy stays in and goes out. For example, Vopak will have an oil terminal over there, but the oil is going nowhere. Power plants are there and they don't need hinterland support. I think there is no need for strong hinterland connections.

C: Well, the SWOT Analysis is based on the objective of generally speaking seaport with logistics and port industries, not under the assumption of "an energy port".

WM: So it is not especially for the Eemshaven?

C: It is for the Eemshaven, but it was not stick to the destination of "energy".

WM: OK, fine. Still it is my question mark because I think ports like Rotterdam are more in need of hinterland support than Eemshaven. Then you say weakness, relatively poor logistics facilities and limited shipping routes. Yes, I do agree. And the last one, question mark again, lack of comprehensive development approach, can you explain a little more why you think it is a weakness?

C: There are two levels; the plan was first focused on oil refinery and then logistics. Every time only one industry is concentrated. No cluster factors are involved. The other level is the port development was about selling land and attracted investment in the port area, instead of regional economic concerns. That's what I mean incomprehensive development approach.

WM: I see...fine, now I understand it better. Well, the opportunities, well, I can see they are opportunities. For the last one, stricter environmental policies and tighter legislation, you see that as an opportunity. Can you explain?

C: On one hand, of course, it is an environment protected area, the Wadden Sea. It could be a threat. However, on the other hand, the Eemshaven has the highest level of environmental classification for industries, up to 6. It might be a choice for some high pollution industries.

WM: When stricter environmental policies and tighter legislation are valid for the rest of the country, the Eemshaven will have the opportunities to have some more dirty industries. This is what you say?

C: Yes.

WM: OK. About the threats, the eliminating subsidies, could you explain what kind of subsidies will be eliminated?

C: No more subsidies are particularly for the port. For some port industries, like BioValue is closing down because the price cannot compete with developing countries when they can't get more subsidies.

WM: BioValue has to be closed down?! OK.

C: I am sorry that it (the background material) is too brief.

WM: It is OK if you could explain it. When somebody has to read it, maybe you should do some explanations under it. I think this will be better.

Well, the rest is OK with me. Maybe I need some more explanations but OK.

C: Do you think there are some important points that I neglect?

WM: Yes. When we go on I will give you more reactions.

C: Okay. After the SWOT Analysis, I put the situation into two scenarios, a conservative scenario and an aggressive scenario. I suggest focusing on energy related industries only for scenario 1, which is what Groningen Seaports and local government are doing. At the same time, I suggest improving landside accessibilities, especially for road connections.

WM: I understand the policies incline more to inland waterways and railways, not so much on road connection.

C: The conservative scenario is somehow a short-term scenario. Road connection can be a start point.

WM: I think this is what Groningen Seaports is doing at this moment. Then it is about your second scenario.

C: The aggressive scenario focus on long-term development with possible expansion. Branding is considered because the Eemshaven is nameless out of the Netherlands. It could be told as the port of Groningen instead of an isolated port. Not everybody knows Maasvlakte, but when talking about the port of Rotterdam, it is worldwide known. From this point, it is stronger to merge the city and the ports in this region.

WM: But you are from China, do you know the city of Groningen? We, at least people in the west, think Groningen is so far away.

C: On a regional level, I think it may be better than the name of Eemshaven. Even people in Groningen think the Eemshaven is so far away.

WM: That is true. I think it is a good suggestion.

C: On a higher level, the municipalities as well as regional companies can work together and have better co-operations. So it leads to the second idea of integrated plans. Getting activities in the port area is not the only concern; infrastructures, labor market, shipping services, social activities should also be realized in the plans. It is a whole package of planning on a regional level.

WM: You are suggesting not only port planning is involved, but also labor market planning and infrastructure planning. That's a good point.

C: The next point is industry clusters. It is not an energy generation site with a port but a port with industries. I suggest having some industries which relate to port activities as well as energy. That's the aggressive scenario.

WM: OK. I see. I think this scenario is more ambitious than the conservative scenario. I think it is always good to have ambitions. What you say is they (port authority) need a strategic plan which is more than energy alone.

C: Yes, energy is part of it, and probably a very important part.

WM: I agree. When I take a look at it, what I miss in the aggressive scenario is windmills at sea.

C: Well, this part is put in the detailed activities part. We will see the content later.

WM: Fine. Now I need to read this one, someone else read it for me already. Let's see, in chapter 4, you did sieve-analysis and potential section selection. Then you say eliminating sections which needs regular support of knowledge and high technology. But there is a university in Groningen. Is it because they lack of technical knowledge in the University of Groningen or not?

C: No, that's not what I mean. As mentioned in the SWOT Analysis, knowledge is one of the weaknesses in the region. The criterion is set based on the analysis.

WM: I can understand. Now we are on page 6. You mentioned greenhouses. My colleague remarks why there is so much importance of greenhouses in the first scenario.

C: Greenhouse is an opportunity the port authority also studies on for several reasons: the Eemshaven does not have possibilities of seaward expansion so as land-based activities, greenhouse is attractive; A lot of CO2 emissions and heat from the power plants can be used in greenhouses.

WM: OK. Well, then the port cannot be expanded because the greenhouses are there. I also understand not so many politicians are in favor of greenhouses. These are my concerns. Others are okay with me.

C: So you think these activities are suitable for the Eemshaven?

WM: Yes, I think so. Not all, but I can see the possibilities except for greenhouses. And the wind park is here and also clean energy.

About the conservative scenario, energy cluster is sort of one industry only. It is a bit isolated and small, isn't it?

C: Yes.

WM: And then your second scenario.

C: The blocks are the activities chosen from the sieve analysis and potential section selection. The bullets are generated by brainstorm. Three examples are given in the following part.

WM: There are not many remarks I have on this because I basically agree. But there are some questions. The first is Chinese car import; there are a lot of competitors for car import, Emden, Rotterdam, Bremerhaven, Vlissingen, Antwerp and Zeebrugge. Would it be wise to think of Chinese car import?

C: The Eemshaven needs a big idea rather than several small activities. Car manufacturers are also competing. Some of them would like to get involved in the whole supply chain. The Eemshaven could offer more freedom to the entrepreneurs which may be a big advantage. For the Eemshaven, a new RoRo terminal needs relatively low investment but could bring a lot of activities to the port.

WM: I think there will be a fierce competition. I don't think it will be an easy choice for the Eemshaven for car import. I have my doubts. And then concentrated paper and wood handling, there is already something happening, isn't there?

C: Yes, Wagenborg and Wijnne Barents both have such business. The scale is suggested upgrading in this case.

WM: This could be a good opportunity, I think. But then, containers, well, container is a difficult market, isn't it? Also in this market there is a very fierce competition.

C: Sorry, I did not make it clear. For the Eemshaven, container shipping is not on an international level but a regional level. I should say short-sea container shipping, focusing on the market of UK, the Scandinavia and perhaps the Baltic.

WM: Only short-sea, that's okay. But this is still a difficult market. There are a lot of ports which are specialized in it. The big lines are already made their choices. I don't think they are going to change this.

I don't have any more remarks on this part. It is clear.

C: Do you think the future vision can be something like the second scenario?

WM: I think there is a future of a scenario like this. I also understand the port authority saying that at this moment, we can grow or expand with the energy cluster. And they will be very careful to expand another activity because you can lose on it as well. There is a risk. They should continue the energy scenario and see what the possibilities for other things are.

C: I think Groningen Seaports is more concentrated on land-based activities. There are more possibilities for the Eemshaven as an industrial area than it as a port.

WM: I am not sure this is what they think. But my idea is there are strong possibilities for the Eemshaven as a seaport. Because ships going to the Eemshaven need deeper maritime access than the current one, central government will do the dredging and pay for it. That is only because we believe the Eemshaven as a sea port. When the port has to be an industrial zone which needs good maritime access, then I think it is okay. It is true about the industrial zone, but I believe the Eemshaven has a future as a seaport. I think they should develop more plans. They are a bit conservative, aren't they? Maybe your study can help them.

C: I guess you are more supportive to the aggressive scenario.

WM: Yes. Not all of it though, part of it. Shipping and warehousing are okay except for the car import..... Except for greenhouses...well, I don't think data center should be in the industrial zones near a port but there are reasons for it. So...that's what I think about it.

Marijke van Beek

C: My study is to answer the questions whether there is a future for the Eemshaven and what activities can we organize in the port. The results will be suggestions on a strategic level and proposals of potential activities.

B: Have you been there?

C: Yes, I have been there several times.

B: You saw the big working (field)?

C: Yeah, I have seen it. Every time there is difference. The first time I have been there, I felt disappointed. There was only one ship in the basin; hardly any work is going on at that moment. I also saw a photo taken in 2003. There was nothing there in the Eemshaven. Recently, there are pillars for the power plants. It is very busy on the construction site. My view of the Eemshaven is completely changed.

B: You are right. I came from another part of Holland to here, in 2007. When I applied for this job, I thought I would become a mayor of a country town, in the middle of nowhere. I talked to people, and then I had an acquaintance with the harbor. Before that, I did not know what was happening in the Eemshaven. So I can understand your feelings, no one knows the Eemshaven. It will change, of course, in the next 10 years. There will be another view on that. A decision is made by the national government to have a harbor to take care of jobs in the north of Holland. That is why Eemshaven was built. It took 40 years to have successful activities. There were some activities, but they did not succeed. Then Electrabel was coming. Now you've seen there are more power plants, Electrabel, NUON, RWE, and Advanced Power. Vopak is coming with strategic oil storage. Now everybody wants to be in the Eemshaven, not only the big plants but also MKB. They want to be there because they can deliver other products for everything what is going on in the harbor. So now, it grows and grows, and soon the place will be full. We are thinking with the province and the national government what the possibilities for another piece of land are. You know the Google datacenter, now there are also other companies are having contact with us; they want to be there and they need ground. And we are thinking in which direction we have place.

C: I suppose only landward expansion is possible.

B: Yes. Because the Wadden Sea is world heritage, there is strong protection of environment. It is difficult when you want to have industries in the neighborhood of the world heritage.

C: Especially with heavy industries or those with pollution. It is interesting that at the same time, the Eemshaven allows the highest environmental level of industries, up to 6.

B: Yes. It is a big challenge to make it work. Nowadays, we don't start with (new) development, and see what the entire movement is doing. (If it is not working), no, we start other way of dealing with it. At the beginning, we talk to people, not only stakeholders but also people from green organizations. We try to make an agreement with them. Everybody knows the Eemshaven as an industrial place, and the Wadden Sea as world heritage with all kinds of regulations. All we try is to combine that.

C: I can imagine it is difficult.

B: Yes. I have learned, and that is also how I work, that it is very important not to think of everything in this building but to get out, talk with the stakeholders, try to make it work together. Not only communication, but also make an agreement, and it works.

C: Shall we go back to the study?

B: OK.

C: I did Porter's Diamond Analysis for regional economic conditions and SWOT Analysis of the Eemshaven. The results are on page 3 and page 4. In brief, I would say the positive factors of the Eemshaven include energy supply, space for future development, relatively cheap price for land and port services, freedom for entrepreneurs, and governmental support. Negative factors include lack of hinterland support for an industrial harbor, infrastructure, port facilities, social activities and living circumstances around the port. Do you agree on these factors?

B: Yes, more or less. I think the Eemshaven started in the middle of nowhere but not anymore. We have to make improvements to make it better. But what is first, develop the port area first or those things you mentioned? It is hard work. I can understand what you said, and we try to work on that. Not only local government and the province, we try to also do that with all the neighbors, Delfzijl, Appingedam, Loppersum. We call it Eemsdelta and we try to make it into an area where it is good to live, to work, to recreate and so on. Also we try to talk to the University of Groningen to make it into a stronger area. It is easy to say but it is not easy to work, especially when we need to get subsidy from the national government. Now money is really a problem in Holland because we have a new government who does not want to spend that much money anymore. There are all kinds of thoughts, bio-based economy, or energy-based economy. If the university starts education for energy related sectors, there will be more people come to this area. Then there will be supply for houses in their wishes so we have to build up (on living circumstances and social activities). It is not easy because the population here is shrinking. Everybody would like to live in the Randstad, though it is expensive and crowded. We have to make our area more attractive. The infrastructure can always be improved. That is really something about investments. They told me why the Eemshaven did not succeed at the beginning: because when there were some companies wanted to come to the Eemshaven, they had to wait for couple of years for the harbor being built. Then the companies said we were going to somewhere we could start tomorrow. That's why Eemsmund, Delfzijl and the province decided to do upfront investments. And we did it, now you are saying, maybe you are right, we should invest in infrastructure. It is really a risk. It costs a lot of money and that is a problem.

