

Erasmus University of Rotterdam

Erasmus School of Economics

Department: RHV BV – Port Economics

**The impact of the Economic Crisis on the port of
Duisburg “Duisport”**

A Bachelor Thesis

Supervisor: Larissa M. van der Lugt
Senior Researcher Port and Transport Economics

May/June/July 2010

Author: Kirstin Timpte

Student Number: 315996

E-mail: kirstin.timpte@student.eur.nl

TABLE OF CONTENTS

<u>PREFACE</u>	<u>3</u>
<u>EXECUTIVE SUMMARY</u>	<u>4</u>
1. <u>INTRODUCTION</u>	<u>5</u>
2. <u>FUNCTION OF AN INLAND-HUB AND RELATION TO DEEPSEA-PORTS</u>	<u>9</u>
2.1 Model on the Functional Relation of an Inland-Hub	<u>9</u>
2.2. Service Facilities and Cargo Handling	<u>10</u>
2.3. Transport Segments	<u>13</u>
2.4 SWOT Analysis	<u>15</u>
3. <u>STRUCTURE OF THE MARKET AND ITS IMPACT OF THE ECONOMIC CRISIS</u>	<u>17</u>
4. <u>STATING THE PROBLEM</u>	<u>19</u>
4.1 How did the crisis influence the inland hub	<u>19</u>
5. <u>ANALYSIS</u>	<u>22</u>
5.1 Barge and General Cargo	<u>22</u>
5.2 Total revenue	<u>23</u>
5.3 Container traffic - forecast and reality	<u>24</u>
6. <u>POLITICAL ENVIRONMENT</u>	<u>25</u>
7. <u>CONCLUSION</u>	<u>26</u>
<u>BIBLIOGRAPHY</u>	<u>28</u>

PREFACE

This Bachelor Thesis is an individual assignment directed at my supervisor, Mrs L.M. van der Lugt, who guided me throughout the last two months and to the employees of the port of Duisburg who provided me with essential information which are a core part of the problem and analysis.

The Bachelor Thesis forms the final assignment of a free chosen subject from my Bachelor's degree programme, International Bachelor of Economics and Business taught at the Erasmus University, Erasmus School of Economics. It is based on the knowledge acquired during the last three years of the International Bachelor, with special reference to the elective courses of "Introduction to Transport Economics" and "Introduction to Urban and Regional Economics", as well as the minor in "Port Management and Maritime Logistics" and the major in "Urban, Port and Transport Economics".

Furthermore, a meeting and guided tour through the Port of Duisburg in May and June provided helpful information. It was particularly interesting to expertise first-hand knowledge and information from someone so close to the market activities. In addition, part of this assignment is based on the interview held with Mr Jan Bellendorf (head of corporate development) and Mrs Julia Crefeld (Human and Resource department and communication), where preliminary results were presented as well as valuable input has been given.

I would like to thank Mrs L.M. van de Lugt for her valuable hints and personal guidance. Her critical comments stimulated me to think more deeply and always one step further, which enabled me to improve my topic and work and eventually led me to the final piece.

Hopefully, this academic assignment will provide the contributors with satisfying the problem and looking beyond.

EXECUTIVE SUMMARY

Inland ports in the region of the “Blue Banana” in western Europe gain on importance. Beside several inland ports in the Rhine-Ruhr Area, the port of Duisburg, “Duisport-Group”, plays the most important role as being the biggest inland hub in Europe. Throughout the last decades, it has experienced the growth of inland freight distribution required an increase of flows. The port of Duisburg as an inland-hub is a more appropriate construct since it considers terminal activities as well as logistic activities taking place.

As inland ports are fitting into regional economic geography by linking a region, the Rhine-Ruhr Area to global supply chains.

However, since the ongoing economic crisis hit the world economy, also inland-hubs draw new visions and changes in their operating activities, as sea-hubs like Rotterdam. “Duisport’s” location is also special, due to the importance of coal and other bulk cargo, which plays a significant role in the Ruhr Area. The area is also special, for hundreds of firms operating, which are regulated by the harbour.

Further, containerization is dominantly linked in the maritime and domestic transshipment, as other intermodal activities which might suffer by the economic crunch.

This assignment evaluates the different functions of “Duisport-Group” and if they are capable to regulate the economic situation without suffering or how to overcome drops in demand for the nearby future. This analysis is based on the numbers of the annual reports from 2007 onwards and how the development directly after the crunch is characterized. There are significant changes in bulk and general cargo compared to the total revenue through the years.

Finally, it is recommended that the “Duisport Group” is prepared well enough to foresee economical situations with a risk management system. That makes it possible to act early enough to overcome huge expenses and find prompt solutions.

Lastly, an outlook on the operational side is given. It shows that especially in container transportation the potential for efficiency gains of port operations is tremendous.

1 INTRODUCTION

Since 2008, the World Economy finds itself in a severe crisis, which affected almost all economic sectors in Europe, including the German and the Dutch port and maritime industry. The port of Duisburg, “Duisport-Group”, is located in the heart of the “Blue Banana” and is stretched over an area of 1.350 ha, 21 port basins and 37 km of shore length. (Duisportal 1, 2010) So, it does not have a direct connection to the open sea and therefore it is characterized as an “inland port”.

In the assignment, the focus is put on one specific port, the inland hub of Duisburg, the world’s largest inland port. (Anonymous 1, 1999) Duisburg is located in Germany’s industrial heartland between Cologne and Dortmund. This area is the home of nearly 30 millions people and 312.000 companies, (for example Krupp Iron and Steel Works) including the headquarters of 40 Germany’s top 100 companies (Duisportal 1, 2010) and is the natural distribution point from which to serve Europe’s burgeoning economies. As its location of a central hub, it is linking European ports, including Rotterdam and Antwerp with the industrial interior.

Nowadays, the inland harbour of Duisburg, “Duisport-Group”, is understood as of several system providers of market and customer oriented service facilities all around logistics. The Group is the initiator and co-organizer of transport and logistic functions. Its aim is the development of the port to an ever international leading logistical intermodal platform. Furthermore, the Group wants its constant profitable position as an intermodal hinterland hub for the big seaports having a gateway function for the industrial areas of central and middle Europe.

Around 500 employees are operating in several relating organizations offering answers and solutions of customers’ needs and wants.

The following figure roughly shows the main branches of the “Duisport-Group” and how they are related. Only in the cooperation as the Group, the port can be profitable and emerging in their intermodality.

