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Oversize transport strategy for the region Mecklenburg-Vorpommern

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Kristina Hunke

Oversize Transport Strategy for the Region Mecklenburg-Vorpommern

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Preface

Logistics has been one of the most booming sectors in the Baltic Sea Region (BSR) till begin of the financial crisis so effective transportation systems are essential to Europe's prosperity, having significant impacts on economic growth, social development and the environment. The economies of the Baltic Sea Region are rapidly growing and forecasts show that this trend will continue and since 2010 the figures are showing a recovering in BSR logistics by finding back to the development started after the EU enlargement in 2004 so that the expectations for future are still enthusiastic. Alongside this development, the transport volumes for oversize cargo are growing due to increase demand across the Baltic Sea Region.

Wismar University took part in several European projects with focus on BSR logistics. It started with two projects "LogOn Baltic" and "InterBaltic" in the frame of the BSR Interreg IIIB Programme. Within the Interreg IV Programme the most important projects are the Southern Baltic Sea Interreg IVA – project "Oversize Baltic", the Interreg IVB – initiative "East West Transport Corridor II" and the Interreg IVB project "Baltic.AirCargo.Net".

This paper will propose the Oversize Transport Strategy for the region of Mecklenburg-Vorpommern. The development of this strategy was the initial part in the "Oversize Baltic" project. The presented material is based on project and research results and the results developed in the Master's thesis "Regional Oversize Transport Strategies" of Kristina Hunke which appeared in July 2010.

List of Abbreviations

A	Name of motorway (German: Autobahn)
AG	Public company (German: Aktiengesellschaft)
a.m.	before midday (Latin: ante meridiem)
ARA	Ports of Amsterdam, Rotterdam and Antwerp
B	Name of federal road (German: Bundesstraße)
bil.	Billion
BSI	Federal office for Information Security (German: Bundesamt für Sicherheit in der Informationstechnik)
BSR	Baltic Sea Region
B.V.	Company with limited liability (Dutch: Besloten Vennootschap)
BY	Belarus
CO_2	Carbon dioxid
EADS	European Aeronautic Defence and Space Company
e.g.	for example (Latin: exempli gratia)
etc.	and so forth (Latin: et cetera)
ETCS	European Train Control System
EU	European Union
GDP	Gross domestic product
GmbH	Company with limited liability (German: Gesellschaft mit beschränkter Haftung)
h	hour
HCS	Heavy Cargo + Service
HLTD	Heavy Lift Terminal Duisburg
ibid.	the same place (Latin: ibidem)
i.e.	this means (Latin: id est)
km	Kilometer
KZ	Kazakhstan
LHM	LIEBHERR port mobile crane
LV	Latvia
m	meter
m^2	square meter
MMG	Mecklenburger Metallguss
MV	Mecklenburg-Vorpommern
MW	Megawatt
NATO	North Atlantic Treaty Organization
no.	Number
p.m.	after midday (Latin: post meridiem)
PS	Horse power (German: Pferdestärken)
RoRo	Roll on – Roll off
RUS	Russia

SE	European Company (Latin: Societas Europaea)
StVO	Road Traffic Regulations (German: Straßenverkehrs-Ordnung)
StVZO	Road Traffic Licensing Regulations (German: Straßenverkehrs-Zulassungs-Ordnung)
t	ton
Tmil.	Thousand million
UA	Ukraine
UN	United Nations
UZ	Usbekistan
VEMAGS	Procedure management for oversize transports (German: Verfahrensmanagement für Großraum- und Schwertransporte)

1. Introduction

The enlargement of the European Union to the East in 2004 opened the market and trades to Poland, the Baltic States and also Russia. New trade routes were found and the demand for the exchange and transshipment of goods from and to the Eastern nations increased. In general, finished or semi-finished products are shipped to the east whereas raw materials are shipped from the Eastern nations to Western Europe. For example, the demand for the usage of renewable energy power plants in Eastern Europe increased enormously in the last years but, unfortunately, the industry of these states cannot design and produce these innovative power generating systems yet. Therefore large generators and windmills need to be shipped eastwards to the Baltic States. At the first try this caused a lot of bureaucracy and losses of time and money because of the reconstruction and newbuilding of new roads and bridges, long permission processes and the inexperienced personnel of the transport operators. According to the mistakes which were made during this transshipment project the Klaipeda Science and Technology Park initiated a new EU project "Oversize Baltic".[1] The objective of this project is to establish a regional oversize transport strategy for the South Baltic Sea Region. In the frame of this project work also a regional strategy for Mecklenburg-Vorpommern needs to be written. The current thesis took this topic and designed such a strategy.

Mecklenburg-Vorpommern is a very important transit market for these oversize transports to the Eastern countries through its logistical location and connections to the new EU member states. Additionally to the increasing demand of the regional oversize transports the general cargo (single segments of ships, power plants, machines, etc.) worldwide becomes bigger and heavier in the last years.

Due to these facts a new oversize transport strategy for the region Mecklenburg-Vorpommern will gain high importance in future years. The infrastructure will be adjusted and improved, as well as the safety of oversize transports. Furthermore, the public will benefit from it through low congestion on roads and railways, lower emissions due to innovative transport routes and means, and consumer cost savings due to economical transport solutions.

2. Legal framework

This chapter describes the existing legal basis for oversize transports. There are regulations of the EU which should apply to all member states; however, every member state realizes these regulations in a different way. Since this thesis focuses on oversize transports in the region Mecklenburg-Vorpommern the legal framework of Germany only is explained.

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1 Klaipeda Science and Technology Park, 14.07.2010.

2.1. Existing legal basis

There are a number of legal requirements concerning oversize transportation in Germany. Such transportations diverge from the norm of “Straßenverkehrs-Zulassungs-Ordnung (StVZO)“. It is a regulation based on § 6 “Straßenverkehrsgesetz”, enacted by the Ministry of Transport, Building and regional Development.

Oversize transportation comprises of four types:

1. large measurements and small weight,
2. heavy haulage (small measurements but very high weight),
3. combination of 1. and 2. and
4. transport of long freights (more than twenty meters).

They cause immoderate using of roads and so they need a permission according to § 29 (3) StVO. Basis for this permission is an exception permit pursuant to § 70 StVZO. Depending on size and freight escort vehicles or police escort are required.

Above that, such transports are just allowed at specific periods. During holidays use of several motorways is principally not allowed. These periods are called „off-time“. Oversize transports are allowed to proceed only between Monday and Friday 9 a.m. and 3 p.m. Nearly all transportations with a width above 3.2 meters have to be realized during the night between 10 p.m. and 6 a.m.

Oversize transports must have a valid permit which has to be obtained from the authority in charge. For this purpose a request with addressor, receiver, measurements of loads, weights, vehicle registration number, axial distances and axle loads, number of wheels per axle, and description of the route have to be conveyed. The agency gives this request to consultation and waits for agreement and issues the permission, which is valid until the end of the following month. In Germany it is common that oversize transport companies have a continuous permit for one year.