C: Well, my plan is not improving infrastructure only, which I will mention later. I would suggest an integrated plan, which is not only about selling the land or getting some investment in the port area, but also improving other factors, including infrastructure, shipping services, labor market, living circumstances. It is more like a development package instead of some single plans.

B: Yeah, you are right. Groningen Seaports sold lots of land but they did not take (sufficient) care of other things. I think they are thinking about it now and we will try to work together on it.

C: Are there any factors in the SWOT Analysis you strongly do not agree or any important points that I missed?

B: No. But you must know, I am the mayor of this town and I am not the managing director the development of the Eemshaven. For this (topic), I can talk with you from my position, I think you are right. But if you want to have real information about this, you have to talk it over with the managing director or other people who is in charge. I never studied how to take the measures. My job is to make sure they are doing the right thing.

C: Yes, I understand. I would like to get your personal view on this, as a mayor.

B: Okay. From my personal view, I agree on these points, especially what you said about the package.

C: After the analysis, I divided the situation into two scenarios. The first scenario is conservative, more in the short-term and without large expansion. I would say focus on energy related industries only because there are not many resources to deal with all kinds of clients now. At the same, partly improve landside accessibilities, as part of the integrated plan. Just one or two projects on it will be sufficient, such as the further expansion of N33.

Scenario 2 is more aggressive. It can be considered on a higher level, like you said, on the Eemsdelta level. A marketing strategy of merging the port and the city of Groningen perhaps is a choice. The second point is an integrated plan, which I mentioned. In addition, I suggest an industrial cluster

which includes energy cluster of scenario 1 and other suitable industries. For each industry, I would say try to co-operate with only one big company to avoid internal competitions and make the best of the advantage of entrepreneur freedom. The successful examples are Theo Pouw and Holland Malt. Seven industrial sections were selected for scenario 2 based on the SWOT Analysis, agriculture based industries, non-metallic materials production, chemical industries, recycling, energy related industries, shipping activities and warehousing.

For scenario 1, some activities were selected for the energy cluster. It is not only about the power plants, the electricity generation or maintenance, but also some other related industries.

B: Yes, I think we all have good feelings of the harbor and think something like what you write here should happen. We try also to talk to Groningen Seaports that we prefer industries which people can go for work. The power plants, as well as Vopak here cost a lot of land but they don't need many people (to operate). We think they are not quite the development we would like to have, but we also have to think about the wishes of national government, province and Groningen Seaports.

It has something to do with the start. It did not work at the beginning, they need some equipment but money is gone, so the port had to sell lands. Oudeschip was once property of Groningen Seaport but they sold it as well. Now it is getting better and the port authority wants to get some land back.

C: Okay. Are there any bullets in the graph you do not agree or you are especially interested in?

B: I see the related industries here, greenhouses. You know we are working on it but it will be very difficult. There is a plan to put those greenhouses here. We discussed about it, because there is no possibilities for wet activities in short-term. I don't know whether it will work. Others, I recognize lots of things you wrote here.

C: OK. For a more aggressive scenario, of course, energy is still an important part. Shipping activities and warehousing are important as well, as port activities, which need some improvements of infrastructure and facilities. Also some sections in between which are selected in the previous stage. What do you think about this cluster as a whole and the bullets?

B: I think it is very important for the whole area, when we talk about going to that goal. It is not easy. You can write it down that this is the way you want to develop the Eemshaven but all the stakeholders have to share the same goal, then maybe it can manage. It is not only the matter of the government. The plans will only be worked out when all the stakeholders think it is important and we want to reach that goal.

You asked about the more aggressive way to make development possibilities for the Eemshaven. I like it. It is not the way we did in the last couple years, which is selling ground. I agree with you that when you want to make it work, you have to make a complete plan, a package. First (it should be clear) what is your vision you want to reach and then you make your steps to make it happen. It should be done for the Eemshaven. Because of the history, there was no time to think what we really want for this harbor. All the people who were involved were very happy that big companies wanted to come to the Eemshaven. There was no thinking about whether this was the right development. We were just happy they wanted to come here. So (it is) not always the good (suitable) companies on the good (right) positions. Like company has nothing to do with the water is staying at the water.

C: Do you think of the conservative scenario or more agree to the aggressive scenario?

B: I personally like the more aggressive plan for the Eemshaven. Ok. Hope I helped you.

C: Sure you did. Thank you.

Hans van Ham

H: I have read this (background materials) you sent me. I think you covered almost everything. What is happening in Eemshaven is in your report so I agree. What I could not find so much is... these are of course maybe the activities taking place in the future, which one will grow fastest, or which will stimulate the north economy best.

C: This is one of the conclusions I would like to draw after interviews, according to the opinions of experts.

H: OK. There was a long time that nothing was going on in the Eemshaven. Now of course the energy cluster is taking place. Two power plants or maybe three (will be built) but the idea of natural gas terminal is abolished.

C: There will be a new terminal for coal and biomass supply for the power plants.

H: I think that one has potential, especially because the policy of the northern Netherlands is concentrating the "Energy Valley". It will stimulate the energy related industries a lot. It could be a base for spin-off, for new activities.

C: What kind of activities do you expect?

H: Energy related. Actually, I am thinking of alternative energy, especially the biomass, which could grow in the future. Still, coal is polluting a lot. Maybe you can use coal in another way, burning coal but in new methods. The policy is also focusing on this. Maybe it can start. It is usually difficult to start a new type of activity, and if you have political back-in, financial back-in, then it could start earlier, especially in the stage where there are no profits for example. The energy related cluster, I think, is one of the potential starts.

Let's look at the shipping activities and warehousing. I think as a port, it has only regional importance. It will not be a "small Rotterdam" or something like that. Because the location is not perfect, the activities are only limited. There is no potential growth that you might have expected in other ports for activities like shipping and warehousing.

C: So, you don't really believe the harbor-based activities will grow in the future?

H: Only 2-3 percent, not really taking off, based on the regional economy.

C: Maybe we can also talk about the SWOT Analysis, on page 4. The positive factors of the Eemshaven, or selling points, include energy supply, space, cheap price for land and shipping services, freedom for entrepreneurs and agricultural strength in the region. The disadvantages are lack of hinterland support, unattractive infrastructure and accessibilities, the living circumstances around the port. Do you agree on the points?

H: Yes, I agree. But space is important but other ports can also offer space. The only port which has really lack of space is Rotterdam but now they are building the Maasvlakte. In the near future, they will have plenty of space again. There are a lot of space (in the Eemshaven), but space is not really scarce in port areas. You think space is an advantage but it is not really so much an advantage. Maybe space could be a little bit cheaper in the north, but I don't think it makes a lot of difference.

Cheap price could be an advantage. Also an advantage, from an organizational perspective, there is a very entrepreneurial port authority. I am not sure, Mr. Post, the name?

C: Yes, Mr. Harm Post, the director of Groningen Seaports.

H: He has got a very entrepreneurial spirit. He is a good communicator. So I think a positive port authority could be also an advantage, and Mr. Post is representative of the port authority. This is a more direct factor than the support of local governments, which are also stakeholders of the port

authority. It is good if you have positive environment; you know you are welcome, which is important. That is an advantage in the north.

So, hinterland, labor market, supply of labor is good but the quality of labor, say the educational background of labors, I am not sure whether it fits the port. The quantity and quality should be distinguished in this case.

Port facilities, okay, they are always a bit ahead of the demand. They built quays already before they are needed. Infrastructure, shipping routes, yes, you have two or three major short-sea shipping companies in Delfzijl. Some of the companies are located there, so it might be an advantage.

C: There is no liner shipping at this moment though.

H: Not in that sense, but there are regular shipping services, for example, with the Scandinavia for general cargo, timber, and sometimes paper. But because the head offices of the shipping companies are also located in the north, that may be an advantage. There is always a link with home-port. If the hinterland is Nijmegen or Arnhem, which are in the east, they can also use the port of Amsterdam or Rotterdam. But because there is a link with Delfzijl, they will use trains for hinterland transport. I think it is an advantage.

C: Okay. The shipping companies located there is an advantage.

H: You also said something about the hinterland transport. From a practical point of view, I don't think it is important, but from Delfzijl and the Eemshaven, there is also a rail connection with Veendam, a rail port of Groningen. That's an idea of combining those two (the rail terminal and the ports). I do not see the connection so much, but sometimes they suggested there might be a connection.

C: That is one of the conclusions I would like to give, to improve the factors on a regional level, including the infrastructure.

The suggestions are given based on two scenarios, a conservative scenario and an aggressive scenario. The first scenario focuses on short-term, without expansion, while the second scenario is long-term, with an expectation of a piece of land, which could be called as the second Eemshaven.

H: Like the second Maasvlakte.

C: Well, not the same scale.

H: No, it is not. It is the central value for the north.

C: What do you mean the central value, job opportunities, or economic importance?

H: Job opportunities, maybe possibilities of exporting goods via these ports. I agree, in that sense, that if you close both ports, they don't go bankrupt in the north. The activities are so small that they can be relocated in Amsterdam, Rotterdam, or Vlissingen. They are really on a small scale.

(Back to the suggestions for both scenarios) But of course, the more aggressive one (attitude) is to sell the ports, industry clusters, focus on a big company, shipping lines and services. How do you convince the shipping lines to use the Eemshaven, excluding the space factor?

C: The potential port industries are supposed to bring demand and supply of cargoes for shipping. In an integrated plan, the port industries, shipping services, infrastructure should be improved at the same time to tackle the "chicken or egg" dilemma.

H: Okay, could work. Here you are thinking of the opportunities in the future and then you may change the infrastructure. One of the aspects you are not mentioning here in the infrastructure is because of these power plants; the accessibility of the Eemshaven is becoming better, by deepening

the access. It is an opportunity as well. What could happen is that: because the power plants need coal. Usually, before you use the coal, you need to mix them to have certain quality. Look at Rotterdam, for example, there you have a dock, transshipment facilities, very close to a power plant. Transshipment facility is mixing the coal and transported by conveyer belt to the power plant. Because the accessibility (of the Eemshaven) is becoming better, it might be an opportunity for coal transshipment for the customers in the Eemshaven, also for new customers in Germany for example. The coal market is growing. If you look at the Eemshaven, with better accessibility, you can serve the power plants, but also from the Eemshaven, you can go to German hinterland via Emden, then you are in the Ruhr Area. There you've got the abandoned coal mines in Germany. They don't use those coal mines so much anymore because the coal is very deep and cost you a lot of money. To me, this could be an opportunity for the Eemshaven, due to the accessibility from this side (sea side). It starts with serving the power plants and later on brings it to the German hinterland. The advantages are not many people living around, so noise is not so much a problem. Coal is really a growth market. If you are in a growth market, it is easier to get a part of the market than the market is shrinking or stable.

C: Okay. That's a good point. Energy cluster is not the only plan I thought about because a power plant itself has limited influence on employment, shipping activities and other value-added activities.

H: I know what you mean but if you think of industry clusters, for example, they (power plants) produce a lot of heat. You can use it as steam for other industries, and then other activities can get involved in the port.

C: Yes, it could be one of the positive factors. Shall we look at the potential activities on page 6 and page 7? Page 6 shows a potential energy cluster for the conservative scenario and the next page is with other activities involved. Are there any activities you think are promising?

H: Ship scraping might be an opportunity. There was an idea of green ship yard, which an innovative way is used for ship scraping and recycling. It is not traditional ship yard but more environmentally friendly. This could be an opportunity.

Greenhouses, the power plants produce a lot of heat and CO₂; they can be used for greenhouses. And recycling could be possible.

C: Anything else in this cluster?

H: I am sorry I cannot see more opportunities here.

C: Okay. The next page is the cluster for aggressive scenario. I would like to ask you to do the same thing, picking up some activities.

H: Chinese car import, well, container and trailer handling, I don't think it will happen. Agricultural products storage could be, because it is an agriculture based in the north. Cement, it needs a lot of heat during production. Some activities about new energy might be possible. Algae power plant, the growth of algae also needs water and heat. I mentioned earlier, the transshipment of coal for German hinterland; it could also be an opportunity because coal is really a growing market.

C: Do you suggest sticking to a plan of energy related industries which benefit from the power plants?

H: I would say an "energy plus" plan, energy related industries with several other activities.

C: My study answers the question if there is a future for the Eemshaven. That is the first step and then what can we do for the future. My report is in three phases: the current situation and a SWOT analysis, give some suggestions on a strategic level and the last stage is to list some potential activities including the evaluation part by interviews, like I am doing now. So I would love to get your opinions on my study and analysis.

I used two models for the study: Michael Porters Diamond analysis and the SWOT analysis. In short the positives effect for the Eemshaven include energy supply, adequate space including the space on roads, and a relatively cheap price for land, also for shipping services, freedom for entrepreneurs that is something that other ports may not have.

And the disadvantage or negative effects are very clear. The port lacks the support of the hinterland.