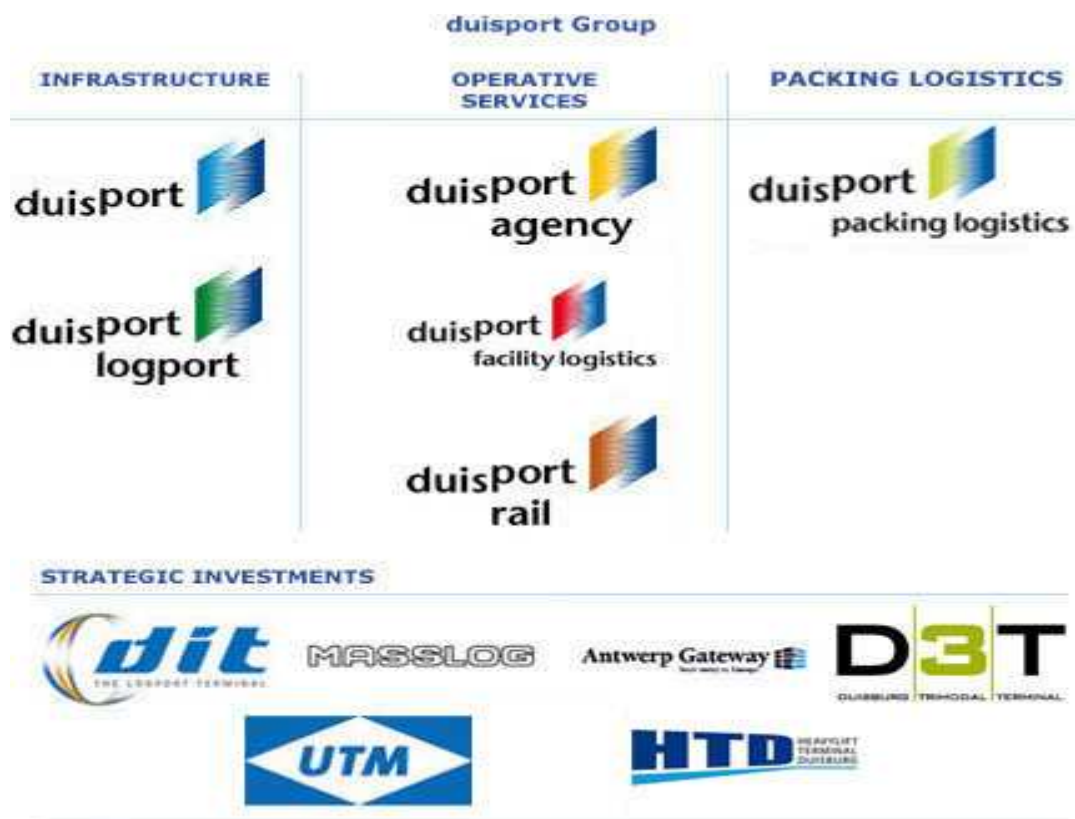


Figure 1: Overview of the Duisport-Group (Source: www.duisport.de)

The Infra and Supastructure:

Duisport, also known as Duisburger Hafen AG (stock cooperation) is the mother company of the Group and belongs to the harbour. It is responsible for its management, development and commercialization of the infra and supastructure as well as the strategic objective target. The logport is the full service supplier in the industrial and rural conglomeration management as described in chapter 2.

Logistical Facilities:

The second branch of the “Duisport Group” concentrates on the facilities in the traffic and logistical context (see chapter 2). On top we have the port agency which is the central distribution company finding solutions in traffic, transport and logistic. The Duisport Facility Logistics offers customers harbour related facilities like port logistics, warehousing and facility management. Furthermore it is essential for the maintenance of the port. The third component of that branch is directing to the private railroad company, Duisport Rail, which is owned by the harbour and integrated along the port region. It offers flexibility for partners and customers and presenting its intermodal importance.

Packaging

The last branch concentrates on packaging which is the newest sector of the Duisport Group. Especially in the last years and since the crisis crunch it gains on importance and offers durable means of industrial packaging, including transportation solution based on the intermodality. Duisport Packaging Logistic is connected and located all over the world, Europeans main industrial areas around the Benelux and Germany as well as in Asia and Eastern Europe.

Concluding the complex structure of the inland hub of Duisburg we can say that it more than just a harbour.

But, since the economic crisis, also the port of Duisburg exhibits some different effects in respect to their terminals. On the next pages the impact of the economic crisis on the inland hub of Duisburg will be characterized.

The analysis of the different terminals of the port of Duisburg in relation to the economical crisis in comparing the data from 2007 onwards did forecast significant effects. The expectation leads to assumptions of an immense decrease in revenue due to the drop in demand. To analyze this allegation, I differentiate in the terminals, container and bulk shipping and taking its transportation modes into consideration as well as for valuing the impact on the port due to the economic crisis.

It is a specific structure of the market that makes the implementation of policies complicated, as their applications are more difficult to predict with many actors in the market.

This assignment aims proposing a situation on the basis of academic literature, reports by institutions involved, presentations of relevant actors, data of economic developments and interviews with port authorities.

By means of this, it starts out explaining the importance and function of such an inland hub in the industrial heart of Europe, introducing some characteristics of the port and hinterland including service facilities and cargo handling in the first chapter, with the help of a strategic positioning analysis, SWOT, to analyze external opportunities and

threats and internal weaknesses and strengths. The second chapter represents the structure of the market and its impact of the economic crisis. Chapter three deals with the core analysis, how the crisis did and/or did not influence the impact on the port and which terminals are more affected respectively to their market structure in respect to the expectations. It also states out significant differences of the main ports in the European Area, Rotterdam, Antwerp and Hamburg, concerning its container traffic forecast and reality. In conjunction with this, the fifth chapter depicts the analysis from the annual report from 2007 onwards in taking a closer look at the revenue and expenses of the subdivisions of the port of Duisburg. Chapter six will finally give some political aspects that could solve some problems caused due to the economic crisis and which could make the market even more sustainable. The last chapter will summarize all analytical outcomes drawn into one conclusion.

2 FUNCTION OF AN INLAND HUB AND RELATION TO DEEPSEA PORTS

As said earlier in the introduction, the port of Duisburg is located in the heart of the German Ruhr Area, in the European context in the heart of the so called “Blue Banana”, the strongest European economical and manufacturing area in Western Europe. In its surroundings, the port provides an optimal traffic and logistic connection with its junctions to intermodal transport systems: water, rail, road and air. (Attachment 2 & Duisportal 4, 2010) This is seen as perfect assumptions for the settlement of several logistic processes.

An inland port is a port not having direct access to the deep-sea which characterizes the main difference to deep-sea ports like Rotterdam. Its functions are basically coordinated with global supply chains. Duisport is dominantly linked with the handling of containers in both, maritime and domestic ways. Nevertheless, intermodal activities, involving added value activities, as consolidating also play an important role. The development over the last decades, made the port being a favourable trend involving activities between the maritime, deep-sea ports like Rotterdam, and inland freight transport. Duisburg has its special characteristic of being located in Europeans best waterway connection.

2.1 Model on the functional relation of an inland-hub and sea-hub

Wakeman (2008) has given a clear graphical illustration about inland-ports fitting into regional economies by linking the region to its hinterland and global supply chains. The relation between the inland-hub and its hinterland can be schematically displayed by the use of a three tier system to present the functional relations of trimodality, figure 2.