Table 1: Permissible vehicle heights, widths and lengths

Permissible vehicle heights, widths and lengths:

vehicle type	***height***	*comment*
motor vehicles and trailers	4 m	
vehicle type	***width***	*comment*
vehicles generally	2.55 m	
refrigerated vehicles	2.6 m	
implements, special vehicles, tractor units	2.55 m	**3 m with accessory equipment for agriculture and forestry or road maintenance, e.g. sowing machine**
vehicle type	***length***	*comment*
single vehicles	12 m	
trailers		
towing vehicle with one or two trailers	18 m	
towing vehicle and trailer (with adherence of partial length)	18.75 m	
articulated vehicle (tractor + trailer)	15.5 m	
articulated vehicle (with adherence of partial length)	16.5 m	

Table 2: Permissible axle loads

Permissible axle loads:

axial structure	***axle load***	*comment*
single axle load	10 t	**generally**
	11.5 t	**powered**
double axle load		**axial distance**
towing vehicle	11.5 t	**< 1 m**
	16 t	**≥ 1 m and < 1.3 m**
	18 t	**≥ 1.3 m and < 1.8 m**
	19 t	**≥ 1.3 m and < 1.8 m drive axle airsprung or double wheeled (2 x 9.5 tons)**
double axle load		**axial distance**
trailer	11 t	**< 1 m**
	16 t	**≥ 1 m and < 1.3 m**
	18 t	**≥ 1.3 m and < 1.8 m**
	20 t	**≥ 1.8 m**
triple axle		**axial distance**
	21 t	**≤ 1.3 m**
	24 t	**> 1.3 m and ≤ 1.4 m**

Table 3: Permissible total weights (single vehicles)

Permissible total weights (single vehicles):		
vehicle type	***weight***	*comment*
generally 2 axes motor vehicles or trailers	18 t	
3 axes	motor vehicle: 25 t trailer: 24 t	
4 axes	32 t	**2 double axes distance centre at least 4 m**
from 4 axes on	32 t	

Table 4: Permissible total weights (vehicle combination)

Permissible total weights (vehicle combination):	
vehicle type	***weight***
less than 4 axes	35 t
4 axes	36 t
from 4 axes on	40 t

Table 5: Permissible dimensions of vehicles with load

Permissible dimensions of vehicles with load:		
vehicle type	***dimensions***	*comment*
vehicles with load generally	width: 2.55 m height: 4 m length: 20.75 m	
	load overhang backwards: 1.5 m	**route until 100 km up to 3 m**
	load overhang forwards: 0.5 m	**at a height of 2.5 m**
vehicles for agricultural and forestry purposes	width: 3 m height: 4 m length: 20.75 m	**at agricultural and forestry products or implements**
	load overhang backwards: 1.5 m	**> 4 m at agricultural and forestry products**
	load overhang forwards: 0.5 m	**route until 100 km up to 3 m** **at a height of 2.5 m**

The costs for a permit of an oversize transport differ very much. In some regions they vary between 26 € and 102 €[2] depending on route and vehicle, in other regions from 10.20 € and 767 €[3]. The same applies to a permanent permit, but at least they cost twice as much as the single permits.

2 Stadt Essen, 18.05.2011.

3 Sächsische Staatskanzlei, 18.05.2011.

Additionally to the costs for the permission the actual transport includes also some fees. These are for example the fees for the accompanying of police during the whole transport process. The fees for the police vary in every municipality. The average price is around 5 € per every kilometer of transport.

2.2. Possible penalties

The regulations of chapter 0 describe the requirements on cargo transports and oversize transports. If the dimensions of the cargo or the vehicle exceed the standard dimensions a transportation permission is necessary. If the truck driver or the operator does not apply for such a permission or did not get an approved permission and conducts the transport anyway he will risk a penalty. The penalties are defined in the list of traffic offence penalties (German: Bußgeldkatalog) no. 104 and 193. They vary from 40 € to the immediate stop of the transport and the suspension of the driver's license. If the vehicle with illegal dimensions causes an accident or damage of the road or any other construction the penalties will be much higher since they will be treated by court.

3. Current analysis of the regional oversize transport market

This analysis focuses on the regional transport market Mecklenburg-Vorpommern. However, Mecklenburg-Vorpommern often cannot be seen as a separate and independent region so it is handled as a part of Germany in its intirety and the connection to the main city regions Hamburg and Berlin and the Baltic Sea Region (BSR).

3.1. Description of the oversize cargo

In the following some examples are given for typical oversize cargo for this region, Mecklenburg-Vorpommern and connection to the BSR.

Windmills:

The transport of a windmill from the construction side to the final location can cause some logistical problems regarding the dimensions and weight of the separate parts of the windmill. All roads, curves, bridges and bottlenecks must be proven even before starting the transport. Often even a road must be built only for the transport of windmills. The transport requires a large amount of bureaucracy to get all permits (for the transport itself, the reconstruction of bridges or roads, etc.).

Figure 1: Transport of windmill

The housing of the windmill is normally finished and can be transported completely on a truck. The problem with the housing is its weight. A housing of a small windmill weights 20 tons, of larger windmills even up to 70 tons. The dimensions and weight increases accordingly to the effective power so that the housing of the future ones can have a total weight of more than 100 tons.[4]

Most of the towers which are installed in Germany are steal towers. These towers are divided into single segments with a length of 20 to 30 meters each. A truck on the road can handle a length up to 22 meters. But anyhow roads cannot be used without any permission or blocking of the road. Another challenge is the dimension of the lower tower parts of large windmills. Normal bridges have a height of 4.0 to 4.2 meters for transport on roads, but the diameter of a tower is already about 4.0 meters. That makes the transport via road very complicated or even impossible.

One solution is the transport via waterways or, if possible, (on-shore) the construction of such parts directly at the final location.

The transport of the blades is complicated due to the length of the blades. A blade can have a length of 30 to 35 meters. In that case all blades can be transported on a truck, but if the blades are even longer (for larger windmills up to 45 meters) the transport is nearly impossible especially in the mountainous parts of the region. Another challenge is the width of the blades which can be more than 4 meters. For example a 4.5 MW windmill has a width of its blades of 5.8 meters. These parts cannot be transported under bridges on roads. Some vehicles have a special construction to change the blade to the horizontal in order to make the transport possible.[5]

Cranes:

Cranes are oversize cargo due to their weight and also the length of the extension arms. Cranes, especially for the maritime industry, are designed for the handling in ports, to load and unload cargo from ships. However, sometimes they are built directly on a ship in order to work offshore. The example of the LHM 400 demonstrates the difficulties of the transportation of cranes.

The port crane LHM 400 of LIEBHERR is designed to load and unload

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4 ADEV Windkraft AG, 06.05.2010.

5 Bundesverband Windenergie. e.V. (1), 06.05.2010.

general and mass cargo but also containers and heavy cargo. The crane has a lifting capacity of 104 tons and an overhang of 48 meters. The LHM 400 should be transported from Nenzing (Austria) to Ireland via the port of Mannheim in Germany.

The crane had two extension arms of 25 meters each, a tower of 50 meters length, 4.2 meters height and a weight of 120 tons. The housing and engine each had a length of 35 meters, width of 6 meters and a weight of 140 tons.[6]

Figure 2: Transport of ship's crane

The LIEBHERR construction plant in Rostock provides the shipping of their cranes directly from the quay to barges which can deliver the cargo to larger ports like Hamburg or even across the Baltic Sea. Furthermore, the cranes which are designed for offshore activities are built directly on the delivered vessel in the port of Rostock.

3.2. Transport means

Another classification of the oversize transport can be made according to the means of transport used in the infrastructure required. On this basis it can be distinguished between road transport, rail transport, inland navigation, maritime transport, and air transportation.

Roads:

Roads are the transport means which allow a transport to almost every corner of the region. It is the most individual transport means, however very expensive and less effective. The oversize transport on roads must be planned and organized very well since the same roads are used by the usual cargo transports and public transport, respectively passengers. Therefore, most oversize transports are only allowed during off-times or on restricted parts of a route.