Including the economic structure, relative industries, labor market from the quantity view but also qualitative. Besides port facilities and infrastructure are not as good as major ports. There are reasons but the effect is they are not that good and also the living circumstances and the social activities are quiet under developed. Do you basically agree on these effects?

LZ: Yes, I think so. But you must not compare the Eemshaven with Hamburg or Bremen or Rotterdam or Antwerp. I think there is a good future for the Eemshaven but they have to specialize and to focus. They cannot have the same ambition as the ports I mentioned. So they have to focus their activities on a view...

C: Niche markets.

LZ: Yes and the possibilities you mentioned. The opportunities are in the sphere of energy but also the bio based economy and perhaps in the waste. They can import waste from other countries and use that waste in the energy for recycling or as fuel in the electricity generation. So I think the best opportunity is connected with the energy sector and bio based sector. And the energy sector not only for the production of fossil energy and also the wind energy. And also a supplier for the off shore wind energy. So the opportunities are connected with the energy, not only for the electricity production but also for the distribution of liquid gas.

C: Yes.

LZ: I already mentioned waste and bio-based economy. And when you all these opportunities I think there is a good opportunity for the Eemshaven future.

C: By this you mean the short term future or long term.

LZ: Long term, 20 to 30 years.

C: My study will proof that we share the same idea here.

LZ: There is perhaps to mention another disadvantage or you may call it a challenge and that is that the Waddenzee is well much protected area. All future plans will have to cope with that position. So if there are plans for big new investments. The environmental people will always check if there is impacts on the environmental system...

C: It is also interesting that I found the Eemshaven has the highest level of environmental classification which means is up to six. That is already the highest. Actually I put that legislation in the opportunity part.

LZ: OK, yes, but you also add to that there is a good position to negotiate with each other.

C: OK, with the environmental organization.

LZ: Yes, there is an understanding between different stakeholders. So they are used to deal with each other and respect the interests of the environment and that tradition to negotiate with each other makes that there is a positive attitude.

C: Do you think environmental legislation itself is a factor for port development.

LZ: No, I don't think so.

C: So if you have to choose, is that an advantage or a disadvantage for the Eemshaven?

LZ: It is hard to say but I think it is important that you mention it in your report. You have to mention it.

C: Ok.

LZ: The effect of the Eemshaven is that vulnerable. There are some limitations and some possibilities but you have to respect the situation of the environment. But the stakeholders or the people that defend the interests of the environment and landscape, they are reasonable people. They are not extreme in their way of operations.

C: No, besides that do you have any further ideas that I did not mention and neglect in the SWOT analysis. Or do you think that there is something completely wrong?

LZ: No, they are correct. You have always the possibility that there becomes a new opportunity you did not see. Ten years ago, nobody had thought of the electricity production in the Eemshaven. And now it is the best opportunity for further development. So there is always an opportunity that there are opportunities that you didn't see. But this is what you mentioned is correct. Eemshaven has another position compared to Hamburg or Rotterdam. They have to focus, they are a niche player, and they have to cooperate. I think it is wise to mention that Eemshaven authority should cooperate intensively with Amsterdam and Rotterdam. It is wise that the Eemshaven authority works on a joint cooperation with Rotterdam because every firm in the world which operates international will have heard of Rotterdam. And Eemshaven should not compete with Rotterdam but cooperate with Rotterdam.

C: You mean shipping activities or other activities?

LZ: Yes, other activities as well because Rotterdam has many more opportunities than as the Eemshaven.

C: When some people like to do some business in Rotterdam but it is not possible in there you put it in the Eemshaven, but now on a strategic level.

LZ: On a strategic level, ok, I think on a strategic level I think it is necessary that they development a joint venture with Rotterdam.

C: I heard somebody mention the name of Rotterdam North.

LZ: Yes, you are right. But I think in the sea trade firms in Shanghai.

C: Yeah, Rotterdam and Antwerp.

LZ: But they don't know the Eemshaven. But if they visit the people in Rotterdam and they say, we have also a possibility in the Eemshaven, and then I think it is for the long term better for the Eemshaven. In the long term they have more opportunities than they operate stand alone.

C: And then compared to Rotterdam, what do you think is the strength of the Eemshaven.

LZ: Simply cheaper. I think you are right. You mentioned the price per square meter is much lower than in Rotterdam. And another advantage is the good connections to Scandinavia. So if a firm needs good connections with the Hanze cities in the Eastern Sea but also in the Scandinavian cities, Oslo, Stockholm. I think Eemshaven also has an advantage.

C: Yes, by this I little bit disagree with, I think the distance is close but the shipping services is not that good, there is no regular shipping route. There are shipping routes but not regular shipping services at this moment. Actually that is somehow chicken and egg dilemma because the companies and the port authorities don't want to develop shipping activities when there is no need but at the same time companies need those services will think you don't have that service, then they go to another port.

LZ: There is a chicken and the egg.

C: I basically agree with you on the location of the Eemshaven but I don't think the shipping services itself is that good.

LZ: Yes, yes.

C: What do you think of shipping, do you think it is necessary to have liner shipping?

LZ: I don't know. I think that one of the problems of the Eemshaven there is a lack of scale. So there it is, it is a very small port from port perspective. So they don't have the same opportunities. So if you can't beat them, you have to join them. So I think personally that the Eemshaven has no choice than cooperate with Rotterdam. That is a strategic necessity.

C: That is quite a new way. It is important to me because nobody else mentioned that before.

LZ: You don't have to agree with me but personally I think that is necessary.

C: That is important for me to get another opinion. After that I separated the study into two scenarios: the conservative scenario and the aggressive scenario. The conservative scenario is somehow short term is for 5 to 10 years without the expansion of the Eemshaven and the aggressive scenario is long term with let say twenty to thirty years and hopefully they can get another piece of land for the port.

For the conservative scenario there is the focus on energy only like the authorities do now and at the same time improve land side facilities.

LZ: Yes.

C: Especially to start with the road connections. The N33 is expanded but not until the Eemshaven. Not the last section. May be it is good to do that as well, for the future. It is not only good for freight but also for people who live here.

LZ: Yes, I strongly emphasize that the conditions, I agree with cause of the lack of people here is that people don't want to live in Delfzijl. They want to live in cities. In general people want to live in the city. They don't like to live in a small village.

In the city you have more culture, entertainment, gaming, sports...Especially in the north. So in the whole world there is a trend that people want to live in cities. That is not only here but that is all over the world. That is a global development, which is something you can see all over the world. That is a trend that we can see and already started and that will continue in the future I believe.

So that means you have to develop the infrastructure and you are right not only for transportation but for also for people, my opinion is that the better the infrastructure, the better the improvement possibilities for the future.

If you invest in better infrastructure, it will return some economic activities. It may be now or in a time line of 5 to 10 years. But Guinness people always see opportunities if the infrastructure is good. So in this region the infrastructure must be state of the art. If not we have problems with our future. So they have to do only one thing and that is to invest in infrastructure.

I think the quality of the infrastructure is rather good here in the north of the Netherlands and in ext ten years we will invest 2 billion in infrastructures only here in the north, 2 billion Euros. With that money the connection to the Eemshaven will be better.

C: Road?

LZ: Just road.

C: In the second scenario there are more contents involved. First of all, you mentioned cooperation but what I mentioned here is not cooperate with Rotterdam but cooperate with the city Groningen.

LZ: Yes.

C: That is important to upscale the port development. It is not just Eemshaven or Delfzijl but port of Groningen; it is also good for branding because nobody knows Eemshaven outside of the Netherlands. But more people know the city of Groningen.

LZ: May be some people in the Netherlands don't even know the Eemshaven? I work here since the first of January of 2009. Before I worked in Limburg in the southern part and I also didn't know what is going on in the Eemshaven at all.

C: The major of Eemsmund, Mrs. van Beek, mentioned that as well. She said she didn't know that before she worked in the region. But you are not local?

LZ: I studied here but I was born here but my whole live I have worked in the south of the Netherlands. The way of living is very nice in the south.

C: And the next part is up scaling of port development need an integrated plan. Not only selling land in the port or getting investments in the port area but also include infrastructure, living circumstances and social activities, environment and shipping activities; an integrated plan instead of port attractiveness itself. That is the second part. The third part is about industrial clusters. As you mentioned it is not only energy but also some other sectors.

LZ: Yes, but in a way they are connected with the energy sector. So I think that in the future globalization will be much more important than today. So there are upcoming countries in Africa and Asia but also in the South America for example in Brazil, Argentina. So I think in the future more streams of goods will be transported across the world and that means that logistic activities are one of the most important in the country and Holland has become specialized in transportation and distribution. So the main ports are very important for our future, so Amsterdam with the airport of Schiphol and Rotterdam with the port of Rotterdam. In a way we have to connect the Eemshaven with that situation. And that means I realize that I repeat myself that the Eemshaven will succeed in good cooperation with Amsterdam, Rotterdam, Hamburg, Bremen or Antwerp. They are also important for the Eemshaven. And you said before that they should cooperate with the city of Groningen. I agree with you because the municipality of Eemsmund is much too small to boost the development of the Eemshaven.

C: And also for labor market and social activities, for knowledge you depend on a city like Groningen.

LZ: I agree, one of the weak points is the lack of people.

C: And also the quality. I read a report about the labor market in the north, I found that most people that cannot get a job because they are low educated. That is for port development is that not the targeted labor market. Because you need well educated or specialized people, so personally I don't think port development cannot solve the problem of unemployment in the province. So you can only get a high educated labor market from other areas like cities, may be even from Leeuwarden. So that is what I think.

LZ: I agree with you.

C: I was also talking about industrial clusters. I will mention which ones later which ones are selected. And for one detailed activity, I would say focus on one big company instead of a lot of companies. There are more reasons. One is the scale of the Eemshaven. The scale of the Eemshaven is limited. You cannot really raise a competition inside a business scope like Rotterdam. And another advantage is the freedom for entrepreneurs. So make the best of it. The aggressive scenario is according to the SWOT analysis. I select some criteria for industrial sectors selection which will be interesting for the Eemshaven. After the sieve analysis I select the seven sectors: agriculture, chemical, pharmaceutical, non metallic production, recycling, energy related, shipping activities and warehousing. Seven sectors, none surprising.

LZ: None surprising but I don't have to add extra.

C: You mentioned agribusiness, recycling. So you totally agree with the?

LZ: Yes.

C: On page six there is the cluster of energy of scenario one only. But this is based on brainstorm only. No scientific basement. I don't believe, I believe not all of them will be suitable for the Eemshaven but some of them are very interesting. Do you think this is it? Or is there really something that you can really put in the Eemshaven?

LZ: Yes, what you mentioned here, I do recognize.

C: There are basically four groups. One is energy consuming groups which makes sense because adequate..

LZ: Do you mention off-shore, oh yes here. There are good possibilities for off-shore, for wind energy. I think in the future many thousands of windmills will be placed.

C: Especially German.

LZ: Especially German, yes, and I think it is for the Eemshaven a challenge for them to do something for their supply of the windmills, also a good connection with the windmills and the maintenance of pipelines of gas or liquid gas, undersea electricity transition...

I think this is a complete oversight. I cannot see other.

C: Do you think other things which don't have a future at all? Some bullets?

LZ: Green houses, what do you mean with green houses? For agriculture?

This is a possibility, I agree, I cannot make estimation how.

Fishing, I think there is not a future for fishing but that is not so important. I think there is already an oversize of facilities for fishing.

C: Thank you for your comments. And the next page is for the aggressive scenario. Also the same questions, are there anything that is a nice idea, let's develop that first or is there anything that is totally nonsense? I don't believe that I could be possible...

LZ: No, I think you mentioned the right possibilities, Chinese car import...

Could be, it is right but to find such an opportunity is very hard. I think you have to do both things; you have to work on a big company that settles down but also be aware of the medium and small sized companies. I think if you look at the companies that who are there at the moment, they are all come from the direct environment; they don't come from China or America or from Germany...

And I think it is wise to focus on the local companies, if you are lucky and there comes the big shot, but it may be over 20 years but the change that you will attract such a big firm is very small.

But you have to study which other ports in the world where this is proved to be a successful strategy. So aiming at the big firm and other examples you know. It is for your study or for your report wise that you compare the position of the Eemshaven with other ports in the world who are a little bit like the Eemshaven, and so you can perhaps learn what they have done in Scotland or in Scandinavia or in...

You have to do both things as well. Not only aiming at the big shot but also try accommodates the medium and small sized firms.

Also because there is the possibility of Chinese car import like you mentioned, I don't know another opportunity. If you ask me whether car import is one opportunity, but if you ask me another possibility, I don't know.

It could be wise to you to make a paragraph in your study for a benchmark so you have to compare the Eemshaven development with other ports what are a little bit in the same position as the Eemshaven.