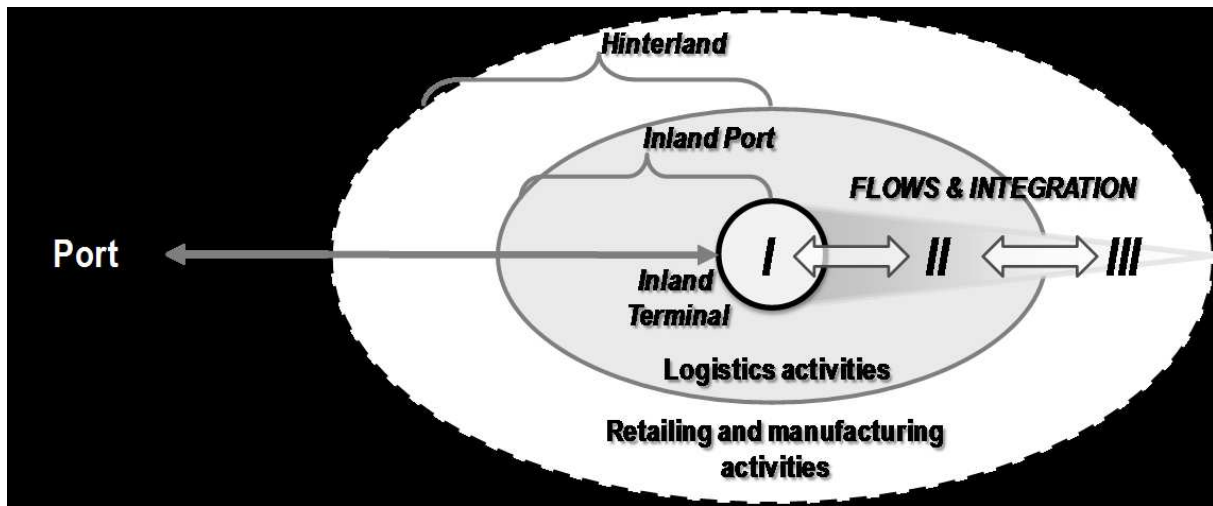


Figure 2: Model on the functional relation of an inland-hub and sea-hub (Source: Rodrigue et al, 2007)

The port on the left side illustrates the deep sea hub and in the middle of the three tiers, we have the inland hub. Putting this model into the function of the inland hub, we can consider Rotterdam as its sea-hub in its respective hinterland. Tier one focuses on the transport function of the inland port. These are the intermodal facilities of Duisport-Group: road, rail and water which fulfil the functions for the containerized loads. The second tier considers the transport functions of the first tier in relation to the supply chain functions. This is an important level due to the permission of several supply chain functions occurring in its inland and hinterland. This overlaps to the last level of the model which belongs to the market area. It is essential to the ports handlings and freight flows.

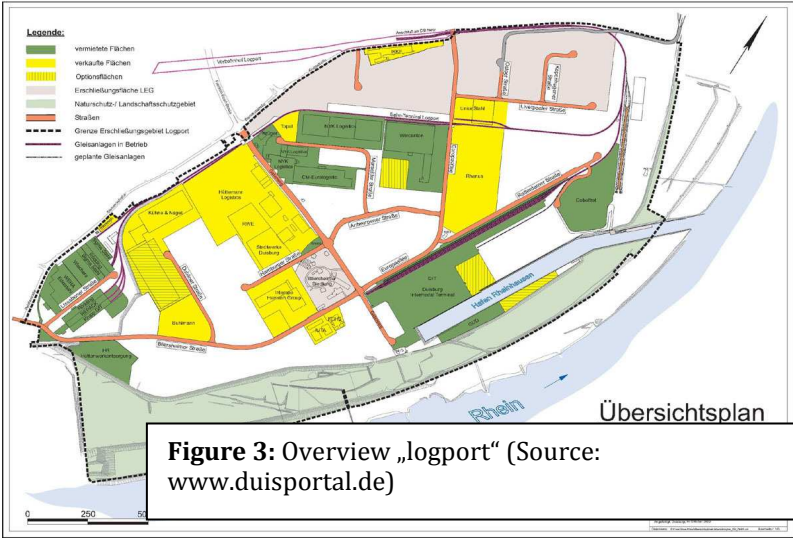
2.2 Service Facilities and Cargo Handling

Service Facilities

The harbour has a perfect location within the Mega City Region (MCR) Rhine Ruhr and can benefit from this extraordinary economic and geographical location. (Attachment1 and Duisportal 1) That makes it special for logistic firms being located in every urban centre. But on the other hand, Duisburg is also part of the three regional concentration centres of the MCR. (Hall, P. & Pain, K., 2005) As it has a good connection to all transportation modes, it provides firms being settled due to its perfect internal and external accessibility which offers logistic firms almost perfect conditions.

Duisport-Group has to be differentiated into a few service facilities. Due to the fact, that the port has its optimal location tethering to the river Rhine, the biggest facility it is famous for, are 7 container terminals, including two terminals created for up to 9 parallel rail tracks for handling block trains. It consists of another 9 halls for dry keeping transitions. Due to the fact, that the port is located in the Ruhr area, which is famous for coal and steel, it is important that the port has its own coal mixing construction with its own loading facility. This implies Duisport-Group having 6 steel service centres for the treatment of steel productions. Considering import and export trade, which is around 50/50 in direct connection to the sea hub Rotterdam (Bellendorf, J., 2010), The harbour has five import coal terminals.

Beside service, logistic plays a significant role. There are in total three logistic centres, providing excellent conditions for the overall logistic industry. The logistic Centre of “Kasslerfeld” stands for the warehouse logistic and was one of the first plots in the harbour of Duisburg in the early nineties. (Duisportal 2, 2010) It is seen straight forward to the needs and wants of the modern warehouse logistic and nowadays providers like DHL are in use of these facilities. Unique is that the cargo worldwide has a direct access to railway sliding which lead the port to be a perfect distribution mode of rail in respect to its hinterland accessibility on an environmental friendly basis (Bellendorf, J., 2010). It is a surviving factor for it successful future properties. Secondly, the logistic centre of “Ruhrort” concentrates on free cargo flow with an area of 37.000 square metres being available for storage, warehousing and logistics. (Duisportal 1, 2010) Beside that, it is also qualified for the declaration of cargo arriving from outside Europe before its further transportation. The newest logistic centre is the centre of “logport” (Figure 3).



It is a special and multimodal logistic node in the European transportation network, constructed by Krupp steel in Rheinhausen, western side of the river. (Attachment 2) This area was since 1993 neglected for the use of iron, steel and coal but in 1999 first steps were made and new land was exploited. (Hesse, M., 2005) The aim of Logport is to establish a more and more trimodal logistic centre for highly qualified cargo in relation to the trimodality of the port itself. International cargo will play an increased role in the business and more Global Players like to use Duisburg as a gateway. (Schwarz, F. Dr.-Ing., 2006)

Cargo Handling

As the biggest inland port of Europe constitutes the most important centre of the Western Part of the Ruhr Area and acts as a hinterland hub for the Belgian and Netherland North Sea ports Antwerp and Rotterdam.