The motorways in Mecklenburg-Vorpommern are very good prepared. Most of them were newly built in the last years and fulfill all requirements for the newest transport density expectations. The following figure shows the cross section of a motorway in Germany. The motorways are divided into two separated directions by a central barrier. Each direction has minimum two lanes which allow a total width of the road of minimum 10.5 m including the

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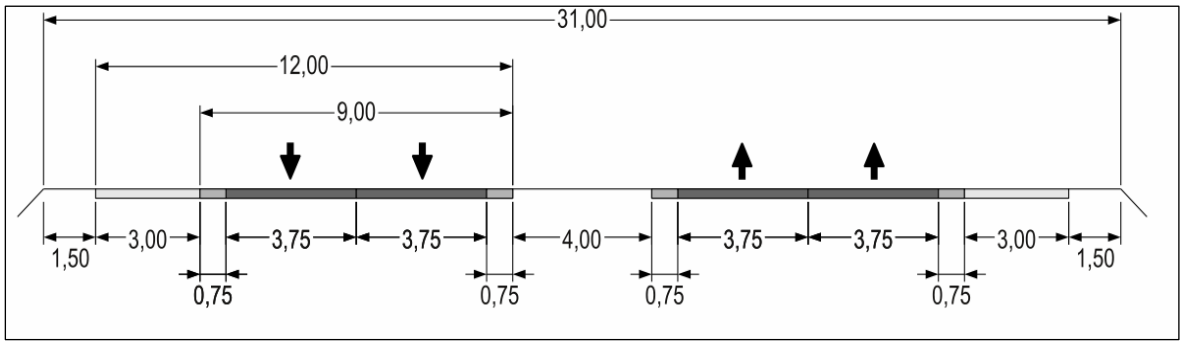
6 Schwerlastinfo.de, 06.05.2010.

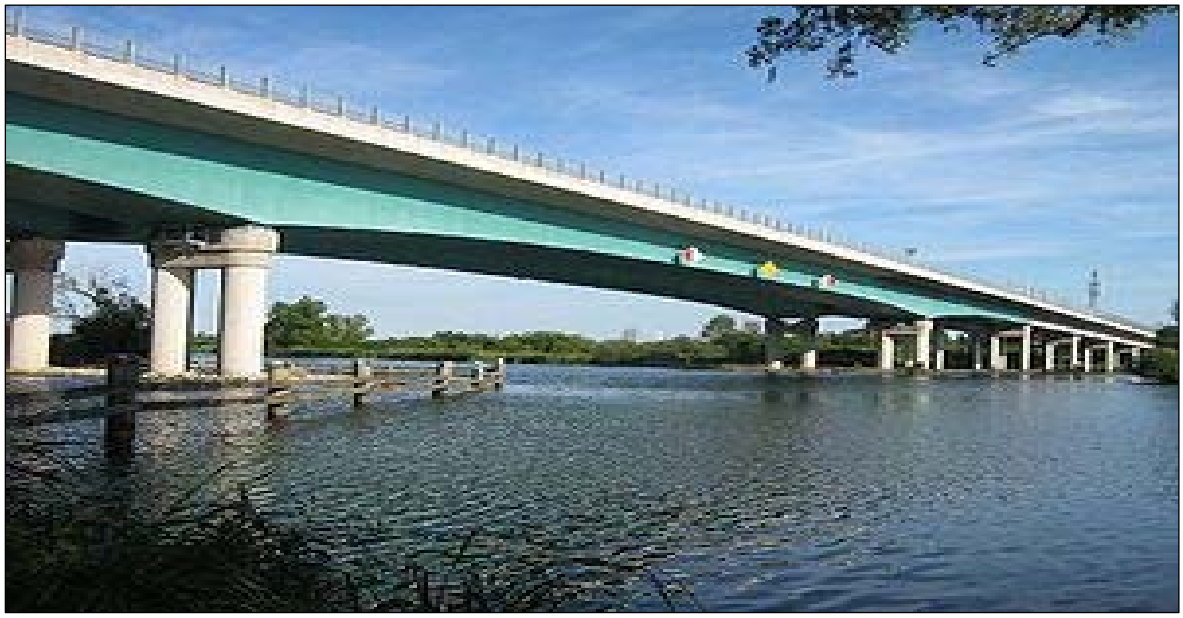
emergency lane.

Figure 3: Cross section of German motorway



Furthermore, since the bridges of the motorways were newly built in recent years, they are in good condition and can handle also very heavy transports. Only in rural areas some bridges are smaller and are not able to cope with heavy and oversize transports.

Figure 4: Bridge over the Peene (A20)



The heights of the bridges across the motorways are minimum 4.2 m plus a safety space of 0.3 m. However, most of the bridges have headroom of 5 m.

Inland water ways:

Inland water vessels are due to their dimension very suitable for oversize transports. The vessel is often the only solution for the transport of very heavy or long cargo. An inland water vessel can hold up to 40 tons/m² or single pieces with a weight up to 1,000 tons without causing blockings or congestion on roads or other infrastructure means.

Also the transport is very safe against damage or loss. This is an advantage for the operator regarding insurance of the high-quality freight. The transport

on inland water ways can cope with very heavy high-tech turbines or windmill blades up to 45 meters.[7]

Railways:

The transport via railways has its advantage in the efficiency since the trains can load more than 1,000 tons at once (up to 72 tons per axle) and transport it over long distances. However, the dimensions of oversize transport on railways are limited through bridges, tunnels, electric power supply cable. So, the possible width is 4.8 m and heights 4.2 m. On national level the transport of goods from one point to another between the handling stations is important which leads to an enlargement of the rail systems in these regions, for example in Rostock. So the railway transport plays a significant role in the hinterland traffic of large German sea ports.[8]

Transport of goods via railways is often only possible at night because of the capacities of the rail tracks which are occupied by public transports most of the day. The transports cause loud noise and do not lead to acceptance by the public, even though the transport of oversize cargo is going slower than other cargo and therefore noise is reduced.

Trains can usually transport oversize cargo only with heavy weights but it is difficult to carry cargo with oversized dimensions because the rail tracks cannot be enlarged easily or combined if there are already double-track parts.

Maritime Transport:

The Baltic Sea is regularly used for oversize transport in short sea shipping. "Short Sea Shipping refers to maritime transportation over relatively short distances where no oceans have to be crossed. The idea encompasses both domestic and international transportation, including pre-carriage and on-carriage, transportation along the coast, to and from islands and into rivers and lakes. […] The most important advantages of Short Sea Shipping are the existence of cheap infrastructure, the possibilities of door-to-door shipments (since the vessels used are capable of reaching the interior via rivers and canals), the low cost of transport together with its high capacity and its environmentally-friendly nature. These must be set against a number of disadvantages, however. It is still a relatively new form of transportation the capacity of which has yet not been thoroughly tested; at present speed and frequency leave something to be desired."[9]

The main flow of goods on the Baltic Sea is eastwards, starting from Rostock or Lübeck to ports in the Baltic States, Russia, or Finland. One of the experts in oversize short sea shipping is the shipping line Scandlines. They deliver heavy cargo to the Baltic States, for example, two 56 m long and 170 tons heavy truck trailer combination from Rostock to Ventspils, the hub of Scandlines in the Baltic States. They use the RoPax-Ferries on their regular

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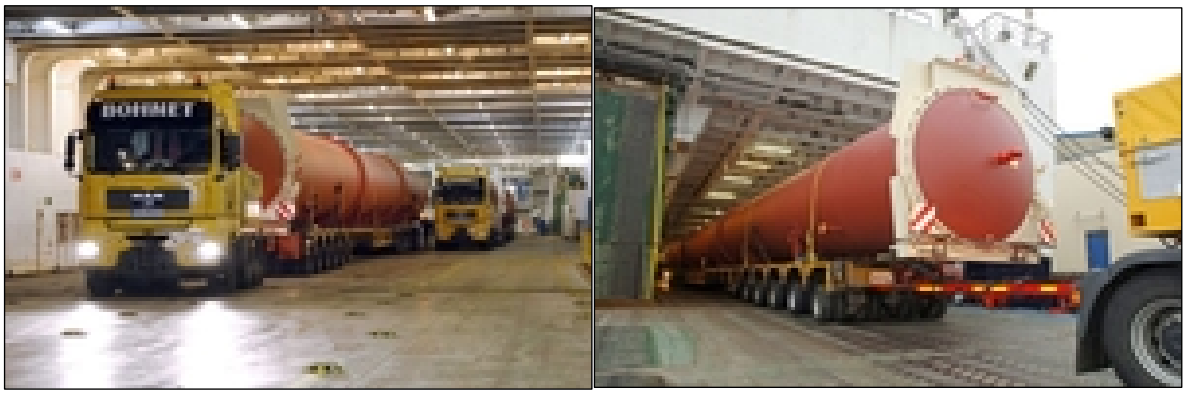
7 Bundesverband der deutschen Binnenschifffahrt e.V. (BDB), 06.05.2010.