C: I think in a longer term a port is still an industrial port; you have invested a lot of money on the infrastructure and also the maintenance of waterways. It is not worthy to neglect all those investments and not only focus on land side activities. So I put shipping activities and warehousing as a port as two important industrial sectors in the aggressive scenario. Well for two scenarios, which one do you believe is easier to achieve?

LZ: I don't believe in the aggressive scenario. I agree what you said about the seaport authority but we should look at ourselves as a supplier of industrial activities more as a port. I think that is the right strategy.

When I look at this you have seven: shipping activities will be limited I think also in the future, and also because of the environmental position of the Eemshaven. I don't think that the Eemshaven environmental organizations will tolerate intensive shipping flow through the Waddenzee. I think that they will not allow that.

C: How about warehousing?

LZ: Incidental.

C: OK.

LZ: I see if I have to, my estimation is that this one and that one and this one, these three.

C: Energy, recycling and chemical industry? And you mentioned bio-business.

LZ: Yes.

You said yourself already that it is difficult to attract new activities because there are no facilities at this moment. And I also think that the capital they need is. The local authorities here are, they are the shareholders and they don't have the money to make big investments for shipping activities.

I think that the central government will only do that if they agree Groningen seaport if Groningen seaport cooperate in a narrow cooperation with Amsterdam and Rotterdam.

Central government will not invest again in the development of the Eemshaven. They will only do that if there is a joint cooperation with the ports.

C: The Eemshaven is somehow depended on the local government and entrepreneurs, At the moment they depend on local authorities but that is too little.

LZ: I think that is too little, they should be convinced that for their future they should have to cooperate with the national government. That is my opinion.

C: And for the bullets you don't have further comments?

LZ: No.

C: Ok, thank you.

Klaas Jan Noorman

C: As you can see is on page 3 and 4 are the results of the Porter's Diamond Model and regional economic condition and SWOT Analysis for the port. In short, I think the selling points are stable energy supply, adequate space, no congestion, relatively cheap price for land as well as well as for shipping services and freedom for entrepreneurs. The weak points are the lack of hinterland support, the port infrastructures are not that big compared to other seaports, the social and living standards are not attractive for a stable labor market.

KJ: We will discuss that one. This is the observation of someone who is not living in the area. But I think it is a fair observation form the port analysis. But it needs some nuances. There are more things about economics in this part.

C: So you are local?

KJ: Well yeah, I consider myself as a local. I live in a village 15 kilometers north of Groningen city. So it is not too far away from Delfzijl and the Eemshaven.

As you can see this photos are from another harbor. This is the Waddenzee. It is a wonderful natural wetland, UNESCO protected and a very sensitive area, which is another aspect for the Eemshaven. It is the smallest most north port in the Netherlands, Noordpolderzijl. There is nothing there. It is a tidal Harbor. You can only go out with high tide. Only fishermen go there.

Well yeah, if you look at the advantages energy supply is an advantage in the sense that the condition of the entire region, not only the harbor, is to develop into an energy harbor. There is a lot of energy production activities. About one third of the electricity in the Netherlands is produced in this small area. Energy is an advantage if you look at the clustering of activities. Probably it would mean that a lot of energy related activities can find a place in the harbor but also for Delfzijl. But also chemical activities and metal industry are south of Delfzijl. There is still a lot of space but it is not the same situation as five or ten years ago. There is a lot of activities in the harbor. It is one of the fastest growing harbors in the moment. The picture of the Eemshaven was an empty place, boring, cold windy, with some water and poor infrastructure.

C: I have seen a photo of 2003 and there was almost nothing.

KJ: But now it is completely different. You have been there?

C: Yes, last time if have been there was a month ago. There were about 200 cranes in the construction field with very high pillars.

KJ: The pillars are for power plants. They build a power plant already. And then we have Electrabel, they own an already existing power plant. It is cheap indeed but that is also a disadvantage because when it is too cheap, it might attract companies or activities which you don't want to have in a harbor. There is an activity; I could not recognize the name, going on that occupies a lot of space. It doesn't suit the profile of the harbor.

C: Do you mean Theo Pouw?

KJ: Yes, I don't think it should be situated in a harbor or the Eemshaven.

C: Theo Pouw is considered as quite a success because it contributed the most to the throughput of the Eemshaven.

KJ: Well, if you look at the ambitious plans of the Eemshaven, I don't know of the whole picture of Theo Pouw in the harbor really fits. But perhaps, well they are still happy with the whole situation. Theo Pouw consumes a lot of space and it is part of the history of the harbor of course but it is a weird situation. I think you want to further develop you should really look to other activities then Theo Pouw.

C: And another thing is the activities of the second hand car export.

KJ: To Africa, yes.

C: From that point of view there are a lot of examples of those.

KJ: Yes. But I believe in every harbor there are this kind of activities. Even in Shanghai.

C: Must be.

KJ: OK, I quite agree on this one.

A powerful agricultural sector, it also means that agricultural industry becomes powerful. Now but certainly this can be related to renewable energy production.

C: Biomass?

KJ: Yes, Still we have poor infrastructure, well that is a picture that lives in the Netherlands as a whole or if you compare it to the western part of the Netherlands, Amsterdam, Rotterdam, etc.

C: Eindhoven, .maybe

KJ: Yes, Eindhoven becomes a main port of the Netherlands. Moreover whole Brabant becomes a industrial sight. The western part of Brabant becomes very industrialized. So compared to that part of the Netherlands, the economic structure in the northern part is poor. But also you see an accelerating development of the economy in the North. Still we have a higher unemployment rate in the north of the Netherlands but we are developing as well.

C: You mention the unemployment rate but it is not only quantity but also quality. I read a report about the north. I found that the most people couldn't find a job because they are low educated.

KJ: That is true, so you there is a large gap between the demand and the skills of the labor market. It should be solved by education. But for looking for economic activities, it should be taken into considerations that the jobs suit the population of the north.

C: From this point of view, Theo Pouw suits the Eemshaven even more than power plants in the Eemshaven.

KJ: That is true. But there are not too many people working at Theo Pouw. The economic structure of the north is quite poor but that is improving. But when you look at the chemical activities we have almost half of the activities is situated in Delfzijl. Not too many people are aware of that. That is a labor intensive metal related industry, of course. But Akzo became a large player in the sixties and seventies when gas was found in the north of the Netherlands. They produce salt and chloride. It is an important industrial activity.

Port facilities, well, large investments at the moment in the harbor. But the harbor has one challenge that is called the Waddenzee. So we have the third harbor in the Netherlands, Rotterdam, Amsterdam, and Delfzijl.

So there is a lot of space for windmill opportunities, but not for Delfzijl. But there is very big but to the harbor activities. It is very hard to find a balance between nature reservation and economical activities. For example the arrival of the power plants also means a large increase of shipping movement for importing coals or biomass for example. There is a big debate going on at this moment how to deal with that dilemma. Large tankers become a problem.

C: The provincial government has a large project of widening the shipping route.

KJ: Yes, Environmental groups are objecting those activities. Not only widening but also deepening these shipping routes. But also Germany is very much in favor of widening and deepening the shipping route, not only for Emden but also for Papenburg. They are constructing wonderful cruise ships.

C: It is a strange situation. At one hand there are the nature concerns but the Eemshaven has the highest level of classification level up to six.

KJ: Yes of course there is a lot of resistance for the arrival of a number of power plants in the Eemshaven. It will generate a lot of economic activity although the once the power plants are build, the power plants won't generate a lot of new employment.

So infrastructure and shipping routes are still under debate and will continue to be under debate for the next couple of years. Unattractive living circumstances, well

C: I guess you don't think so because you are living there.

KJ: I do understand the description, I agree with it but it is a very subjective way of putting it. A lot of people would love the physical surroundings of the north. It is open it widens, the colors changes etc. A lot of people come back as a tourist but not to live here. Well in Delfzijl there is a lot of retrofit program at this moment. So they are trying to make the living circumstances more attractive. Dobbelsteen made a few plans, to make it more attractive and environmental sound. Also into account the energy situation there. But to be honest I don't want to live in Delfzijl. But I do like living in the northern part of the Netherlands especially. Well it has an unattractive appeal to people but I believe it is changing. But I do understand that you put it here.

C: I found that the reason lives here in the north of the Netherlands close to the Eemshaven or Delfzijl don't work there. Most of them work in Groningen or Assen.

KJ: There is not a strong band between living in the area and working in the Eemshaven.

At the other hand high educated people live in the north and even former directors of companies in the western part of the Netherlands move to the north after retirement. For instance the former director of Akzo bought a house in Groningen. But you cannot compare living in Delfzijl to the northern part of Drenthe or Utrecht. That is true.

C: Well as you comment this is a point of someone that doesn't live in the Eemshaven. But what would you change to the SWOT analysis?

KJ: Well I agree with the advantages energy and space but I don't know if cheap price is really an advantage. Freedom that is true. Ok I agree with the advantages. But the disadvantages well if you put it here I agree most of them but they need some nuances. I gave the nuances but there are still a lot of developments going but agree it is an unattractive living area but it is improving. Social activities are not the best but it is improving as well as economy. I agree the infrastructure is not the best in the Netherlands but it is improving. In your SWOT analysis they are in the right position.

C: After the SWOT analysis, in my report this is worked out into two scenarios: a conservative and an aggressive one. The conservative scenario is a short term scenario with further expansion and the aggressive scenario is a long term plan 20 or 30 years development and hopefully there will be another piece of land in the Eemshaven. For the conservative scenario I focus only on energy related activities which is being done by the port authority and local government. But at the same time I suggest the land side accessibility, especially road connections.

KJ: Yes.

C: Not only for freight but also for labors. That is what I think is for the conservative scenario.

KJ: But I think rail connections...Yes, I agree with the features of this scenarios.

C: OK. That is about the conservative scenario but in the second scenario is branding of the Eemshaven, because nobody knows the Eemshaven. And for most Dutch people Eemshaven is just remote area. Even for people living in the city of Groningen they think the Eemshaven is so far away. Actually it is only 40 minutes ride. So branding is important. One of my colleagues wrote an article in a newspaper saying we are merging the city of Groningen and the Groningen seaports together. We simply call it the port of Groningen. Just like Rotterdam. We don't call it Maasvlakte. I think that is an interesting view.

KJ: I think that is an important one.

C: Merging the scale and up scaling the scope, not only in the port region but in the whole area.

KJ: Absolutely.

C: Secondly make integrated plans. A portfolio development not only selling land in the port area but also for, like I said, infrastructure. Do something for the labor market, improving shipping routes. It is a whole package instead of just some land.

The third one is focus on industry clusters, not only energy but some other industries which can really contribute something to the regional economy.

KJ: I totally agree on that one. Because if you only have a monoculture on industrial cultures than it is working in a suboptimal way and not making use of the potential of the area on the other one. So, I think this is a very important one. Identifying the right industrial clusters that can be less vulnerable then and searching for symbioses which can strength each other. That is important.

So energy, chemistry and metal are but also a strong agricultural sector connecting the port to the hinterland. One of the main qualities is agriculture because the primary production is in the north.

In the Netherlands we are really focusing on the foreign hinterland, from Rotterdam straight to the east. But not only going to Germany and going south. But we also have another part of Europe, with the Baltic States, Scandinavia, and the northern part of Germany. And if you look to it from that perspective, The Eemshaven is in the middle of it. And then it depends on the kind of activities you would like focus on. And then you have to look to the north and there is a lot more activities than just the south east and north. But also our partners are from the Baltic States and Scandinavia. So there is a market.

C: I agree the seaside hinterland of the Eemshaven; the natural hinterland is the Scandinavian countries, north of Germany and also United Kingdom. The most shipping activities have been happening there. But at the same time it is at the dense of the seaports is quiet high. There is a severe competition between ports. And there is a main shipping route passing cross the Eemshaven. But it is important if the port is not strong enough, nobody will pick you as a stopping point.

KJ: That is absolutely true. OK.

C: For scenario two, I suggest to focus on one big company only. Not like Rotterdam having a lot of similar companies and raise competition in the port area. For the Eemshaven there is limited scale but also have the advantage of entrepreneurs. Don't ruin it, make the best of it.

KJ: I agree.

C: That is the aggressive scenario. The next part is the selection of the industrial sections from the standard classification from the European standardization. The criteria were chosen based on the SWOT analysis. The results are not really surprising. Agriculture related, chemical or metal related industries, production, recycling, energy related, shipping and warehousing. Then the next page comes the conservative scenario one, which includes the energy cluster.

KJ: Power plants in the center.

C: That is what we have now, the power plants. That is how it relates to energy consuming and fuel related industries. Environment protection and clean energies and other related industries. Those are generated by brainstorm. The first box do you think they relate to energy clusters.