The shipment of import and export stands 50 to 50 in relation to the sea hub Rotterdam. (Bellendorf, J., 2010) These sea and inland hubs are not acting as competitors, more as a team. (Bellendorf, J., 2010) This will be more discussed in chapter 3 and 4. Nevertheless, considering other inland harbours in the direct hinterland of Duisburg, Venlo, it is obvious that they do not have the profitable facilities and suffer much more from the ongoing economic crisis. (Bellendorf, J., 2010)

After discovered the service facilities, the questions is what is handled most to keep the facilities in use. Cargo handling divided in general and bulk cargo plays the most important role in the industry. Duisport is listed under the TOP-100 worldwide biggest container harbours. (Metropole Ruhr, 2010) The most significant development has taken place in the nineties and a second time from the year 2007 onwards. (Metropole Ruhr, 2010) The crisis crash in 2008 was a shock for all authorities and in the beginning quite unclear about its dimension. Therefore, nowadays it is essential to zoom into the last 3 years of cargo handling. From the year 2007 onwards, the port is in its top condition and leading harbour over all other German, Dutch and Belgium inland harbours. (Metropole Ruhr, 2010)

2.3 Transport Segments – structure of regional economics

As said before, the harbour of Duisburg can be reached via barge, train and trucks because of its intersection of big and significant European water roads, railways and motorways. (Attachment 2) All these facilities of different transportation modes assign the port of Duisburg as trimodality and can be the key to the efficiency of an inland hub function. An advantage to stay capable in competition to the client's side of the business, a high qualified combination of common carriers to efficient, reliable and low cost transport modes are offered.

Rail

Its effective and efficient railroad connections have the highest priority for Duisport-Group and have a share of around 40% of all loaded and reloaded cargo. (Bellendorf, J. 2010) There is a weekly transport to 80 European aiming rail stations, blushing more than 350 calls. (Annual Report 2008) Beside the close teamwork of the port with "Railion", the privatization of railroad companies gain in importance. Its goal is to provide optimal railroad services for the clients in the surrounded area and beyond. Since 2001, Duisport-Group has its own railroad company, Duisport-Rail, acting in the market. Through alliances of several railroad companies, it is necessary to expand the network more competitive and to build powerful and capable connections to important harbours (Rotterdam and Antwerp) and other logistic services.

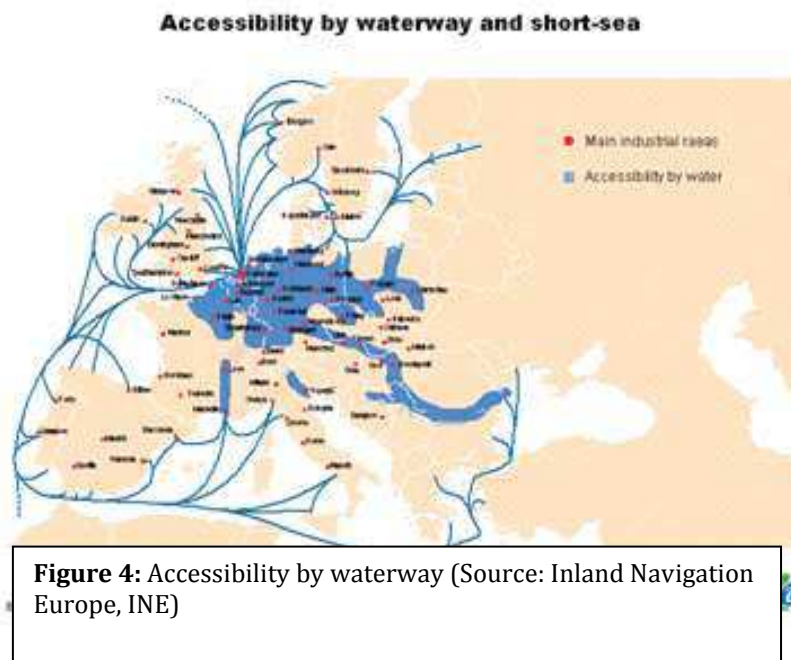
In connection to the rail transportation mode, the "Betuweline" plays a beneficial role for the future. The "Betuweline" is a direct railway connection for cargo from the Netherlands to the German boarder, close to Zevenaar. It is a high speed connection from the harbour of Rotterdam and the future plan of a direct connection with the port of Duisburg. This is still under construction and contended by Dutch political institutions. The trail crosses natural reserves and urban residential districts which cause the construction of tunnels which exceed the costs. From the German point of view and also from the point of view of the Group, the extension of the line is under contract. (Konings, R. 2003) This will provide a direct continental network along the railway tracks between the inland hub (Duisburg) and sea hub (Rotterdam) which is of great importance of increasing revenue. In terms of the economic crunch, this is one of the key points to be even more beneficial. The Duisport Group has to try to keep revenue

constantly increasing and exceeding expenses. But now this project depends on political solutions if it will be realizable and a solution of some damage of the economic situation.

Road

Road transportation, trucking, was, is and will be the major transportation mode. Although there are striking issues as pollution, truck overload and underestimating the capacity of bridges, it will always be a discussion point for the government. Despite overburden streets, increasing restrictions and financial demands, especially for short distances, it will always keep its competitive advantage. As can be seen in the map of the second attachment, 5 highways and several federal roads lead to a fast and efficient connection to other major destinations or to the numerous companies operating in the Rhur area. Around 20% of all cargo are moved along road connections. (Bellendorf, J., 2010)

Barge: inland waterways



Attachment 2 and Figure 4 give a realistic impression about the waterway connections of the port of Duisburg. It is located in the heart of the European river and canal system which is clearly illustrated in Figure 2. Around 40 % (Bellendorf, J., 2010) of the transhipped cargo inland is taking place in the area of the Duisport-Group. A highly profitable advantage is the direct connection to the port of Rotterdam along the river Rhine. On the other hand, barge transportation also serves the most flexible, authentic

and inexpensive (Duisportal 1, 2010) method as well as being environmental friendly. But, barge operators have severe years since the last quarter of 2008. They suffer the most by the crisis. Further analytical information will be taken in chapter three and four. But due to a decrease in demand, trips for barge skippers have become less and consequently their turnover has fallen after the economic crunch in 2008.

	2009 in Mio t	2008 in Mio t	2007 in Mio t
Barge	12,1	15,4	16,0
Rail	10,7	12,9	12,6
Road	21	26,2	26,5
Total	43,8	54,5	55,1

Table 1: Traffic Volume 2007-2009 (Source: www.duisport.de)

To summarize the major transportation modes, Table 2 provides valuable information of each descriptive transportation mode from 2007 onwards. It is clearly seen that railways gain in importance and therefore it is almost necessary to extend the “Betuwelijn”.