8 bahnaktuell.net, 03.06.2010.

9 Blauweens et al., Transport Economics, p. 30.

lines.

Figure 5: Oversize transport on Scandlines ferry



Rostock is strategically well located since it has direct access via motorway and rail connections which are both suitable for oversize transports. Therefore the line Rostock-Ventspils will become the most important connection for oversize transport to the Baltic States.[10]

Air transportation:

Air cargo defines all cargo which is transported with an airplane. No other transportation means has gained so much growth in the last decades as air transportation. One reason for this is the advanced global production of goods and the following transportation of more valuable goods over longer distances. Air transportation has some advantages over other transport means:

- speed – the airplane has the shortest transportation time of all means
- safety – less risky transportation due to short transport times and low handling times
- reliability – very punctual schedules

However, air transportation has also some disadvantages. The transportation costs (e.g. due to the fuel consumption) are much higher than with rail transportation or short sea shipping. Furthermore, the airplane is not environmental-friendly and produces a lot of CO_2-emissions.

Because of the very high cost for the transportation the air plane is only used in extraordinary cases for oversize transport when the cargo is very special and valuable and needs to be transported very quickly. In Germany there is mostly one type of freight air plane which can handle oversize cargo, the Antonov 124 and 225. This airplane has a RoRo-ramp which allows the direct loading with no additional lifting of the oversize cargo. The oversize transportation with this airplane is used only in exceptional cases, e.g. the transportation of an excavator to Siberia in Russia.[11]

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10 ConTraiLo, 05.11.2007.

11 RP online, „Schwertransport durch die Lüfte“, 23.11.2005.

Figure 6: Oversize transport with Antonov 225

Source: Arnold Schwerlast GmbH & Co. KG, 07.07.2010.

As is described above, the transportation of oversize cargo with an airplane is very individual and therefore this transport means is of no importance for the regional transport strategy of Mecklenburg-Vorpommern, though the airport Rostock-Laage could handle such cargo if the demand will arise in the future.

3.3. Regional perspective

Mecklenburg-Vorpommern is situated in the Northeast of Germany directly at the Baltic Sea and in the centre of Europe. Between European centers like Berlin, Hamburg, the Øresund region (Copenhagen), the Baltic States or St. Petersburg, the shortest transport routes for goods are through Mecklenburg-Vorpommern. Mecklenburg-Vorpommern is located at the intersection of two European transport axes: from Scandinavia to the Adriatic in the North-South direction and from the regions adjoining the North Sea to the Baltic States and on into Russia in the East-West direction.

Because of its excellent location at the Baltic Sea, Mecklenburg-Vorpommern benefits from the efficient ports and well-built land connections in the West-East and North-South corridor. This does not only apply to the oversize transports and special cargo transports but also to the main flow of goods and cargo.[12]

In Mecklenburg-Vorpommern 17 large-scale industrial locations and sites for maritime logistics (e.g. shipbuilding yards,[13] offshore pipeline construction companies,[14] and construction companies for ship's engines[15]) have been established. These locations are dominant users of oversized cargo transports. The sites in Mecklenburg-Vorpommern for maritime logistics are located mainly close to the ports and have a large space capacity already today. Ac-

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12 Mecklenburg-Vorpommern – der Logistikstandort an der Ostsee, October 2009, p. 3.

13 Neptunwerft, 13.07.2010.

14 EEW Special Pipe Constructions GmbH, 13.07.2010.

15 Mecklenburger Metallguss, 13.07.2010.

cording to the maritime transport forecast for 2025,[16] prepared on behalf of the Federal Ministry of Transport, total goods handling in the four ports included in the study, Rostock, Sassnitz/Mukran, Stralsund and Wismar, will more than double from just under 30 million tons in 2004 to over 73 million tons by 2025. The assumption is that also the demand for handling oversize cargo will increase in this period.

The infrastructure of the ports will be adjusted to the growing cargo handling numbers as required. At the port of Rostock, for instance, the amounts handled will grow by 4.4 % annually. To accommodate this growth the state government is developing additional areas of 660 hectares in total in the vicinity of ports: 70 hectares for handling and storage areas, 160 hectares for the establishment of service, commercial and logistical enterprises and 430 hectares for the establishment of port-related industry.[17]

Furthermore, Mecklenburg-Vorpommern has three commercial airports for freight traffic. The modern airports at Rostock-Laage, Parchim and Neubrandenburg still have free storage and handling capabilities. Apart from their function as logistics hubs they also offer sites for industrial development (e.g. for oversize transports) as large-scale industrial locations.[18]

3.4. Transit market for oversize transport

Despite all fluctuations in the economy, all forecasts[19, 20] predict a growing amount of goods carried for the next decades. As a result of the increasing transport volume and the partly high haulage costs it is becoming more and more important to remove bottlenecks in the transportation systems. The regions of Skåne, the eastern German federal states, the Adriatic ports as well as numerous other regions in Central Europe therefore offer with their Baltic-Adriatic corridor an attractive alternative to other North-South connections.

The Baltic-Adriatic corridor will offer a modern, versatile, low-congestion infrastructure. Especially intermodal transport benefits from such an efficient supply chain. Apart from ferry and RoRo connections from the ports of Rostock and Sassnitz to Gedser and Trelleborg onward carriage is performed by freight trains for instance from Rostock to Verona and Basel.

Through cooperation in the Baltic-Adriatic corridor further logistical solutions and optimizations will be produced. The logistical offers are to become more efficient, lower in cost and more sustainable, the range of logistical services is to be extended.

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16 Seeverkehrsprognose 2025, April 2007.

17 Mecklenburg-Vorpommern – der Logistikstandort an der Ostsee, October 2009, p. 5.

18 ibid., p. 7.

19 2025 Forecast for Transport Interdependencies across Germany, 14.11.2007.

20 Seeverkehrsprognose 2025, April 2007.

In the years 2009 to 2012 the initiative is supported by the two EU projects SCANDRIA[21] and SoNorA.[22] Both projects are co-financed by the European Fund for Regional Development and focus on the development of the North-South transportation axes in Europe.[23]

4. Practice description

There are many oversize transports in Mecklenburg-Vorpommern and most of them are made without any difficulties. Often they are conducted next to the public transportation, however, sometimes they are more laborious since roads or bridges need to be closed and roads need to be blocked for public transports. To give an insight of what are oversize transports in Mecklenburg-Vorpommern three examples are given in the following paragraph.

4.1. Mecklenburger Metallguss

In the centre of Mecklenburg-Vorpommern the market leader for metal ship propeller constructions is located. The company MMG (Mecklenburger Metallguss) builds approximately 180 propeller each year and has a market share of around 25 %, with large propellers with a weight over 80 tons even 60 % and with more than 100 tons over 93 %. Since the reunion of the German State and the development of the ship construction in Mecklenburg-Vorpommern also the capacities of MMG were continuously enlarged.[24] The company can now melt up to 200 tons of metal and build a propeller with a diameter of 11.5 meters and more than 150 tons.

Due to the disadvantageous location of MMG the transport of the heavy ship propellers is very difficult. They need to be transported to the port of Rostock or to the port of Hamburg in order to be shipped further or set in directly in the new ships on shipbuilding sites, the export rate is more than 90 %.[25] The ship propellers are transported via the B 192 to the motorway A 19 and further in direction to the port of Rostock or on the A 24 in direction to Hamburg. The regional location of MMG can be seen in Figure 7.