KJ: Yes, I think it is a very good selection of opportunities. In this scenario, as you know is energy handling and storage is a bit out of reach at this moment but perhaps somewhere in the future.

C: Storage is still possible.

KJ: Well we had some plans of LNG terminal but we won't have these discussions in the next few years. What do you mean by importing bio-fuels by sea from other areas? Do you mean produced by other areas?

C: For example, grape seeds.

KJ: I believe that the production itself, the volumes are very small, so... I do believe that the power plant from for instance, I predict a 10 percentage input biomass in the future.

Perhaps more, it would be much higher, for example 20 or 30 percent. But 10 percent already means 1600 MW. That cannot be produced locally. So it needs to be imported, coming from, Russia or the Baltic States or Canada. What might be interesting is the introduction of new technologies or producing fuels from biomass, using biomass for producing bio-fuels. That might be interesting. I don't believe that local production would bring in a lot of change.

C: I focus production and manufacturing a lot because they generate employment. What is in your opinion the failure of bio-fuel?

KJ: Several reasons I think, financial means there are a lot of subsidies involved. But not anymore, a lack of subsidies turns out to be disastrous at this moment. These products didn't find a place in the market, the price is not right.

C: I am not familiar with the market. But can I get the subsidies from the government, local?

KJ: Not only local but also from national. But it is still a very difficult market. It is still in the very first stage of development. It needs support and there was an incentive from the EU from almost five or six percent of mixing bio-fuels with gasoline. Not because of price but because of the incentive of the EU was going down. The EU gave six percentages and now it is four. That means the supply is bigger than the market and the prices are going down. That is one of the reasons why bio-fuels crashed.

C: In the near future there won't be a lot of opportunity.

KJ: In my point of view on the long-term renewable energy is one of the very promising track for the future and for the harbor. But at the moment the market is not a very good market for renewable energy.

C: OK, so this cluster is part of the short term and for the long term. Can you give comments on the bullets that are good or bad in your opinion?

KJ: Environmental protection, CO2 caption and storage is a big issue in the north of the Netherlands at this moment. Heat reviving is very important. Wind power, Hydropower, well that is not an option. Nuclear power is a discussion that started when we got a new government in the Netherlands.

It might raise the change of nuclear power in the Eemshaven. Not only because of risk, but also because it takes ten years to earn back the initial investments. The initial investment is 6 billion to 10 billion in Finland. The government won't make this investment.

C: Ok.

KJ: Short Sea shipping and warehousing are being done already. It is good. Ah, electric cars handling, I haven't thought of that one, but it is good. Telecommunication... food storage is happening only for potatoes and bananas. Greenhouses, there is a debate, it is very logical to bring them up, that is interesting one, yeah.

C: Are there any boxes for a cluster besides energy consuming or producing.

KJ: It might be interesting to bring a box with agricultural industries, food production. It might become a very important cluster.

C: The energy plus cluster.

KJ: That is a good one.

C: Then it is the aggressive scenario as I mentioned with the seven industrial sections selected from the whole list and also the bullets came from brainstorm.

KJ: OK shipping import warehouse, very logical activities. Here you brought in agricultural activities. OK not a lot of comments.

C: Still Bio-fuel and nuclear power plants. But you don't believe that.

KJ: But there are now reasons here to let them out at this moment because the discussion has just started again. A waste power plant already exists in Oosterhorn. Not for bio-fuel Akzo Nobel is already researching pigments for paints.

C: They also can be used for pills.. so..

KJ: Yes, the production is much more valuable than for bio-fuels. That might be very promising

Chinese car import, haha...

C: The port authority needs shipping activities to justify maintaining shipping routes and facilities. It is very interesting to bring one activity that brings a lot of value rather than on some niche markets. But you cannot do very specialized market on several markets. That is just an idea in this circumstance. This could be an idea. Not necessary this idea but Emden. Emden has a lot of opportunities by VW.

KJ: But the production of VW is partly moved to Shanghai.

C: That is true; Toyota and Honda, a lot of Japanese cars are produced in China. And in the future they will be produced in Rotterdam.

KJ: They are now being imported via Rotterdam?

C: Most of them in Bremerhaven and also Zeebrugge, also a part via Rotterdam and Antwerp.

KJ: I believe there are no cars coming into the Eemshaven.

C: That is correct. The market in the Netherlands is not that big. But if you look at this market you need to get a part of the market of Germany and Belgium.

KJ: Yeah, we only have six billion cars in the Netherlands.

C: Ok, The next part goes a little bit further for each activity. It gives three examples of those ideas. It gives insight into the risks and economy and goes further into its effect on the labor market.

KJ: Yes, You probably already heard of the off shore wind parks.

C: Yes.

KJ: Groningen is making plans for an Island for windmills.

C: Yes, especially for the German market.

KJ: That is interesting, we lost from the Germans and the Danish, and it is a good way to catch up with them.

C: But this is only for the German market because it is far away from the Danish market.

KJ: It is very realistic for wind parks north of the Islands, in the triangle between the Netherlands, Germany and Demark. We have enormous goals for off shore windmill parks in the Netherlands. 6000 MW per year, we only have only 200 MW at this moment. So, they have to build almost 6000 MW. Most of the distrusting is north of the Netherlands. So it might be very interesting to give a boost to this all off shore wind from the Eemshaven

C: There is only one plant of off shore wind mills in the north.

KJ: That is true. But these plants are north of the Waddenzee, about 20 kilometers north of the Waddenzee.

C: Now there is time to answer the question, is there a future for the Eemshaven. I would say, as a conclusion of the regional condition, it is not wise to put a seaport there. You cannot get a support from the hinterland. At the other hand whether it is, I think, it is successful or not. It really depends on the government policies and the policy makers.

KJ: Yes, your first observation is right. But then you have to realize that the decision to build a harbor was made in the early fifties. And nothing happened between the early sixties and the middle eighties. But the present situation is that there is a harbor and now the main question is how to develop the harbor in a proper way and sustainable way. And to create value added to the hinterland. That is a very important to taking into account the natural values of the Waddenzee. And one of the opportunities then is presented in your aggressive scenario are very good opportunities for developing the harbor. But you can't look at developing the harbor without thinking of the structure of the structure of the hinterland. These are two sides of the same sides of the same medal. It further means there must be a development of the economy of the province of Groningen and it also means a development of the economical structure of Germany. So once, there are two strategies, one strategy taking the harbor as a start point and at the other hand taking the structure of the hinterland as the start point. That brings more guarantees for success. I don't know how you feel about it but that might be an interesting sight. Not focusing on the harbor alone. One of the activities is related, green houses. And green houses cannot be supported by the harbor alone. The need knowledge and they need a cluster in which they can flourish. And this regional agricultural cluster, your porter model analysis is correct. But you should more interconnect the harbor with its surroundings and there are opportunities. Groningen is not connected a t all to the Eemshaven and it is only 30 kilometers away. And large parts of Shanghai are much further away. But we mentioned Shanghai as a harbor city. So it might be very wise to connect the city of Groningen to the Eemshaven and not only to the Eemshaven but to the whole Eemsdelta. And of course the Netherlands is a very small country. It is not huge and do not think of large prospects but focusing on the harbor and the region alone is not enough to make it flourish. So why not taking into account a further development of the city of Groningen and connect it to the harbor and to the entire region. Then the whole perspective on of the real opportunities is to further develop the harbor as a part of a larger system.

C: Here comes the issue of Groningen port.

KJ: Oh yes, and then we have large opportunities and I think you mentioned all the opportunities because they all fit into this idea. We should work to roadmaps of the Eemshaven to 2050.

We need a clear vision and a perspective and it should be encouraging and it should be wonderful, it should like this is the way we want to go.

C: My point is, nothing will come to the Eemshaven automatically because of the port itself is because the government plays a key role in the current situation and also entrepreneurship is important because we can see some successful activities like Theo Pouw or like Holland Malt. They came from nothing just a piece of land. They are successful.

KJ: Coincidence is not a good strategy for further development of the region.

C: Agree. But governmental support is the only thing the Eemshaven can really count on. So that is one of the conclusions of my study. For the future, the government should do more.

KJ: Well not only the government. But the role of the government is an important one, absolutely. The whole region needs more support from the government. And what you see know from politics comes in; most of the focus of national policy is on the western and mid part of the Netherlands. Of course, but lack of space, crowded, very expensive and it is a further opportunity in the Rotterdam harbor.

Yes they have some land but we also have a lot of space available here, that is one of your advantages here in your report. So the Eemshaven is only 150 km further north in comparison to the Rotterdam. That is relatively close compared to European context. I agree with your main conclusion but it is also true that entrepreneurs play a role. But I don't think regional or national but international companies larger ones. We have some interest of Chinese companies in the harbor and well. It is not a regional harbor anymore but internal.

I am very much in favor of sustainable development taking into account that we are very close to an important wetland. And the harbor cannot play an important role in the development of the local economy. Look at it as a regional challenge. By regional I mean partly international. I mean in the north Western Europe not only in the Groningen region. It is not big enough. Your study is really important, find out which activities are feasible and a clear vision on your goal. You need a long term perspective on what you really want to be, the role of your harbor in your economy. And just saying we need further improvement and development of the harbor is not enough. The harbor is one of the economic pictures. It leads to further developments by infrastructural means. It is not a goal on itself. A long term vision and I mean as far for one or two generations. We are now two generations away from the decision from the original plan and perhaps it is worth investing in another vision again two generations away. So what would the harbor look like in 2050 will be interesting.

C: From my two scenarios they are different. One is just energy. It somehow stopped. We keep what we are doing know in the future and the aggressive one is to somehow medium sized industrial port with some importance in the region. That is my vision.

KJ: But this also means greening industry. I mean when you are collecting things. There was a study on Eemshaven Green. That was a study of the province of Groningen. How to greening industrial activities. One of the opportunities was to produce green ethylene and green gem balls because there is a lot of bulk production already. And we have the facilities and the knowledge to tear develop into this direction. While in China they have seen well. I mean slowly. I don't want to say anything from the quality but the Chinese environment itself but the Chinese are really searching for greening their products because they recognize that the future market will have a demand for green products and we should be more aware of these megatrends. We can produce green chloride by using for example wind mill energy, for example for new green aluminum. This might be value added in the market if customers are willing to pay the price.

C: That is an important point.

KJ: Key point, but I think they are willing to pay, there is a price for CO2 for example. If pollution is taken into the price, this is going to happen in the next decades. A large environmental footprint will be more and more expensive. I really believe that. Greening activities will become the future. And then you can argue are these clues. But Ok, there is not a lot of knowledge and not a lot of skills, we have not many activities, so why in this region? Well because there are not a lot of activities we have the opportunities to become a first mover. We can become a first mover of new sustainable entrepreneurship. But then we need support from the government. Well I think this is it. This is the outcome of your study.

C: Thank you.

Sander Oosthof

C: My study is about to find out if there is a future for the Eemshaven. The first stage is the current stage analysis. The second stage is some suggestions on a strategic level. The third part is an idea of potential activities. The evaluation part is the last part of my study. It is difficult for me to evaluate if this plan is good or not.

O: Who did you talk to?

C: This morning I was at the University of Groningen. I am not sure if you know him, Klaas Jan Noorman. Before that I talked to people from Groningen Seaport and the mayor of Eemsmund, Mrs. van Beek, Mrs. van der Mei of ministerie of Verkeer en Waterstaat, also scholars from TU Delft and some internal experts of Arcadis.

O: OK, good.

C: I had a lot of interesting discussions.

O: It is a very interesting problem. Well yeah, as you know the Eemshaven as we established 25 years ago. That is even more, I think, more than 30 years ago. That is why everybody thought that almost nothing happened there. And suddenly a couple of years ago it started booming. Though power plants are not really harbor related activities, expect for the coal.

Anyway Eemshaven seems to be a very good location for a power plant, I doubt if there will come more. One is operational, two are being built at this moment and another one is going to be build in the near future. But that is not the only thing that is happening in the Eemshaven. As you know there is going to be a wind park north of the islands, the Dutch Waddeneilenden, an offshore wind park. There are going to be a lot more wind parks. There are a number of companies that want to build a wind park.

What we also see is that the chemical cluster in Delfzijl, they are also thinking of bio-based, bio-fuel based for chemicals, which is another useable form of material for the Eemshaven. Did you get a good impression of the Eemshaven, what is going on there?

C: I think so.

O: They also showed you the strategic oil storage that they planned there?

C: Yes.

O: That doesn't sound like it going to create a lot of movement in the harbor but it is all kinds of oil there. But you have to exchange it, I mean, it is going to be a big storage, the same goes for bio-based materials. Probably that is going to create a lot of movement in the harbor.

C: OK, One of your concerns is unemployment, I suppose.