As said earlier, trade in the port is deeply focused on road transportation which is a continual coming and going allocated through the highest traffic volume of 21 Mio t in 2009. (Table 1) But, considering the development from 2007 onwards, a clear effect is determined. The strongest decline is due to the crisis in 2008.

Taking barge and railroad into consideration, we can generally assign the same development. However, a special note should be made in the traffic volume of railroad. Its difference in Mio t over the years is less significant which is due to the fact of its own railroad company.

2.4 SWOT analysis

A SWOT analysis (Table 2) for the port of Duisburg is a strategic positioning analysis, helping to analyse external and internal factors. It aims at depicting advantages and disadvantages and it will become clear that not only the port itself is taking into consideration, but also its whole chain, including hinterland accessibility along different modes. After an analysis of the ports facilities, also the environment and division of

transportation modes is summarized in the SWOT analysis and leads to the following SWOT matrix:

SWOT matrix:

<p><u>Strengths</u></p> <ul style="list-style-type: none"> • Arising from ports internal resources • Flexibility • Good tie to road and river • Being up-to-date in innovative trends in the productivity • Good company image “Duisport” • Connection West-East Europe 	<p><u>Weaknesses</u></p> <ul style="list-style-type: none"> • Not enough direct calls – depending on calls from feeder ports
<p><u>Opportunities</u></p> <ul style="list-style-type: none"> • Access to new markets and market segments with the project of “logport” • Vertical integration with other/new organizations • Ability to develop towards more prosperous and profitable sectors • Fast market development 	<p><u>Threats</u></p> <ul style="list-style-type: none"> • Road and bridge problems • Unfavourable political and economic situations (crisis 2008) • Recession of the economy • Negative demographic changes – river dams can brake

Table 2: Outcomings from previous environmental facts and information by Julia Crefeld

The sea hub Rotterdam, which is daily in a direct connection to the port of Duisburg is located in the direct hinterland. But the port authorities do not see each other as a competitor. It is basically teamwork and an extension to each other. Although Duisburg still depends on the calls of the port of Rotterdam, the transshipment is almost in a balanced condition in import and export. As the strengths of the SWOT matrix show, it will be just more profitable for firms to find their new location in the area of the port of Duisburg, especially if the company is acting in the logistical chain.

3 STRUCTURE OF THE MARKET AND ITS IMPACT OF THE ECONOMIC CRISIS

As said several terms before, the inland port of Duisburg plays an important role in the Rhine Ruhr Area but it is also a sign and a decisive factor for Germany's economy. (Trepins, D., 2006) Its traffic volume is significant in three transportation modes: rail, barge and road; the air plays a less important role, as been depicted in 2.3. Beside the railways which will play an increasing importance as the port provides its own railroad company in the harbour and the "Betuweline" promises benefits, the barges are forecasting. (Table 1)

Zooming into the inland port itself, we can establish the following market structure within the agency of the port itself. The harbour covers three different business segments, each of them operating in the port. (Bellendorf, J. 2010)

The infra-and superstructure is the most classical business area of the port by a total revenue of 34, 8 Mio Euro in 2009, 9% more than in the year 2008 (Annual Report 2009). This is also during the economic crisis a quite stable segment, almost showing no retracements. The infrastructure concentrates on room used for business purposes; the superstructure on the other hand is deliberating in the warehousing industry. This area is mostly used for logistical intentions. As said before, the port of Duisburg established itself to European leading position in logistical services (see Logport). This fact leads to the stable condition during the crises and no significant impact has followed, yet. The second segment consists of traffic and freight traffic which suffer the most. Although in the beginning of 2008 the port of Duisburg writes a growth in freight transportation, in the end of 2008 the picture has turned. (Annual Report 2009) Especially for the inland water navigation system, this is a forecasting effect. The inland shipping sector is part of the global supply chains. Inland navigation is constantly confronted with a changing environment that aims at optimizing processes in order to satisfy customer needs. In other terms of reducing costs, while offering faster and more reliable services are putting constant pressure on the industry. (Deutsches Verkehrsforum, 2006) Duisburg as an inland harbour and its different transport segments are part of a fragmented market. Small and big entrepreneurs are facing the challenges of the economic environment. This part of the market structure is increasing the competitive edge as more companies on the market find themselves in a constant process of enhancing their services and prices compared to their competitors. Due to the increase complexity of

global supply chains, these companies more and more organize logistics needs (positive effect for Duisburg) of the final customer. This is more in concern to the market for container transport. However, for the bulk shipping sector it is slightly different. As large industrial cooperations mostly generate the final demand for bulks, the power on the demand side is more concentrated than in container transportation.

Duisport Packaging Logistics develop logistical solutions, especially for firms operating in mechanical engineering and plant constructions and is market leader in this domain. Packaging logistics composes a huge quota of yearly revenue, up to 500 Mio tonnes of general cargo is transhipped over the world.

Until now (first quarter 2010), Duisburg still recognizes a rise by 6% of each year from 2007 onwards (Annual Report 2009). But this market segment will probably not stay spare during the year 2010, as Mr. Jan Bellendorf has explained. Directly after the crunch of the economic crisis, companies still need to export the orders of earlier calls, but from 2008 onwards the orders become less and the collision by the crisis will take place at the minimum of one year later. Further conclusions in that segment can be drawn by the end of 2010, after the sales volume has been known.

4 STATING THE PROBLEM

Through the following paragraphs, the problem of how the crisis is influencing the sales volume is analyzed, with respect to the port's transportation modes and the differentiation in its market structure. Thereby, it lays the foundation of the analysis and policies described in the next two chapters of the assignment.

4.1. How did the crisis influence the inland hub

After the breakdown of the global financial system in fall 2008, the world economy dropped down into a credit crunch. According to its consequence, companies have difficulties in their viability and obtaining loans necessary to carry out their businesses. As said several times in earlier chapters, the area of Duisburg with the port as its centre is a very famous area in urban and rural conglomeration. In the Ruhr Area, huge companies like Thyssen Krupp and Kühne & Nagel (Hall, P. & Pain, K. 2005) benefit of its location but do suffer by the impact of the crisis. For the port itself, the expected impact was quite spared in comparison to the several acting companies.

Accordingly, demand for raw materials and finished goods have declined sharply. But, due to the derived nature of the demand in transport, this transportation modes were hit, especially barge transportation which is one of the harbour's main transportation modes. Transport firms, therefore, cannot create their own demand but have to rely on the producers of the goods that need to be transported. This concerns transporters of containers, liquid and classical bulks, like coal, mineral oil, nutrient resources and discarded metal.

If we draw some expectations before analyzing the basic facts I would expect significant changes in revenue and volume of the port of Duisburg during the economic crisis. Companies operating in the port and its surrounding are the main initiators for the expected drop in demand. If the operating companies get less offers it results in less calls for the port itself and less operating activities can take place in the Duisport-Group. As a leading inland hub, the port of Duisburg is definitely depending on the performance of its directly connected seaports. If we take a closer look at some relevant facts of the sea hub Rotterdam, the annual report states that its throughput has fallen by 8,1% (Port

Statistics Rotterdam, 2009) compared to the year 2008 which is due to the economic crisis in fall 2008.