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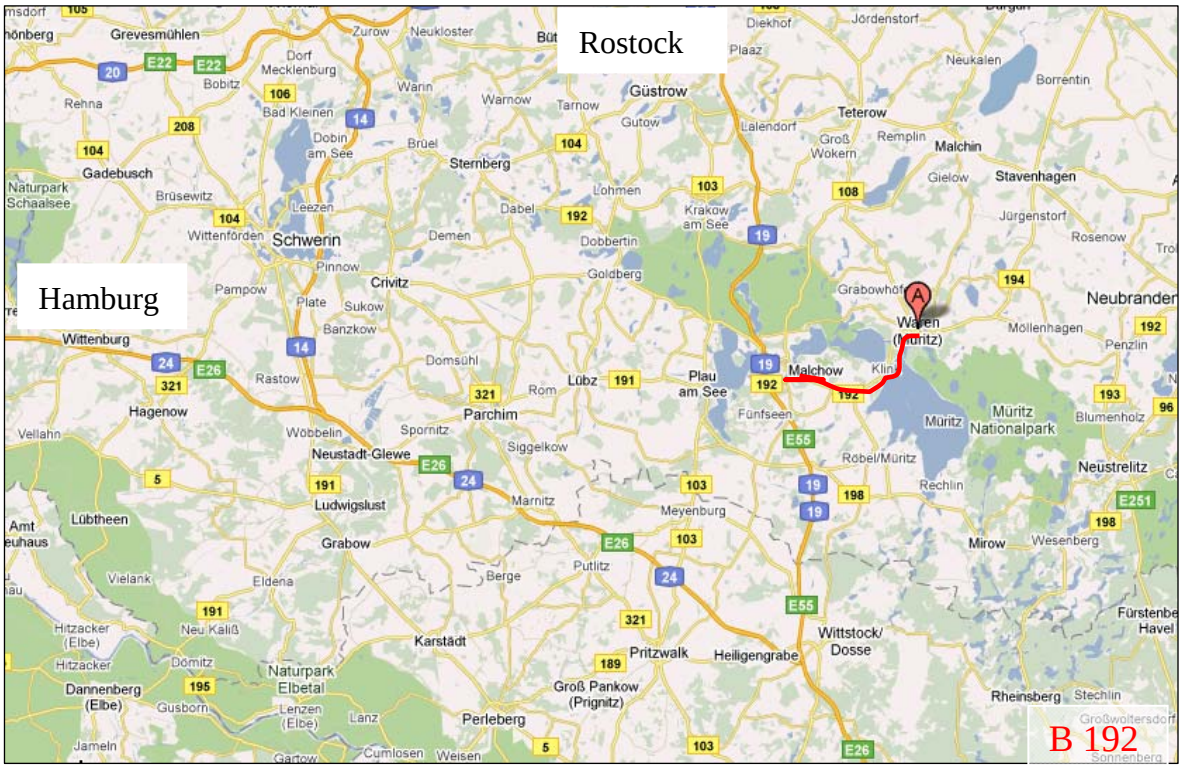
21 Scandria Project, 13.07.2010.
22 SoNorA Project, 13.07.2010.
23 Mecklenburg-Vorpommern – der Logistikstandort an der Ostsee, October 2009, p. 9.
24 Fischer, Manfred, 18.05.2011.
25 Mecklenburger Metallguss, 18.05.2011.

Figure 7: Oversize transport map of MMG



Until 2006, the B 192 was a parkway lined with large trees and had a width of only 8.5 meters. Since the propellers become wider than this MMG designed a new construction to be able to shift the propeller. Today the trees are cutover and are no longer a barrier for the transport. However, the increasing weight of the propellers might become a problem since the B 192 as well as the motorways have some bridges which might not be able to cope with such weights.

4.2. Nordex' windmill blades

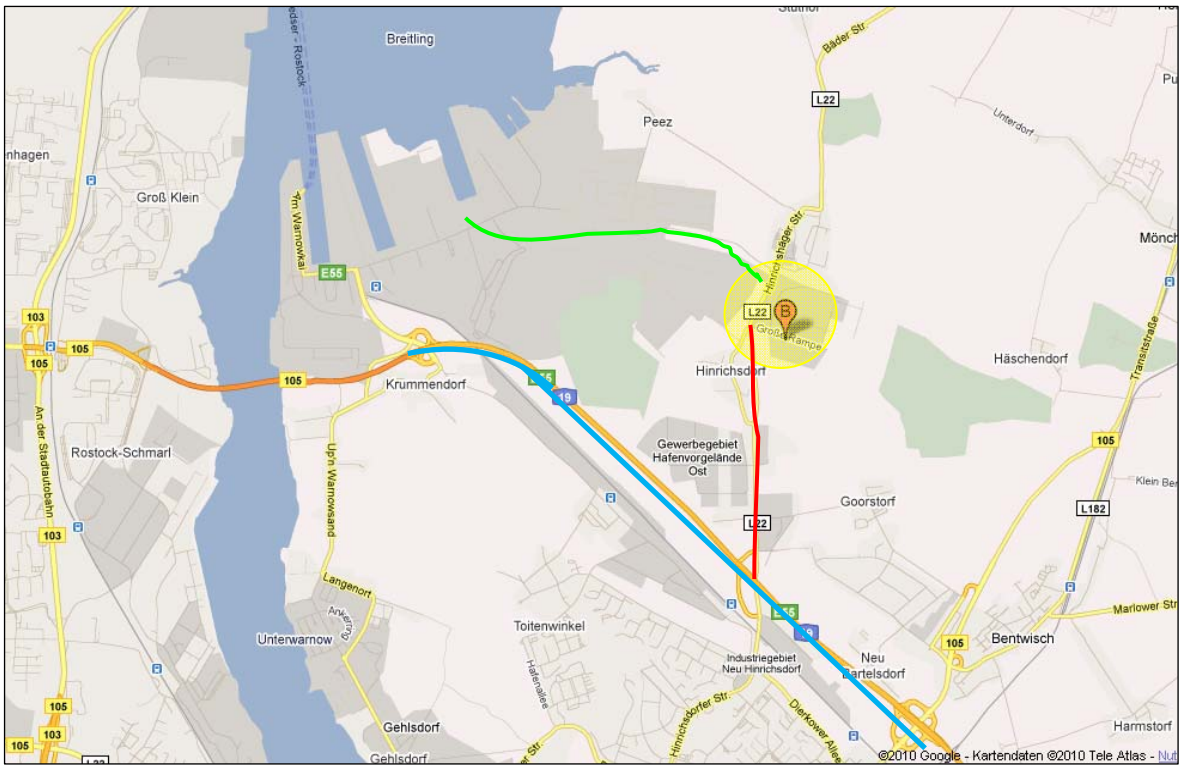
Nordex is a German manufacturer of windmills. Further information about Nordex can be found in chapter 0 where the interests of Nordex as a business client for oversize transport strategy are described.

The construction plant of Nordex is located in the Northeast of Rostock near the port of Rostock. There is a direct link to the quays in the port (so called bypass road) and also an access to the motorway A 19 in direction to Berlin and via A 20 to Hamburg. Nordex delivers around 60 windmill blades every week both directly to the port on vessels for further transportation offshore via the Baltic Sea and on the road for further transportation onshore. The road "Hinrichsdorfer Straße" connects the construction plant with the motorway. This road is planned to be enlarged with special width for the transport of the windmill blades of Nordex. Also the slip roads to the motorway are rebuilt.[26] Figure 8 shows the location of the construction plant and the connec-

[26] Ostseezeitung, 27.03.2010.

tions to the port of Rostock and the motorway A 19.

Figure 8: Road connections of Nordex



	Legend: *„Hinrichsdorfer Straße"* *Motorway A 19* *Nordex construction plant* *Direct access to Port Rostock*

5. Bottlenecks

Bottlenecks are very individual and vary between different regions and different transport means. They can be of legal, technical and organizational/political nature. The following paragraphs describe some typical bottlenecks which were discovered by analyzing the previous examples and their possible solution.