O: Yes, well, our mission is to help to improve the economy in the northern part of the Netherlands. One of the criteria that is measured is employment. But unemployment is not the best criteria. An investigation is being done in the Northern part of the Netherlands and especially in the Eemshaven activities are very capital intense.

And what you also see is that the power plants for instants. If you spend a billion euro in a power plant like that, that will generate 30 to 40 million a year. That is a lot of money for every region. For every billion you spend, you will generate 800 jobs, in service and in management.

C: Temporary jobs?

O: No. Temporary jobs during the building process that is much higher.

They are indirect not direct jobs; we also see that subcontractors build offices near the Eemshaven to be able to service them. Let's say the employment is not count in the direct employment. So what you see is that the balance is changing. And to me it is very important to have those very capital intensive investments

C: OK, go back to my study. I used Porters Diamond model and a SWOT analysis for the current situation. The results are on page 3 and 4. In short the selling port of the Eemshaven as a port, an industrial port, not an energy port, the advantages are a stable energy supply, adequate space for expansion, relative cheap price for shore land and shipping activities and freedom for entrepreneurs. Of course agriculture is a regional advance, somehow. Only production, not marketing...

O: Agriculture you mean, if you look at the northern part of the Netherlands it is mainly an agricultural area. We produce crops of course. But if you look at most companies, that are processing wheat or crops, sugar beet or potatoes, they make ingredients for further productions. There is not a lot of companies here that make end products here.

C: Because of lack of consumer market?

O: I don't know if it is that but it is a constraint of the region. There are not a lot of companies like that in that region. For instance, if you are in Amsterdam and you are easy to pick up your production and go here. So also the consumer brands are made not here but western or southern part of the Netherlands probably close to Rotterdam

C: The negative factors also include a lack of support of the hinterland. Or I should say from the economic structure. Economic view or I should say support industries and labor market. There is also a quality and quantity factor.

O: Yeah, labor market; I shall say what I think of the labor market,

C: I also think the part facilities and infrastructure is not so attractive compared to other harbors. The last part also relates to the labor market. That is the living circumstances and social activities. I mean the port area. That is basically the basis idea of the port analysis.

O: Well, if you look at the port of Rotterdam, the actual activities right now, there is not so much activity as well. If you are in the port of Rotterdam, that is called Maasvlakte, and if you have to travel to the city of Rotterdam. That is a longer distance than from Groningen to the Eemshaven.

C: With congestion.

O: And there is a lot of congestion. I don't think the Eemshaven is a port that needs to dig in. The way the Eemshaven is promoted now is an energy port. And that is not only energy that is produced there but it is also energy that from foreign countries, for instance coal. That is what I think that it is going to be. Next to that there is going to be some short sea shipping. That is not a lot, For instance Wagenborg and Wijnne Barends. They do a lot of short sea shipping from there. But if you look at the Netherlands, that is not very big. But that is not a focus of the harbor.

By the way, if something would happen in the harbor then the New York Times won't be printed because all the paper of the New York Times is transported via the Eemshaven.

C: OK. Do you agree on the SWOT analysis, like living circumstances?

O: I don't think that is a big problem, what you see in general, in the province of Groningen, which the northern part of the north, or at least the northern part of the province, people or moving away from there to the city, because Groningen is just half an hour away from the Eemshaven. Have you ever been in the Eemshaven?

C: Yes.

O: Do you know the city?

C: Yes.

O: It is a vibrant city, you can do anything. It is a very nice city to live. But the second one, an under develop labor market, that might be a problem in the future. What you see is that all the baby boomers are going to retire the next couple of years. What see overall in the Netherlands is that the unemployment rate in the Netherlands is quiet low, in this region as well. That is about six percent. But you need unemployment of about four percent to have a smooth labor market. And all those people are going to retirement and we have hardly any younger people coming in. Then we might have a problem. That is the sheer number but we also see that the cause of the shift from labor intensive to capital intensive. We need better, higher skilled people. At least they should have a MBO level. So, I expect some switch numbers.

C: The logistics and the shipping routes?

O: I don't think that is a problem, shipping wise it has a logical position; I don't think that is a weak point. I think you cannot look at it compared to other ports, like Vlissingen. Vlissingen has a relative good position. Vlissingen is very close to Antwerp. They have a lot of opportunity to grow to very important port.

It is never going to be a very big port. You have to look at the Eemshaven in the situation of the Northern part of the Netherlands, which is a very thin economy. I mean if you look at the total population of the three Northern provinces, which is only 1.6 million. That is as much as the whole Rotterdam area. So it is a very thin economy. It is for our economy a very important port.

C: Because of energy?

O: Because of energy and also because of what is happening there, it will never be a large port. That is I think a good ambition for the Eemshaven.

C: The SWOT analysis is based on the assumption of achieving an industrial port. Not just power plants. Is there anything you do not agree or do you miss certain aspects in this box?

O: Well, the strength of the Eemshaven is the chemical side near Delfzijl. We are also working on that strength by building a pipeline between Eemshaven and Delfzijl. I think that is an important strength. I am not sure about the agriculture sector in the region. It is strength for the region not for the Eemshaven. The Eemshaven is small just because of that. So that is a question mark. I agree that the shipping routes and facilities are relatively limited but I think they are sufficient for Eemshaven as a port.

C: OK.

O: If you compare it to small airports, we have a small airport here, Eelde, it has very small catchment area. Only people of the region here fly out of there and I think you have to look at the Eemshaven in the same way. Small port, it is not a very expensive port, and it is sufficient for in- and export for the materials we need, that we need. Not more than that. If we didn't have Eemshaven, we would have to get all the material from Emden or from another port like Amsterdam. It is very important that we excess that we need.

I know for us direct port investment, what the proximity of the Eemshaven, is important to our clients.

C: For entrepreneurs?

O: Yes, not that they are dependent on a harbor, they like the idea of having a harbor in the neighborhood and I think it will be more and more important in the future.

C: Are there other points that you don't agree with?

O: The last point assigned in weakness, I don't think I agree with that, I think there is comprehensive development. If you listen to Harm Post, he has a very clear vision on what the Eemshaven should be. In his vision the Eemshaven is a harbor where value is added. Value added logistics, not like Rotterdam, most of the containers there aren't even opened there. They are put on a truck or train; there is not a lot of value added logistics over there. What Harm wants is an energy port and that does a lot of value added logistics.

Not only in the traditional way like assembling some parts there, but also in the production of chemicals and that is the vision of Groningen seaports.

O: OK, anyway I do think there is a vision behind it all.

C: OK. Opportunities, for large companies they would like to have their freedom for their own logistics chain, freedom for organizing their business.

O: Yes, and you say in the Eemshaven there is room for that?

C: I think in the Eemshaven compared to larger port, they can offer more freedom than bigger ports.

O: OK, I am not sure of congestion in the main ports. I mean if you look at Rotterdam, I think you mean the congestion on the road.

C: Also at the port of Callin ships.

O: I don't think there is any congestion in Rotterdam, but they are going to build Maasvlakte 2 which is going to be used. What it creates is a lot of congestion on the road.

I don't think that is an opportunity for Wilhelmshaven and Bremerhaven, those are two really big container ports, they are the real competition to Rotterdam not the Eemshaven. Maybe you can get some minor activity from them.

The increasing demand of shipping activities, I think it is a real opportunity, especially for the off-shore sector. Especially for the off-shore wind parks that are going to be built. Especially in Bremerhaven is not enough room for those off-shore activities.

There is going to be an enormous amount of activities around this. That is an opportunity. And also a lot of power in the Eemshaven gives us opportunities when we talk to energy consuming, like data centers. We talk about a number of opportunities there. A couple already settled themselves over there because of that. Threats, Eastwards shifting of global industries. That is not a threat to the Eemshaven.

C: My assumption is an industrial port. The global industry plan is to put industrial sites in the east. And the demand of the industrial sites in North West Europe is shrinking.

O: Yes, if you look at the position of industrial sites with a lot of labor involved, that is true. But I don't see it as a threat, I see it more as an opportunity, and a lot of other industries but don't. Recently some companies moved back their production back from Eastern Europe or even from China back to the Netherlands. Because what we are doing in the Netherlands is that we are very good at productivity minded activities and it takes a lot more time to reach that in Eastern countries, and the wage difference is getting smaller and smaller. And if the difference is getting smaller you get more traditional logistics back in the Netherlands. So it becomes attractive again for production back again in some cases. In general the trend it is true.

C: Ok.

O: Fast development of neighbor ports, I think that is always a threat. Eliminating subsidies, I don't think that is a threat because the same goes for other regions and subsidies in the Netherlands will be lowered or not. But we see the same in Germany or Belgium for instance. It even makes you stronger. You have to focus at your own strength. There is no way that you get a company in as there no subsidies. That is not valid. That is not valid; you have to work at your own strength. What you see is that subsidies are very important to the labor intensive industries. There is a big thing going on with SCI of Korea. About 10 to 15 years ago they planned a factory for 5000 employees in Heerenveen, a town near Groningen. They had got a lot of subsidies; as soon as the subsidies were gone they closed their plant. That is my remark.

C: Just like the for the biodiesel production factory closed down in the Eemshaven?

O: That is a different situation. That has a lot to do with bad luck, for instance, but it has something to do with subsidy, more with EU legislation, 4 or 5 years ago the EU decided that we have to mix six percent of biodiesel. At a certain moment somebody found out that bio-fuels are not a good solution are not a good solution. Eventually EU decided that the amount of biodiesel that had to be added to normal fuel had to be lowered. So what happened to that plant was that the demand dropped very quickly.

C: OK, what do you think will be the real threat for the Eemshaven?

O: The real threat is really one of the weaknesses, that is the labor market, that will not be available to the Eemshaven. That will be a problem for the acquisition to the Eemshaven. That will be a disadvantage for the Eemshaven.

C: Other facts that do you think...

O: To be honest I don't know.

O: We need skilled people, but we don't need people with a major of the university.

C: And where do skilled people come from?

O: That is not a problem; we have a big university in the city. We have a big university with bachelor education. With a lot of people that will be available. The problem is that those people are needed everywhere. Not only in the city. What we see is that a lot of highly educated people go to Amsterdam etc. Or even a foreign country. We educate an enormous amount of German people, also go back to Germany. It is not so much that we don't have the education level but there are more existing things to outside the region.

C: That is more a regional problem than from the port itself. After this analysis, I separated the analysis into two scenarios, a conservative and a aggressive scenario. Scenario 1 is somehow a short term, with no expansion. I should focus on energy related industries only, as the port authority and local government are doing now and at the same time improve land side accessibility, especially road. But I never saw a plan for concerns roads towards the Eemshaven.

O: Well, there is a project there but that is the N33.

C: But not to the Eemshaven..

O: Yes but there is also a plan for doubling the road towards Eemshaven. But we really need to wonder if we have to do that, it is not a very busy road. I don't think that is an issue now.

C: OK, Do you think the infrastructure should be improved only when you see the future demand?

O: I think it should be improved but only occasionally. I don't think it is a big problem now. Of course the Eemshavenweg is a very dangerous road to travel.

C: You think for a short term scenario it is not necessary to improve?

O: May be in the aggressive scenario it is necessary but I am not sure.

C: Then my aggressive scenario includes marketing the Eemshaven. One of my colleagues of Arcadis wrote an article in the newspaper. They should merge the Eemshaven Delfzijl and Groningen in one and call that the port of Groningen. We don't say that yet.

O: Very good one.

C: What I also think is the upgrade of the development. Not only go for the port. There is not a comprehensive development approach. So in an aggressive scenario it is necessary to upgrade the scope of development.

O: What do you mean with that?

C: Just the regional area, not only the port itself. When you talk about the future itself, you not only talk about the port itself but about regional development. Then come to integrated plans because of that, infrastructure, shipping routes and social activities. It is a whole package. And in this scenario I don't think it is wise to focus on energy related activities only. But also include other industry clusters.

O: Of course.

C: But for each activity, focus on one activity focus on one activity only. Avoid competition. There are two reasons, the Eemshaven has limited scale, and the other advantage is it has the freedom for entrepreneurs. And that is the aggressive scenario. The next page is the selection of industrial sections, besides the energy cluster.

The criteria's are selected based on the SWOT analysis. Seven sections are selected. Not really surprising, agriculture related activities, chemical industries, non metallic materials production, and recycling, energy related, pharmaceutical and shipping as well.

O: And what we see is chemical is very important, I think you have to skip the pharmaceutical industries,

C: OK, from the standard chemical and pharmaceutical are put together.

O: Non metallic production doesn't make a lot of profit.

C: The next page is the conservative scenario, the energy cluster. According to brainstorm, I am not sure if this cluster is similar to what you talked about.