Due to the fact that the inland hub of Duisburg partly relies on the calls of Rotterdam, the expectation draws a decrease in revenue and a drop in demand as well. This involves the activities between the maritime deep-sea port Rotterdam and inland freight transport in their continental network. The crisis crunch lead to the following assumption of the port of Duisburg: decrease in demand and volume leading to a decrease in revenue and throughput.

Table 3 shows that particularly the drop of bulk and general cargo significantly dropped from 2008 to 2009. Thyssen Krupp, Germany's biggest steel producer struggles due to the low production level.

	2009 in Mio t	2008 in Mio t	2007 in Mio t
Coal	3,7	6,2	6,8
Mineral oil	4,4	4,6	4,2
Nutrient resources	0,9	1,0	1,3
Discarded metal	1	1,5	1,6
Bulk Cargo	10,0	13,3	13,9
Iron/ Steel	3,2	5,2	5,8
Container	9,6	9,8	8,9
General Cargo (packaged goods)	10	15,0	14,7
Total Barge - and Rail Transport	22,8	28,3	28,6

Table 3: Bulk and General Cargo via barge and rail in Mio t 2007-2009 (Source: www.duisport.de)

Rotterdam is the *biggest bulk port* in Europe and even more directly effected than Duisburg. The inland hub of Duisburg is *the biggest inland port* in Europe, but for Rotterdam as a deep-sea port also a strategic important hinterland hub. Duisburg is the turning platform for the traffic volume between the sea port Rotterdam and Duisburg. Two third of all containers transhipped over sea, firstly arrive in Rotterdam and Antwerp and 80% of them roll further to the Ruhr Area; eventually 60% end in the

inland hub of Duisburg. (Der Westen. 2007) That is decisive for expanding in its capacity over the container terminal in the nearby future.

But because of its cooperation between sea-hub and inland hub, they do suffer quite equally. (Bellendorf, J. 2010) Duisburg as the centre of the Ruhr Area is the main gateway for metal inputs for these companies.

The overcapacity as demand decreases rapidly is followed by excess supply which has caused prices to drop. This affects the operating firms and is followed by the decreased cargo in Duisburg's harbour basins. Duisport-Group can only be efficient enough if the operating companies receive enough calls for their transshipment over several transportation modes.

Nevertheless, for being profitable, a company needs to load the transportation modes with at least 75 % to cover all incurred costs. (Korver et al. 1993) This cause is basically seen in the bulk and general cargo terminals of Duisburg transported by barges and rail. But it is also significant that the problem already occurred before the definite crunch in 2008. Table 3 clearly shows a decrease from 2007 onwards.

5 ANALYSIS

After section three, it becomes clear that not the port itself suffers, but the transportation modes acting in the hinterland of the port and which depend on the performance of the companies operating in the port. In this chapter, an analysis is given in respect to its impact followed by the crisis. The analytical statements are more in concern to the revenue and expense of the port, taking into consideration Duisport-Group.

5.1 Bulk and General Cargo

Due to the fact of an immense decline in demand, less bulk and general cargo has become transhipped over the last three years. Whereas in 2007 the shipment of total coal still reached 6,8 Mio t (Table 3), in 2009 it has decreased by 3,1 Mio t. Duisport's-Groups main business is the coal mining industry due to its location of the European main economical and manufacturing area. Bulk cargo in total has a decrease by around 3,9 Mio t (Table 3). General Cargo on the other hand has overall the same effect of a decline from 2007 onwards. But after zooming into the division of general cargo, iron, on one side and container on the other; a positive effect can be drawn. Whereas iron and steel illustrate a deep drop as well, container transshipment confirms a less suffering situation. Just a slightly decrease from 2008 to 2009 is strained. (Table 3) Despite a hard economically situation in the first quarter of 2009, the container handling increased up to 1 Mio TEU. (Kahler von, M. 2009)

The words by Erich Staake, chairman of the board of management Duisport-Group, quote the following in the context: "With our successful increase in container TEU and combined transport, despite the economic crisis it was partly possible for the Duisport - Group to compensate the negative impact on coal and mineral oil." Bernd Reuther (Duisportal Press, 2010) and Julia Crefeld (Department for Marketing and Press Duisport) have affirmed this repercussion.

5.2 Total revenue

With a consolidated turnover, including the revenue by strategic cooperations, of 145 Mio (2009) Euro, the Duisport Group could boost its total operating performance again by 4,6 % compared to 2008. (Table 4)

	2009 in Mio €	2008 in Mio €	2007 in Mio €
Revenue	145,2	139,2	128,4
EBITDA	27,3	25,2	22,9
Net Equity	103,3	99,2	92,6

Table 4: Total Revenue Duisport 2007-2009 (Source: www.duisport.de)

The earnings before interest, taxes, depreciation and amortization (EBITDA = Revenue-Expenses) has risen up to 27,3 Mio Euro in 2009. (Table 4) This positive result, even in economically hard times, is due to its organized strategy in consequently expanding business segments. In Rotterdam on the other hand, the EBITDA fell by 1,4% in 2009 (Port Statistics Rotterdam, 2009). This leads to a surprising positive effect on the performance of the port of Duisburg. Other facts which contribute to this situation are several provisions taken early enough to overcome and abscond the economic crisis. So, considering the Duisport-Group and not its sales volume due to its transportation modes, they overcome a decrease in revenue and therewith the impact of the crisis is less than expected. Jan Bellendorf, head of corporate development, confirms this statement and adds that Duisport-Group has its own risk management to analyze risks early enough and to prevent the harbour of extend to the crisis. To strive the crisis in the year 2010, the port of Duisburg will continue in its successful path of tightening its market position, increasing their enterprise value and reaching their financial objective target. (Kahler van, M. 2009)

5.3 Container traffic - forecast and reality

As Mr M von Kahler already has stated in his press article for the port in January 2010, the container flow in the port increased up to 1 Mio TEU and does not point out any negative changes due to the crisis. Mr. Bellendorf affirms this proposition a second time and concludes it with a major factor that container traffic means investing in a sustainable future for the port.

However, container traffic therefore deserves special attention and is seen as a success story. Figure 5 exemplifies that in the area of optimal waterway infrastructure (Germany, Netherlands and Belgium), container shipping even broke the optimistic view of growth.