5.1. Legal

Legal bottlenecks arise through constraints by law either for the industry, the transport service provider or the public.

As for all oversize transports the main barrier for the transport operator is to

get the permission for the oversize transport and the applied route. The application for the permission must be handed in at the responsible authority. This is proved and checked by the authority and can be permitted then. This procedure can take up between two and three weeks which might require a good planning beforehand by the transport operator. A solution for this bottleneck was the implementation of the online one-stop-shop VEMAGS in Germany. Furthermore the transport operators have the possibility to gain permanent permissions which allow oversize transports for a certain period on certain routes without any further applications.

5.2. Technical

Technical bottlenecks are limitations of the design of the transport mean, low infrastructure standard or poor access to ports and terminals. This would cause ineffective transports or even impossible transports of oversize cargo for this region.

In the example of the metal construction company the transport of the oversize cargo is very complicated on normal public roads. The historical roads in Mecklenburg-Vorpommern often set limitations due to trees along the roads or narrow curves. However, looking at the new construction of roads these problems were considered and as far as it is possible circumvented. However, not every road in Mecklenburg-Vorpommern is able to cope with very heavy or wide cargo but due to the density of the road network in this region (including the modern motorways) an alternative route can be found easily and with only small indirections.

A bottleneck which still exists even on the newly built roads is the capacity of bridges both on smaller roads but also on motorways. Oversize cargo becomes heavier and some bridges reach their capacities in the future since they were not planned to handle such heavy cargo. In the case of the ferry port Sassnitz, the only road connection to and from the port is via the Ruegen bridge. The Ruegen bridge was opened in 2007 and is one of the most modern bridges in Europe. It has very innovative traffic control systems which is beneficial not only for the tourism but also for the logistical traffic to and from the island. Due to the strategic importance of this connection to the Island of Ruegen it seems unreasonable to block this road for oversize transports even during night times. Oversize transports must use the old link to the island which still exists. The frequency of the traffic is not that high and the old link is not that prone to heavy weather especially for over-dimensional cargo.[27]

The example of the windmill construction plant of Nordex shows that the company, even though it is located physically close to the port of Rostock and the motorway A 19, they still have problems to transport their long blades on the roads. They invested privately for the enlargement of the connection road

[27] Der Spiegel, Die neue Rügenbrücke, 20.10.2007.

"Hinrichsdorfer Straße" in order to be able to use the closeness to the motorway effectively. They had the same problem with the connection northwards to the quays of the ports because the slip roads from the motorway A 19 are too narrow to allow a transport of long windmill blades. Therefore the company Nordex must use an old bypass road from their construction plant to the quays.

5.3. Organizational

Bottlenecks of organizational nature are regulations from the government which constrain the oversize transport cross-border difficulties due to customs regulations or different permission procedures and requirements.

For the region Mecklenburg-Vorpommern which is mainly a transit market for oversize cargo the different national application and requirement standards are a big constraint. Transport operators who e.g. would like to transport a good from Scandinavia to Italy need a new permission for every country the route passes through. It is not possible to gain only one permission which allows the oversize transport from the starting point to the final destination. This procedure causes a lot of bureaucracy and a loss of time and money for the transport operator but also for the industry, the customer.

Another organizational bottleneck is the limited usage of motorways for oversize transports. Of course an oversize transport would cause huge congestions on the motorways, negative both for the transport of other cargo and public transport, but it means for the oversize transport operator and the customer that they can only work during night times. This can lead to delays in the deliveries, higher safety requirements and higher personal costs.

6. Links and logistic centers for oversize transport

The already existing links in Mecklenburg-Vorpommern are described and their role and connection in this region and in the transit market. These links connect or built a part of the corridors where the main cargo is transported. In the case of Mecklenburg-Vorpommern there are two corridors: North-South and West-East. To complete the picture also the inland logistic centers for oversize transports, inland ports in Germany, are introduced even though they do not play a very important role in the region of Mecklenburg-Vorpommern but for oversize transports.

6.1. Oversize transport links

The oversize transport links in Mecklenburg-Vorpommern can be divided along the main transport routes into the North-South corridor and the East-West corridor.

The North-South corridor lies on the axis of the Scandria (Scandinavia –

Adria) corridor of the EU. Mecklenburg has a good infrastructure to serve this corridor. It is the motorway A 19/A 24 from Berlin to Rostock and A 24/A 14 from Berlin to Schwerin/Wismar, the railway between Berlin and Rostock which will be extended to a double track in the next years. Furthermore, the connection to the Danish Islands, South Sweden and Finland through the regular ferry lines from Rostock and Sassnitz ensure the link to Scandinavia.

The East-West corridor ensures the connection to the east European countries and the Baltic States. In Mecklenburg-Vorpommern a new motorway A 20 from Hamburg to Stettin was built as well as extended railways. Sassnitz is the only ferry port which can handle the Russian railway trains and is therefore the most important link to the Baltic States and Russia.

Figure 9: Connections to and from Mecklenburg-Vorpommern

Source: Mecklenburg-Vorpommern – der Logistikstandort an der Ostsee, October 2009, p. 6.

6.2. Oversize transport network

The oversize transport network can be divided into different parameters, namely the transport means and cargo classes. The usage of the suitable transport means depends on the weight and dimensions of the oversize cargo. Some cargo does not fit on a road truck, some needs to be transported to some location where no other access than by road is possible. In some cases where a high increase of oversize transports is expected it might be efficient to build new transport connections, either road reconstructions or new railways (e.g. in the seaport hinterland connections in order to supply the offshore wind parks).

If such a need for new transport connections is decided on it also seems to

be reasonable to cluster oversize transport clients in Mecklenburg-Vorpommern. The conditions for a transport permit are the same for every business, disregarding the sector, company size or transport volume. Despite the fact that transport in every case is very individual a combined transport or something similar would be possible. So a business cluster seems to be economical here.

Locations of clusters for oversize transport in the region Mecklenburg-Vorpommern could be the ports as logistics centers described above.

6.3. Logistic centers

A logistic center is defined as "a centre in a defined area within which all activities relating to transport, logistics and the distribution of goods-both for national and international transit, are carried out by various operators on a commercial basis."[28] For the region Mecklenburg-Vorpommern it means that the ports on the shore of the Baltic Sea are the logistic centers. They function as intermodal hubs and logistic platforms in the international transit market. Especially for oversize cargo it is necessary to have the equipment and location to handle abnormal goods which is not given in any other freight village in Mecklenburg-Vorpommern. The ports and their transportation possibilities for oversize cargo are the most important strategic locations on the oversize transport chain in this region.

Mecklenburg-Vorpommern provides the shortest and fastest routes between Scandinavia, Russia and the Baltic states and central and southern European economic centers all the way to the Mediterranean and the Adriatic. The growing transport volumes by road, rail and across the Baltic Sea are a challenge for the entire port and logistics industry. Mecklenburg-Vorpommern will benefit from this dynamic growth market to a considerable degree. The Baltic Sea is not a separating element but rather an outstanding connecting link.

The ports are an efficient transport interface of national and international transport chains and an attractive location for shipping companies, port-related industries and commercial enterprises. As Europe grows together, the ports in Mecklenburg-Vorpommern meet the challenge of growing cargo figures, also for oversize cargo. From 2004 to 2007, the total cargo handling in these ports increased from around 34 million tons to around 40 million tons. Until 2025, the tonnage at just the four ports of Rostock, Sassnitz/Mukran, Stralsund and Wismar will almost double, reaching 73 million tons.[29]

Rostock port:

Very well developed interior traffic connections ensure uncomplicated road and rail transport. The Rostock port is connected with the German motorway network; the North-South motorway A 19 and west-east motorway A 20 pro-

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28 Bentzen et al., Best Practice Handbook for Logistics Centres, 2003, p. 18.