O: Not really. Not exactly, what you say then is energy consuming, that is right but data centers for instance. Storage, I think you talk about coal storage, I suppose?

C: Yes.

O: There is something going on there as well. Aluminum is ok, power plant for instance, yeah. Hydropower, we do have an electricity transmission with Norway, so we do have hydropower.

O: Yes it is really a big chain. If Norway has an excess of electricity production and the Netherlands a shortage, then we get electricity from Norway. At the other hand there is not enough water in the reservoirs in Norway, OK it is quiet complete.

C: Which are the promising or potential activities in your view?

O: So, I think the biomass economy. That not only relate to bio-fuel but mostly as biomass as a raw material for chemical industry. It is not that we rule it or want it to be but it simply will happen.

C: Mainly production, procession or just transshipment?

O: I am not sure what it will look like but what we will see is that we will get biomass into the harbor, and to the most sensible idea is to get gas in the harbor, and to get the same gas in the proximity in the harbor. To create a pipeline alley room towards the chemical plants and to use them together as to use them as a raw material.

C: Also relates to the logistics. The next page is the aggressive scenario. The boxes are the selected industrial sections. The bullets also came from brainstorm.

O: Yes, Chinese car import, who knows..

C: The same questions, are there bullets that you don't agree with or think they are quite interesting?

O: I am not sure about Chinese car import. That will be very, how do you say, I don't think it will happen but there is no reason to exclude it. Bremerhaven is the biggest car import harbor. What you see right now is that they are exporting. Only the Netherlands is a relatively small market. But what you see is that a lot of Japanese cars are imported via Rotterdam. There is no reason why they should leave to the Eemshaven. The connection to the hinterland is important here.

C: The distribution network.

O: Absolutely.

C: With three ideas we are going a little bit further.

O: Yes.

C: Estimate the possible scale and risk, expected effects on the economy.

O: It is also important for the wind industry in the north of the Netherlands. We have a lot of yacht sailing ships, small boats compulsion for that. There are a lot of boats made out of composites, which makes the port very interesting for barges for instance and turbines.

It is also possible that the big producers come to the Eemshaven. What you see is that since wind energy is going off-shore, that the mills are being used are getting bigger and bigger. One the makes this is typically used is 70 meters long. Is not something that you want to transport overland? So what those parties are looking for is locations close to deep sea port.

C: So for the Eemshaven it could be very interesting.

O: Yes, it is. That if you look at the other hand, if you look at the United Kingdom, as soon as they decide on building wind parks and it attract companies to build them, they will get the obligation to ensemble all the parts in the UK. That is something we don't do in the Netherlands. If we build a wind park, we don't care if it is being built or serviced in the Netherlands. What the British say, ok you can build our wind parks but you have to source everything in the UK.

C: So, you think the Dutch policy should be changed a little bit as well.

O: When it comes to wind energy, I think so. Intermediate agricultural materials that is very likely, good

O: Let's say most of the companies that are in the agricultural or in the intermediate products are those plants are already settled and they are not in the neighborhood of the Eemshaven. We have got a big sugar plant over here.

O: In sugar, it certainly is not. It does increase in the form of alcohol. So you probably produce sugar next to the alcohol. I don't think storage will increase a lot. Although what you see is that companies that are producing or looking at bio plants, are looking for it. What we did see however. We had had a malt plant in the harbor. That is a totally new development in the harbor. And for a company like that the harbor is really attractive. Because you are able to get all the wheat, grain, corn whatever, you can get that in by ships, some of it transported it mainly by trucks, from the farmers...

O: And then they would get the malt to the brewery.

C: It is quite a nice idea to put Holland Malt there, it is quite a successful. Well from two scenarios themselves, what do you think about that? Do you think they are nice or do you think there is no future for them?

O: As far as I can see Eemshaven is almost full, there is not a lot of land.

C: You don't expect an additional piece of land for that?

O: I don't think so, how to say, the harbor won't get any bigger. All the empty things are going to be developed, I think. There is going to be some additional industry and some plants there that together and that is going to consume the lot, and in Delfzijl area there is a lot of land for all kinds of industries. I think Eemshaven is about to be ready in 10 years.

C: And you don't expect future expansions?

O: That would surprise me. There is no plan for future expansions. If there is, I should have known.

C: So you think just put some energy related industries there. May be some extra companies and then it is done?

O: I would go for a development of the chemical cluster in Delfzijl and consumptions in the harbor. I think that is the most viable way to increase the economical activities in the region.

C: And there is no need for Groningen seaports to explore new investments. It is just management?

O: I think it is just harbor management, and then it is just done.

C: Then they need to get money from shipping activities.

O: That is right.

O: That is my vision of the Eemshaven. I don't really think there is a big philosophy; it is a nice economical activity which belongs. Well you can think of making it suitable for bigger ships but we also have to count at north that we have port of Rotterdam. We have the world's biggest harbor there so, I think it is ok for the people that live here and that is not going to be a lot more in 20 or 30 years, probably less.

C: And in the future it won't be different from what it is now?

O: No. I don't think so. That is not a problem.

C: That is not a problem at all. It is nice actually and then the government will be relieved because they don't have to keep money in there. They can invest in other places more efficiently.

C: Thank you.

O: Yes, no problem.

Pieter Pellenbarg

P: The port history goes back to 1950s. The building was finished in 1973. The ideas about having a port were older, in 50s and 60s. I think it is important because if you look at the Eemshaven now, because otherwise you just cannot understand why it is there. If you have to decide to develop such a port now, I think no one will pick that as an optimal location. It seemed a logical thing to do in 1950s and 1960s, when there was so called "rush to the coast". All kinds of heavy industries, oil related industries, heavy chemical industries, etc, they all moved to coastal locations. Before the 2nd World War, the heavy industries were originally developed at raw material locations, those for coal, oil, gas. After the war, a lot of these activities moved to coastal locations, because it was easy to be in ports: raw materials from varied sources and export the products...

There was a very big volume of global transportation. Industries constant locations were placed for import and export of metals, oil, chemicals, etc, which were pro sectors at that time. Within Europe, Rotterdam was definitely number 1 for port location. That means in 1950s-1970s, as industrial locations, Rotterdam was developed with a high speed; the areas were sold very quickly. (If you look at Rotterdam, the city is here, the original port facilities were also here. Then in the course of 1950s-1970s, all these port locations were developed but also sold out in a very high speed. So around, 1970-1975, there was no more space for industrial location available. There was a big question: how can we accommodate the growth port industries if this (Rotterdam) is fully used. Then originally, there was a plan to expand the port area into here (southern), making canals, but that was refused by the provincial authorities, and then other port locations along the coast could be picked. Big facilities, port areas for industrial locations were developed in Terneuzen, for chemical industries, here in Vlissingen, Moerdijk, IJmuiden, the alternative of Amsterdam, also here and there. In fact, all the available costal locations were planned. The idea was if the area was fully used here (in Rotterdam), we need alternatives along the coast where the companies can go.) Moerdijk was indeed developed. One of the biggest facilities of Shell moved to Moerdijk. Terneuzen was also developed and Eemshaven was developed. In 1972, 1973, the worldwide oil crisis (came) and all the other plans were stopped. But it was a bad luck for the Eemshaven that they had already built the port. If the plans had started two years later or so, they might be say "let's not do it" and might do some other projects.

Then we get the problems, the port was meant to be an industrial port, like Rotterdam, Terneuzen, like the other plans, a location to accommodate these "rush to the coast" firms, producing heavy metals and heavy chemicals. After the oil crisis, the worldwide growth chemical industries, especially heavy chemical industries, chose to stand still. The production facilities they thought to accommodate here (the Eemshaven) never came, not only the Eemshaven, but everywhere in the world, just stopped. The demand of chemicals also changed; less demand for heavy chemicals and more demand for fine chemicals. There were sorts of plans, saying the establishment of companies like this and companies like that. All kinds of firms came to the Eemshaven to look at the possibilities, but there was never a company really came. It was just over.

C: Excuse me, you mentioned the companies saw the site but they decided not to come to the Eemshaven. What do you think of the reasons to make those decisions?

P: Two reasons. One reason was that the balance of supply and demand of industrial sites was changed. It was no longer the large demand and small supply, which was the situation before the oil crisis. But after that, it was all the way around, a lot of locations available and less demand. The Eemshaven was just one of the possibilities, which is rather far away. If you look at the other locations, I just mentioned Moerdijk, which is here, the first to be developed. It was there a few years before the Eemshaven became a port. A part of Shell had already relocated there for their business. Moerdijk is very close to Rotterdam with a lot of vacant space. There also some activities stopped but they kept selling land, slowly. It took them 20 years to fill the whole location. It was definitely a better alternative than this one (the Eemshaven). Price of this location (the Eemshaven) is lower but prize is not really as important as factors like infrastructure. You pay the price of land only once, not every day. In fact, labor cost and transport cost are the things you have to pay everyday in the production system. Then it made it cheaper here (Moerdijk) in terms of especially transport cost, it was much more attractive than this one (the Eemshaven). It is very close to the main transport accesses going from Rotterdam to Germany, a corridor with many modes of transportation. There was a bad road, at that time, not very poor rail transportation and a narrow canal to Delfzijl, no canal to the Eemshaven.

On one hand; it is a bad comparison of locations and conditions, like Moerdijk, but also Terneuzen and Vlissingen, which are much closer to Rotterdam. Another factor is in 1970s, there were a lot of discussions about the danger of polluting industries at the coast of the Waddenzee. Lots of things happened in the 70s. One of the most important was the awareness of ecological performance of human activities. The awareness of environmental problems related to industrial establishment. The idea was everywhere in the Netherlands as well as in the rest of the world. Here in the north, there was the problem of the Waddenzee being a natural protected area. Heavy polluting industries located in Harlingen, Delfzijl and the Eemshaven were realized as a problem. The provincial authorities wrote a report about the environment protection of the Waddenzee, laying down rules of industrial locations along the Waddenzee coast. Anyhow, the Eemshaven was meant to be an industrial port but it never became an industrial port.

Then in the 1990s there was an idea that maybe the Eemshaven would never become an industrial port but could be developed as a logistics center. Then all kinds of initiatives started that were related to this scenario. It is not too easy to understand why this scenario became so popular but it had been for 10 years or so. My personal impression is that it is related to the falling of the “iron curtain”, because it changed the whole European economy. If you look at the European map, the “iron curtain” was here. It was not so difficult to understand that when the “iron curtain” came down, all sorts of trade and transport tried to develop in economic centers in Eastern Europe and Russia. Especially the maritime transport to the Baltic States became popular. The Baltic States are the most developed area of Soviet Union; they had history of independent economic development. Earlier in the 20th century, the area picked up much more quickly than the rest of Russia. They had advantages of the port locations, which could make easy connections with ports in Scandinavia but also Western Europe. There was a history of trade between Western Europe and Eastern Europe, going through the North Sea. The ports there (along the North Sea) sort of had a turntable in the shipping relations between Western Europe and Eastern Europe. Turntable is also the name of the monthly magazine of the port authority. That is the idea of the change in the relations. They tried to establish regular shipping connections with the Scandinavian ports, the Baltic States ports and the UK. It was way too enthusiastic to build the facilities in the Eemshaven to accommodate logistics activities but it never became a success.

After 10 years or so, the same feeling of failure came again that it did not really work. All the initiatives, the shipping lines, the facilities were not used. It just did not work. I think by the time the fact made many people, including myself, have the feeling that it would not work out; it would never ever success. It was just the cause of the wrong decision at the wrong time, a bad luck. Well, then certain area in the Eemshaven was developed as an example of energy related industries became a big success. No one could foresee this. If you said that in 70s, in 80s or even 10 years ago, no one would believe you. Ok, you have just had an idea, like an industrial port, like a logistics port, nothing would work. But this worked.

C: Whose idea it was to develop “an energy port”?

P: It was not easy to say whether it was raised by a particular person or a particular group. I think it was because a number of things happened at the same time. One thing was that people realized that we had to do something with gas recourses, one of the biggest gas fields in the world. Also in this area, people wondered whether it was possible to save something for the future. Because in the past century, we have developed a lot of knowledge related to gas exploration, distribution, marketing and also more generally knowledge related to gas. Again, the energy economy can't lose its stable economic pace. The gas could be used up but the knowledge is still there. Energy is important to this region.

This is one thing; another thing is that it became increasingly difficult to find a location in the Netherlands for energy producing plants for processing or distributing. All these energy plants need a lot of space; sometimes they pollute, sometimes they need water for cooling. It is difficult to find that kind of locations in the country. The Eemshaven was there with lots of space, a small population, and no close big cities like in the Randstad. The Eemshaven is an interesting alternative and very much relate to the knowledge center of energy. That was why the initiative of the Energy Valley developed. It was a big cluster of a particular activity happened in the Eemshaven. Thinking of the sustainable paces, energy knowledge and fact of the Eemshaven as an interesting location for energy plants ended up in the Eemshaven as Energy Valley.