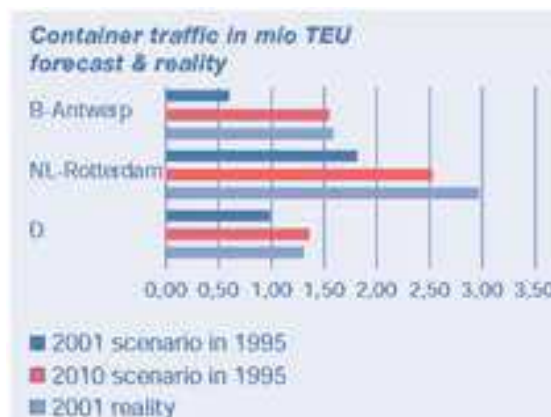


Figure 5: Container Traffic in Mio TEU, forecast and reality (Source: Konings 2003)

Figure 5 compares the container traffic of the major sea hub Rotterdam to Antwerp and Germany, whereas the outcome for Germany basically focuses on the port of Duisburg due to the close network of inland waterways. For Antwerp and Germany the number of container equalled the forecast for 2010. For the port of Rotterdam, however, reality even exceeded the expectations. In addition, the “trend will be the same for Duisburg”, so J. Bellendorf. New forecasts predict that by 2010 container transport by facilities along inland navigation increased by 40 % (Konings, R. 2003) and the modal share continuously rise. (Visser et al. 2006)

For the port of Duisburg, this means to look a step further, that the beneficial trend after the economical crunch does not lead to shortcomings in capacity along the harbour. The crisis does not have a negative influence; ever increasing calls lead to exceed the forecast.

6 POLITICAL ENVIRONMENT

Seeing the influence of the economic crisis on the port of Duisburg in a political view, Mr. Jan Bellendorf has some acknowledgements to the municipalities and the government. It is clear that the port of Duisburg is the most important harbour in the Rhine-Ruhr Region to regulate their future profits. Nevertheless, there are always political procedures which underline these. The municipalities of Duisburg, as well as from the federal state “Nordrhein-Westfalen” and the German government should work on constant improvements on the infrastructure. These regional and European initiatives should work in cooperation and should consolidate some processes. The project on the “Betuwelijn” as described in 2.3 is the next step. Political institutions should form a better consolidated segment in realizing the last extension of the railway track to the port from the Dutch-German border.

Furthermore, the port itself does not receive any special subsidies but profits by several research projects by the federal government and educational institutions.

To overcome economic situations like in fall 2008, Duisport-Group introduced a special department dealing with risk management to be aware of risks and chances. A basis for sustainable development of Duisport-Group is build which incorporates strategic orientations and operating businesses. This guarantees optimal control of business processes. It is in mind that risks will be reduced through the implementation of counter measurements which diminishes the risk volume.

This should be a save way for the future to stabilize the position in the market, increasing the company’s value and to reach its financial goals.

7 CONCLUSION

In this assignment, the impact of the current economic crisis on the inland-hub Duisburg in Western Europe has been explored. After a brief overview of the port of Duisburg itself including some relevant characteristics and identification of the influence of the crisis in the port as an inland-hub in respect to its transport segments and total turnover has been presented and analyzed.

Germany has become Europe's main transit country and its inland ports (Duisburg), and seaports (Rotterdam) in the direct hinterland, play a central role as gateways and distribution centres. Due to the ongoing economic crisis, the expectation was a lack of revenue caused through a decrease in demand. But this effect has been analyzed and it is the case that through several provisions Duisport-Group was aware at an early stage and it was possible for the Duisport-Group to overcome a big recession. The bulk and general cargo sector affirms significant negative changes in their sales volume but the container traffic and total revenue represent an increase till the first quarter of 2010. So, Duisport-Group stays quite spare during and after the crunch in 2008. This is due to the fact, that the port itself uses all facilities and geographical abilities they have, to prevent recessions.

If we consider Figure 1, the different branches of the Duisport-Group, we can finalize, that the infra and superstructure have increased their total revenue despite the crisis. With its special structure of the Duisport-Group it is possible for the port to compensate little drops in other segments and lead the port having an appealing trade cycle. Beside several subsidies by the government, it was possible to recover fast in 2009 and reached a growth in sales by 4% (Annual Report 2009).

Although the Duisport-Group did draw decreasing changes in their traffic volume as stated in chapter two and three, it was possible for the Group to compensate it with its new sector of Packaging Logistics and Duisport Facility Logistics. This is the main difference to the sea hub of Rotterdam who did draw negative changes after the crisis crunch. So, it was possible for the Duisport-Group to increase their container turnover.

The Duisport-Group focused on different branches during the crunch and afterwards with the help of their risk management to overcome the big recession compared to other inland harbours like Antwerp where the container turnover dropped significantly.

Also the hinterland sea hubs contribute to this positive effect as Erich Staake (CEO Duisport-Group) states: “The importance of our location as a hinterland distribution centre for the western sea ports Rotterdam and Antwerp will bring us further growth in container trade over the upcoming years.” This statement is documented in the forecast of container traffic in chapter four. Duisport-Group always focuses on the future development and wants to look beyond and one step further.

BIBLIOGRAPHY

Annual Report of the Duisport Group 2007

Annual Report of the Duisport Group 2008

Annual Report of the Duisport Group 2009

Attachment 1: Duisburg's combined Water and rail Links

Attachment 2: The Port of Duisburg and its environment hinterland accessibility

Attachment 3: Discussion questions "Duisport Group"

Anonmous 1 (1999). The Rhine-Ruhr Port of Duisburg. *Logistics Management and Distribution Report*, Vol. 38, Iss. 7

Bellendorf, J. (2010). Pers. Comm. Head of Corporate Development Duisport Group

Crefeld, J. (2009). Pers. Comm. Department for Marketing and Press, Duisport Group

Debrie, J. Gouvernal, E. (2006). Intermodal Rail in Western Europe: Actors and services in a new regulatory environment. *Growth and change*, Vol. 37, No. 3, pp. 444.459

Der Westen. (2007). Duisburger Hafen als Drehscheibe. *Portal der WAZ Mediengruppe – Wirtschaft und Finanzen*

Deutsches Verkehrsforum (2007), Ten Criteria for Supply Chain Security. *Geneva: Economic Commission for Europe – Inland Transport Committee*

Duisportal 1 (2010). Website Duisport viewed on 31st May, 2010:
http://www.duisport.de/de/duisport_gruppe

Duisportal 2 (2010). Website Duisport viewed on 31st May, 2010:
http://www.duisport.de/de/logistic_transport/allgemeines

Duisportal 3 (2010). Webiste Duisport viewed on 31st May, 2010.
http://www.duisport.de/de/duisport_gruppe/gesellschaften

Duisportal 4 (2010). Website Duisport viewed on 1st July, 2010.
http://www.duisport.de/de/logistik_transport/allgemeines/world_tour/index.p hp

Hall, P. & Pain, K. (2005). Rhine Ruhr - Qualitative analysis of service business connections. *Institute of Community Studies/The Young Foundation & Polynet Partner Members*

Hesse, M., (2005). Das Ruhrgebiet als Lagerhalle? 'Logport' oder vom Versuch, die moderne Warenwirtschaft zu zähmen. *Raum-Planung*, pp. 236-240

Metropole Ruhr 2010. Der Rhein-Ruhr Hafen Duisburg. (2010) *Verkehr und Logistik – die Häfen Duisburg und Dortmund*, pp. 1-5

Ferraris de, G. (2008). Investing in Waterways is investing in sustainable Future. *Inland Navigation Europe - INE*