29 Häfen in Mecklenburg-Vorpommern, August 2008, p. 5.

vide a direct access to the port.

There are currently trains from and to the South and West of Europe, cleared weekly at the combined cargo terminal. The ferry and RoRo-lines of the Rostock seaport provide rapid connections in the Baltic Sea Region.

With these facilities, Rostock has everything it needs to continue developing its solid position as a ferry hub for the Baltic Sea and logistics centre for the region Mecklenburg-Vorpommern. Therefore it is assumed that Rostock is also the most important link to the Baltic States and Scandinavia for maritime oversize transports.

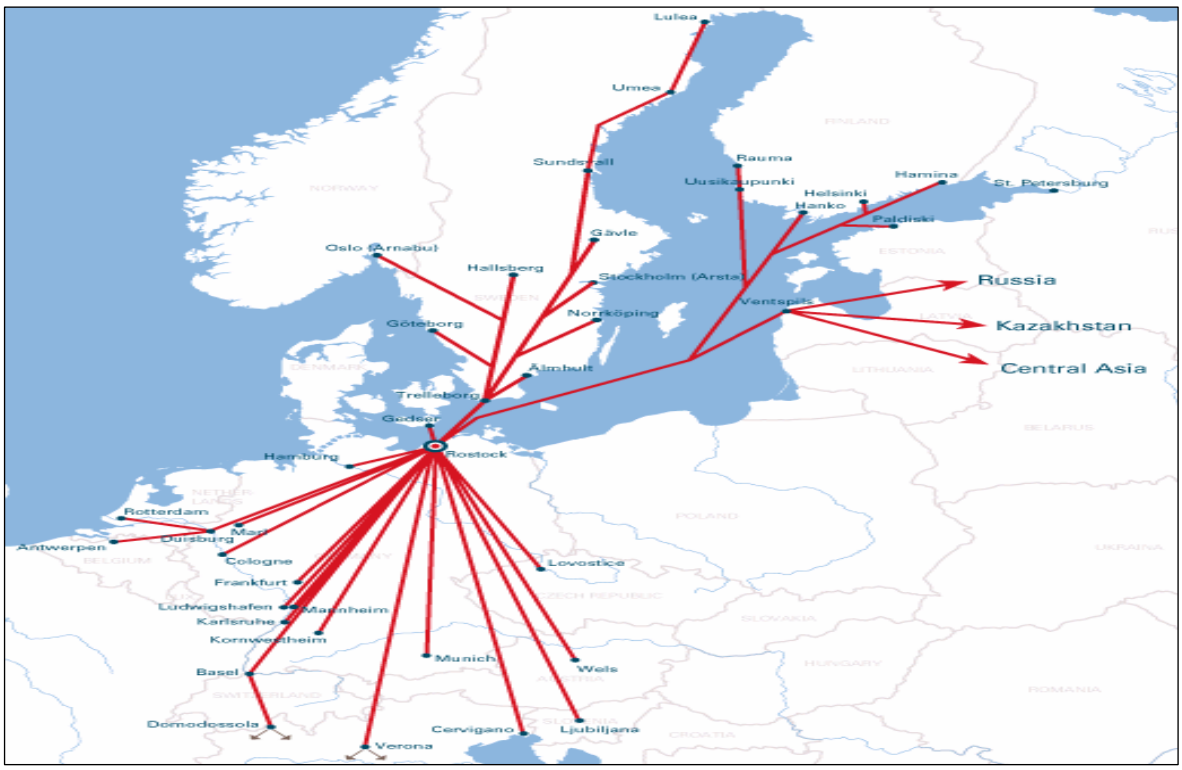
Due to the worldwide financial crises the greatest decrease in 2009 was recorded in the general cargo segment, down 35 % to 411,000 tons compared to the figures of 2008. In contrast, increases were exhibited in the handling of oversize cargo, namely large pipes, cranes, and wind energy generators, primarily driven by local production. The pier for general and oversize cargo handling has cranes with a loading capacity of up to 100 tons. In total, the Rostock seaport has 600,000 m² open storage as well as 120,000 m² covered storage available for general cargo goods.[30]

Figure 10: Road Connections Rostock Port

Source: ibid., 10.05.2010.

30 Rostock Port, 10.05.2010.

Figure 11: Railway connections Rostock Port



Source: Rostock Port, 10.05.2010.

Ferry Port Sassnitz / Mukran:

The port of Sassnitz is situated on the eastern side of the Isle of Ruegen and is thus the easternmost deep-water port in Germany. This geographical position provides the shortest sea connection from Germany to Sweden, Denmark/Bornholm, Finland, Russia, and the Baltic States. However, since Sassnitz is located at the Island of Ruegen the hinterland connection is limited. So all transport flows need to pass the Ruegen bridge combining the continent and the island.

Due to its optimal and spacious track installation the port of Sassnitz has become a specialist port for combined rail ferry traffic. As the only port location of Western Europe the port of Sassnitz has track and transshipment facilities for rail cars of the Russian broad gauge and is also well-known as "the westernmost cargo station of the Trans-Siberian railway".

These facts lead to the assumption that the ferry port Sassnitz has the potential to become the logistics center for rail transports also in the oversize transport segment.

Inland ports:

The transportation on inland waterways is the most reliable and safe transport possibility for oversize cargo. Unfortunately, there are no inland ports in the region Mecklenburg-Vorpommern. The nearest connection to an inland port is in Hamburg or the Berlin/Brandenburg region. However, since the inland ports in Germany play an important role in the transport chain of over-

size cargo in whole Europe, some of them are described here and the logistical position is explained.

In Germany there are more than 60 inland ports, most of them have also the possibility to load and unload oversize cargo. Figure 12 shows the most important waterways in Germany and the location of two examples for inland ports. The other inland ports of Germany are located almost all along these waterways.

Figure 12: Inland waterways in Germany

Source: Elektronisches Wasserstraßen-Informationssystem, 06.07.2010.

Mannheim:

The inland port of Mannheim is combined with Ludwigshafen and is in numbers the biggest in Europe. The port is well located on the rivers Rhein and Neckar with the connection to the ARA ports (Amsterdam, Rotterdam and Antwerp). Next to the bulk, general and combined cargo the port of Mannheim handles also oversize cargo. It is planned that this port becomes the logistical centre in South Germany for oversize cargo. This cargo should be bundled

here and transported to the large ports in the North or to ports on the Black Sea in the Southeast of Europe. Recently, a new terminal for oversize cargo with crane capacities of 400 tons was opened.[31] This terminal allows further reductions in transport times and costs for transport operators.

Duisport:

The port of Duisburg is located in the West of Germany on the river Rhein and Ruhr. There are four container terminals, five terminals for bulk cargo and two RoRo-terminals. Additionally they opened the new Heavy Lift Terminal Duisburg (HLTD) in 2010 which can handle oversize cargo with capacities of up to 500 tons. This terminal is operated by the same transport operator as the oversize terminal in Mannheim and therefore the transport routes to the northern European ports and the ports in the Southeast are connected to Duisport.[32] The connections to the other transport means motorways and railways are excellent and allow the oversize transport to and from the port. Duisport is the northernmost logistics centre for inland waterway transportation in Germany.

7. Oversize transport target group

In order to be able to adjust the developed strategy of oversize transports to the demanding business sector this sector should be analyzed. Transport clients in Mecklenburg-Vorpommern are numerous since not only local manufacturers use oversize transport in or from or to the region but also the transit market in Mecklenburg-Vorpommern is large. Two of the largest players in the oversize transport market are the wind power energy sector and the maritime industry.

Wind power energy in Mecklenburg-Vorpommern:

The ministry for environment of Mecklenburg-Vorpommern expects a complete power supply through renewable energy sources until 2050. The region has excellent requirements for wind energy and up to 1,800 sun hours every year which is one of the highest numbers for German regions.[33] This leads to the assumption that the demand for windmills will increase in the following decades.