Well, this is the history of the development of the Eemshaven. The industrial scenario didn't work; the logistics scenario didn't work, but surprise, surprise, the energy scenario works.

Well, then your questions, in the list, the study structure. That is no problem there. Maybe you can take a look at the SWOT.

C: Yes, on page 4.

P: Adequate capacity of space and price, then it is a nice location for activities that need a lot of space; stable energy supply, yeah, definitely. And then, easy access to ICT facilities and gas pipelines, it is definitely true for gas and ICT, because the underground pipeline system for gas is an advantage for the Eemshaven. Same to ICT, the cable connecting North America and Europe is going like this, and through there (UK) and goes later on to Western Europe, the German Waddenzee access here (close to Hamburg) and Dutch Waddenzee access here. It comes sure in the Eemshaven and goes to the city science park here (in the campus). A very big data hotel is in the science park here and the second is at the Eemshaven, serving Google. The Eemshaven is an ideal location when it comes to ICT facilities, right, quite right. But easy access to the national grid of electricity is a different story. There is a big problem there and I am not sure how they are going to solve it. There are now a number of energy plants in the Eemshaven; all of them produce electricity. To make it possible to use it for the rest of the Netherlands, you have to transport it along the high voltage network. That connection was, couple years ago, definitely insufficient to carry on the electricity to the rest part of the Netherlands. I am not sure whether the facilities are already in place. It is dangerous to say here that the access to national grid is an advantage because certainly and recently it was a problem rather than an advantage.

Agricultural sector, is it really an advantage? I mean it is true traditionally the north was an area for agriculture but it is hardly true nowadays. Maybe the percentage of the employment of agriculture is a symbol of the importance of agriculture; of course this is not the urbanized part of the country.

C: And about 70 percent of land is used for agriculture.

P: Yes, but that doesn't mean it is really a strong sector. Agricultural products are not even shipped through the Eemshaven. The agriculture products in the north, such as potatoes, go through Harlingen and sometimes Delfzijl. So I will not put it in strength.

Opportunities, increasing demand of shipping activities, is that true? I have doubts about it. When you consider all types of transport, overseas transport and inland shipping are seen as more environment friendly modes, compared to road transport. Many studies show that part of (the cargo of) road transport can be transferred to shipping, which can be cheaper and have less damage to environment. Actually, those studies were very popular in 1990s, same time as the talking about the Eemshaven as a logistics port. Everybody was talking about it. We heard a lot of different stories in the past few years, and now those ship engines are not that clean. There is a lot of pollution in the canals. I am not sure the increasing demand is really there. We are not talking about container shipping from Shanghai to Rotterdam, or that in Japan, in Singapore. For the Eemshaven, there should be activity of short sea shipping, from the Netherlands to the Scandinavia, the Baltic States, United Kingdom. I don't think there is so much increase in that short sea shipping.

C: I just read an article about the transportation modal split in the North Sea Region. It shows an increase of short sea shipping in this region.

P: Is it a recent article?

C: I think so.

P: Well, I am not a transport specialist. I just have my doubts. If it is a recent result, rely on it. Clean energy, okay. Congestion in the main ports, this was really true in 1970s but I don't think now it is. Remember there is still Amsterdam. There are still bigger ports, with better relations to hinterland, much closer to Rotterdam than the Eemshaven. Entrepreneurship, is it a special opportunity for the Eemshaven?

C: I mean for smaller ports, it will be easier for entrepreneurs to influence on specific business. They have more freedom to make their decisions.

P: Ok. Stricter environmental regulations and legislation, it is true but is it a chance or advantage for the Eemshaven?

C: Compared to other ports, yes, I think so. Because the Eemshaven may tolerate activities with higher environmental level, up to 6.

P: I know, but on the other hand, it is a protected area of the Waddenzee. You have an environment level of 6 which not many places have, but you still have to deal with the environmental protection organizations. For instance, Harlingen, my native town, also has industrial sites next to the harbor. They recently built a waste incinerator. You know the story? There are constant fights of these organizations. If you would like to build it in the Eemshaven or Delfzijl, I think you will have the same pressure. Maybe the environmental level was settled but you still have to deal with the problem when you want to develop activities along the coast of the Waddenzee.

The weaknesses, lack of hinterland support, quite right; knowledge and labor market, right; port facilities and infrastructure, yeah; lack of comprehensive approach, yeah, correct.

East shifting, you mean Eastern Europe or the world?

C: In the world.

P: Okay, that's right. Fast developing neighboring ports, meaning?

C: Like Emden, other German ports, Wilhelmshaven, Bremerhaven.

P: Yes, okay.

C: Do you have any other ideas of the Eemshaven that is not included in the SWOT Analysis?

P: I think you have the main points. Then let us see the strategies.

C: I divided the situation into two scenarios. The first scenario is conservative, more in the short-term and without expansion or a small expansion. Scenario 2 is more aggressive, with a large piece of land available. For scenario 1, I suggest focusing on energy related industries only and at the same, improve landside accessibilities. The target is to make the best use of the land in the port area now and form a cluster.

For scenario 2, the scope of the development is considered on a higher level rather than the Eemshaven level. A marketing strategy of merging the port and the city of Groningen perhaps is a choice. The second point is an integrated plan, which is not only about selling the land or getting some investment in the port area, but also improving other factors, including infrastructure, shipping services, labor market, living circumstances. It is more like a development package instead of some single plans. Similarly, it is not only an energy cluster but also a cluster with other industries. For each industry, I would say try to co-operate with only one big company to avoid internal competitions and make the best of the advantage of entrepreneur freedom.

P: You are aware of what they are doing now right? The Energy Valley, it is a project of the whole province. A piece of it is definitely concentrated in the Eemshaven.

The second scenario, the more aggressive one, there is one element that I like which is the idea that you advertise the Eemshaven as the port of Groningen. There is a concept that has been used before, the idea of having the city of Groningen, Groningen Seaports, the Groningen Airport and you know, Veendam, the multi-modal terminal. Groningen is part of the name, which makes the Eemshaven less isolated place. It was a part of the logistics concept, linking air, rail, water, road

transport terminals to the city. I think that is a good point. Also for integrated plans instead of the Eemshaven alone, then industry clusters, what kind of industries are you thinking of?

C: The selection of industries is in the following part. The results can be found on page 7.

P: Okay, shipping, warehousing, agriculture based industries, non-metallic, chemical, recycling, energy. I am not sure if all these sectors are really chances for development, as you sketched in the Porter's Analysis. Chemical industries, there are chemical industries in Delfzijl, which is an important collection of chemical industry facilities, much more important than people in the other part of the Netherlands realized. If you put it together with the chemical industries of Emmen, the related facilities, the area contributed about 15 percent of the chemical industry in the Netherlands, which is certainly impressive. So do you really think that there will be a big chance of such activities for the Eemshaven? You go to Delfzijl, to the location of Akzo, where they have 25 different facilities for producing salt, soda and related products. They are still producing there because of the facilities. There is not so many plans of reinvestment. Actually, some of them were closed already.

C: You mean there is no obvious growth in the future?

P: No, I think we should be happy some of them are still there. We should not expect that it will grow. Is it too optimistic to treat it as promising sector?

The agriculture based industries, is a little bit same story, because it is in the past. Of course, there was the traditional agriculture area; there were a lot of factories processing agricultural products. Most of them are no longer there. Strawboard factories are not there; potato producing companies have only one left; Sugar industries, there are two still open. It is no longer a strong sector which is still growing. Some of them are still there. Let's hope they will be there, like the chemical industries in Delfzijl.

Same as ship building industries, there was a big history. It is so nice to see so many of them survived by innovation but it is quite up and down, no strong growth. It is concentrated on, the same story, whether the existing companies can survive or not. Again let's be happy that so much is still there. The sector will not grow to support the economy. The future is very much marketing of activities of housing and care center, hospitals, nursing, personal care at home, etc. This is almost the sector with biggest employment.

C: It is for cities only and definitely not an opportunity for the Eemshaven.

P: Not for the Eemshaven but for the north. When I look at the economy of this part of the country, we have certainly very good opportunities for care facilities and for living. No one wants to live anymore in the Randstad. Well, some people still do. There is growing feeling of running away from industries, pollutions. I think the north is a region that can still live in. The services, especially care services can support the economy in the north. It's quite right. It is not the thing for the Eemshaven.

I think the Eemshaven has the opportunities of energy sector, which is developed quite well now. For the more aggressive scenario, you are return to "the future of the past". I would say scenario 1 is the better one, but it is difficult to say that if you have a scenario 3, which could be very interesting to the Eemshaven.

C: Somehow you think the Eemshaven will be an energy port, not a logistics port or industrial port anymore.

P: Energy is something you can compete (with other ports), also in the future. It is not easy to import energy, especially the electricity energy. You can import all kinds of products from China, or other countries, because transport costs are so low. But energy is more expensive to transport, and you lose more energy on a longer way, so facilities producing electricity will always have an advantage of economy.

The concept raised by Porter about how activities which relate to each other can also sustain each other. Marshall described scale effects of greater number of companies together. Using that idea,

bring related activities of energy, is a good idea. There are also chances of using this concept to get subsidy from national government. Six or seven years ago, the governmental policy of the Netherlands is cluster oriented, in all parts of the Netherlands. The government has identified a number of important cluster activities. Energy Valley is such a concept which is identified. It is important for the Eemshaven to do a scenario relates to energy cluster concept.

C: How do you define the energy cluster, energy generation or others?

P: Energy cluster, on one hand, include companies who produce energy. Also the companies, who explore resources, like NAM. On the other hands, companies do services, like maintenance, knowledge related activities, consultancy companies of energy activities. The concept of cluster is less wide than the network. The activities are not necessarily in the same city, but they are close to each other.

Most of the area belongs to the port now are almost sold out.

C: There are about 200 hectares left.

P: Yes, the expansion is not possible to go seaward. This direction (south) is still possible, but there is no good reason to do that, unless there is a demand for energy activities.

C: You suggest sticking to energy, no more expansion?

P: Correct. For energy related activities, the port is necessary. The energy plants are coal based, they need to import coal. For gas based plant, you can say "I don't need the port", but you need water. And of course, some related activities will need the port. Closing the port is not an option, but developing industries to use the port facilities, I don't think that is what we should think; that is in the past. If you try to do that, I think you will meet the same problems in the past, the need, labor market, the distance from the center. We should be happy of the development of the energy port.

C: Do you think companies like Theo Pouw and Holland Malt should be in the port, under the concept of an energy port?

P: Well, I think recycling is an activity suits there because it relates to energy, distant from dense areas and it needs a lot of space. The second one, what should I say about that; it is one of the very, very few successes in the industrial strategy past. It is very much dependent on one particular entrepreneur. I think it is a special case which use large amount of raw materials that happen to be in the region. That doesn't mean you can expect more cases like that.

You see, the choosing of locations is not a very rational process, sometimes, I am very much aware of it. In fact a lot of things that I have been doing for the past 30 years or more are studying mental mass of the entrepreneurs in the Netherlands. I know a lot of their subjective view of the Netherlands, which is rather negative in the north, very negative when you look at the Eemshaven. If you take a sample of the entrepreneurs all over the Netherlands, you ask them to give values of the locations and you add them up, the top city is Utrecht, and one of the places with lowest value is the Eemshaven. The last study I did was in 2003, I am very curious to see the next one in 2013. Maybe the Eemshaven will get a little higher than some other places in the north, but I don't think it will be very much higher because most people hardly know what is happening there. People still think that is far away, nothing going on, etc. That is the world still goes around, and that is why I don't believe the industrial scenario.

C: Do you have any other ideas of the future Eemshaven? Some people say we close half of the harbor and change it into a recreational area, or simply put more Not in My Back Yard activities there or other plans.

P: Yes. Probably recycling is one example of Not in My Back Yard thing, but for the image of the Eemshaven, if you put too many such activities there, no one else would like to settle there. Using a part of the port for other activities like marina, but they don't want to be there to have yards. I think they are all wishful thinking. I would say be happy for the development of the energy port. Don't

expect too much. Don't start adding other things because I think there will be a big chance to fail. If they fail, we are doing a bad service of the Eemshaven, again.

C: Within the two clusters, are there any bullets that you think are interesting?

P: Underground storage is certainly interesting. Recycling seems interesting, also fuel related industries, the environmental protection one. Not the energy consuming industries and not their related industries. Beverage, I don't think so, also fertilize production, which is traditionally in the south, Limburg or Rotterdam. I don't see any reason why they come now.

Scenario two, I said already, I don't think that is a good scenario at all.

C: OK. Thank you so much.