Kahler von, M. (29.01.2009). Press article Duisportal

Konings, R. (2003), Network Design for Intermodal Barge Transport. *Transportation Research Record: Journal of the Transportation Research Board*, pp. 15-25

Korver et al. (1993). Relationship between costs, revenue and loading degree

Legendijk, A. & van Houtum, H. (2001). Contextualising Regional Identity and Imagination in the Construction of Polycentric Urban Regions: The Cases of the Ruhr Area and the Basque Country. *Urban Studies*. Vol. 38, No. 4, pp. 747-767

Port Statistics of the Port of Rotterdam 2009, Annual Report 2009

Reuther, B. (24.03.2010), Press Article Duisportal

Rodrigue, J.P., Debie, J., Fremont, A., Gouvernal, E. (2007). Functions and Actors of inland ports: European and North American Dynamics. *Department of Global Studies*, pp. 1-22

Schwarz, F. Dr.-Ing., (2006). Trimodaler Containerumschlag-Hinterland-Terminals-Typen und Umsetzung. *FOCUS Hafentechnik*, pp. 1-20

Trepins, D. (2006). Germany: Europe's Premier Hub for Logistics and Transportation. *Journal: Logistics Management 2006*, vol. 45, pp. 1-7

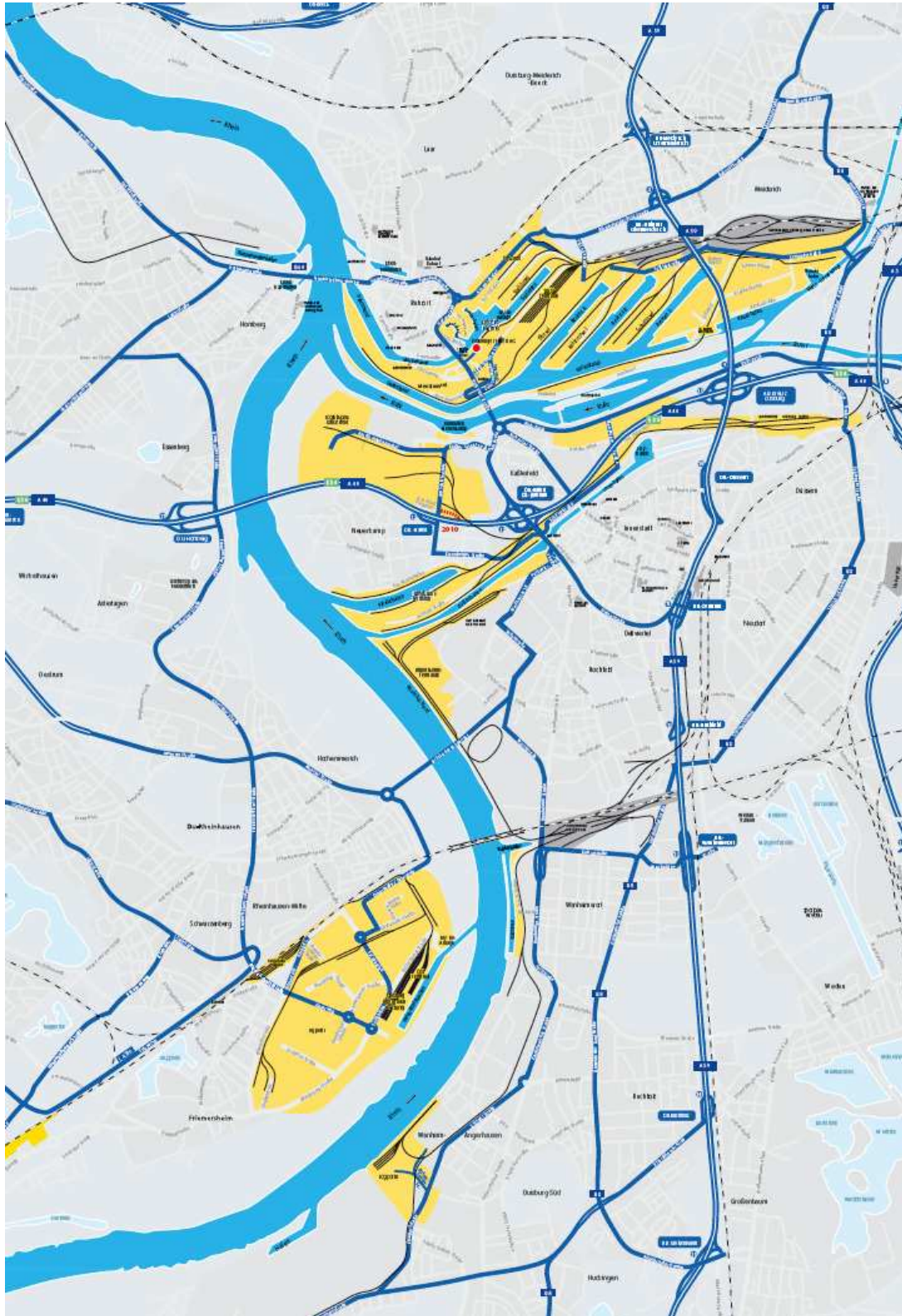
Visser, J., Konings, R., Pielage, B. & Wiegman B. (2006), A new hinterland transport concept for the port of Rotterdam: organizational and/or technological changes?, *Delft: Delft University of Technology*

Wakeman, T. (2008), Marine Transportation of International Freight for the Northeast Corridor, in anticipating 2025 in Northeast Corridor Transportation: Aerial, Highway, Marine, and Rail Technologies and Linkages. *Institute of Public Administration, Public Policy Forum, University of Delaware, Newark, DE*. Pp. 38-59

Attachment 1: Duisburg's combined Water and rail Links



Attachment 2: The Port of Duisburg and its environment hinterland accessibility



Attachment 3: Discussion questions of personal communication with Mr. Jan Bellendorf of the “Duisport Group”, Head of Corporate Development

- 1) The port of Duisburg is located in the heart of the „Blue Banana“. Is it a private property or institution by the state?
- 2) How does the market structure look like?
- 3) How many terminals does it consist of? Where do they ship to and how much in relation to their transportation modes?
- 4) Revenue and expenses in comparison for and after the crisis. Development from 2007 onwards
- 5) Geographical barrier in respect to the served hinterland.
- 6) Rotterdam seen as biggest sea-hub. What about competition in the shared hinterland?
- 7) Economic Crisis 2008. Importance and impact of the crisis on the market segments.
- 8) Which terminals are affected and suffer most?
- 9) Is it controlled by the sea hub Rotterdam? How?
- 10) Was sind die bedeutendsten Unterschiede zwischen Rotterdam und Duisburg? Verfrachtung.
- 11) Politics: Are there any regional and EU policies to prevent economic crunches in the future? Any subsidies? Might consolidation be an answer?
- 13) What makes the inland hub of Duisburg unique?
- 14) What are the biggest problems occurring the inland hub?