However, not only the demand for windmill installations in Germany will increase but also in other regions of Europe (East Europe and Baltic States) which might not be regarded by the wind energy sector so far. This means Germany will become one of the most important locations for construction and export of windmills. To ensure the smooth transport chain, especially the East-West connections need to be efficient.

An example for such a windmill construction company in Mecklenburg-Vorpommern is Nordex.

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31 Schwergutlager Mannheim, 06.07.2010.

32 Duisport, Ein Magazin der Duisburger Hafen AG, 01/2010, p. 20.

33 Bundesverband der Windenergie e.V.(2), 14.05.2010.

Nordex AG:

As developers and manufacturers of wind turbines, Nordex concentrates on the core competencies, powerful wind turbines for almost all geographic regions across the globe. In addition to the overall technical design, their know-how also lies in the development of rotor blades with a length of up to 45 meters and in the integrated electrical and control technology for wind turbines.

These are the driving factors behind the development of more efficient and thus more economical machines – which is to the advantage of the environment and of their customers.

Today more than 4,000 Nordex wind turbines with a total rated output of more than 5,720 MW are already rotating in 34 countries of the world. They are represented by offices and subsidiaries in 18 countries. In this way they are consistently seizing development opportunities in a market which will continue to grow in the course of the next few years.

Nordex SE is a management holding company with its headquarters in Rostock. The domicile of the board and administration is Norderstedt, near Hamburg. Nordex AG's task is to control and coordinate the activities of the two 100 % subsidiaries Nordex Energy GmbH and Nordex Energy B.V.[34]

The maritime industry in Mecklenburg-Vorpommern:

The maritime industry, as an industry with a positive future and international focus, is an important structural characteristic of the economy and the economic backbone of the federal state of Mecklenburg-Vorpommern. The maritime shipping and port industry segments are significant drivers of maritime economic growth. The shipbuilding industry set a milestone in the maritime economic growth as the dominant core branch of the maritime economy. The shipyards in Mecklenburg-Vorpommern focused on specialized constructions and innovative solutions. Specialized shipbuilding is very technology intensive, has a high potential for development and, with its innovative strength, it can be globally successful.

The ports in the region with their connected logistics industry are important growth impulses and in addition to shipbuilding, shipping and port industries, the federal state is extremely competent in maritime technology sectors. Offshore technologies are considered to be sunrise industries where the close integration of research and production represents the driving force of their development. Companies manufacturing floating drilling, manufacturing, storage and loading systems are predicted to experience dynamic growth.[35]

In the following two examples for maritime industries of the federal state Mecklenburg-Vorpommern are introduced.

LIEBHERR MCCtec Rostock:

To enhance the international market position of the company in the field of

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34 Nordex AG, 17.05.2010.

35 MV Invest, 17.05.2010.

maritime industries Liebherr established a production location in Rostock for the construction of port mobile cranes, large machines with tare weights of up to 500 t. The production of these cranes started in 2005. They even plan to enlarge their construction plant consistently and want to build also reach-stacker in Rostock and export worldwide.[36]

Caterpillar Marine Power Systems:

The manufacturing facility in Rostock was acquired in 1999 and was formally renamed "Caterpillar Motoren Rostock GmbH" in 2000. To facilitate a long-term growth strategy of large diesel and gas engines, operations have increased in the four-hall facility.

Today, the Rostock Engine Center is one of the most modern manufacturing facilities in Europe. The facility is responsible for assembly, test, paint and shipment of large diesel engines, as well as gas engines, manufactured primarily for the petroleum market.

In 2007, the facility benefited from improved operational flexibility in its engine test cells. Production capacity was extended by moving the assembly of some engines for propulsion and genset-applications from Kiel to Rostock.[37]

8. Barriers and Optimization

8.1. Barriers on regional perspective

The region Mecklenburg-Vorpommern is mainly a transit market for oversize transports. Most of the oversize cargo is developed and manufactured in Germany and then exported to other European countries or even worldwide. Disadvantages of this region are the missing inland waterways or the connection to these. The main rivers in Germany lead to the North Sea, i.e. the western part of Germany. But still, Mecklenburg-Vorpommern has the direct connection to Scandinavia and the Baltic States and Russia, which are developing countries, through the ferry lines. This is the reason why still so much cargo and oversize cargo is shipped via Mecklenburg-Vorpommern.

Furthermore, the disadvantageous location of this region will be threatened by the new Fehmarn Belt link. This link will be built until end of 2020, and it will be most probably a tunnel. It will support the route Berlin-Hamburg-Copenhagen (and further Scandinavia). This means the location of the ferry connections from Rostock and Sassnitz will face higher competition. Nevertheless, it is still unclear if this link will enable also oversize transport and if the capacity of this connection can handle abnormal transports or if these kinds of transport still require short sea shipping via the Baltic Sea.

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36 MV Invest, 18.05.2011.

37 Caterpillar Marine Power Systems, 17.05.2010.

8.2. Barriers on cross-border perspective

A great barrier in inter-regional transports are still the lacking links between the European countries, especially the eastern countries and Baltic States. Regarding the railway transport the interoperability of the different railway security systems is a problem which is already known and on which is worked on from the international and national perspectives.

The objective to establish an inter-regional approach of such a one-stop permission system for oversize transports seems to be difficult since different legal requirements for the permission procedure exist in every single country: different transport fees and transport times (working times, bank holidays, etc. ...).

8.3. Optimization procedures on oversize transport corridors

The oversize transport is mostly done on roads and railways in Mecklenburg-Vorpommern. Inland waterways do not play an important role in this region, because there is no direct access to the Baltic Sea. However, capacities of the roads are often limited due to congestions and construction works. The width of the roads is constraint and no oversize transport is possible on these parts. Construction works on bridges do not allow oversize transports as well. These construction works must be optimized in order to reduce the amount of works and the time frame for limitations. New construction work management systems can help to manage these limitations. The systems can regulate the tender requirements or contract parameters of every construction. The objective is to find the most effective construction company, to define contractual time schedules for the construction period (through holiday working times) and to find a better coordination of the different construction locations.

The freight transport on railways which has already capacity constraints will further increase, especially in the hinterland connections of the sea ports also in this region. Furthermore, the different safety systems of the railways in the different EU countries lead to missing capacities and make a smooth transport flow complicated or even impossible. However, the transport on railways is one of the most environment friendly and efficient transport means and therefore should be supported and improved. Since Mecklenburg-Vorpommern is mainly a transit market for railway transport the various disadvantages of the railway transport makes this mean very unattractive for foreign operators. The solution is a European Train Control System (ETCS) which enables uniform safety standards and international transports. This is very important especially for oversize transports because oversize cargo is very difficult to charge and reload on different transport means. Once the cargo is on a train it should be transported until the final destination.

The sea ports play an important role in Mecklenburg-Vorpommern. Many of the oversize transport are shipped around the globe from these ports. But

the structure of the ports and the hinterland connections are lacking. One of the most important tasks is now to improve the connections to the important industry locations in Germany. The roads and railways will be enlarged and built new. Furthermore, the network cooperation of the single sea ports should be improved. They can build cluster and share opportunity costs. Since oversize cargo is going to be shipped even over long distances, the transport of oversize cargo on inland vessels or feeder vessels in the Baltic Sea becomes more and more important and efficient. Short sea shipping should be more feasible than long distances in railways or even roads across Europe. This applies especially to transports on the North-South corridor from the Mediterranean Sea to the North of Europe.

Due to the fact that the capacities of the existing transport connections in Mecklenburg-Vorpommern and in Germany are already overloaded, especially during holidays and in the summer time, it should be economical to separate the passenger transport and the freight transport (incl. oversize transport) more effectively. Oversize transports are often not possible, on North-South railway connections, because they are already busy with the regular freight and passenger transports. Through a separation of these different transports the risk of congestions will be reduced, the safety will be improved, and the capacity will be increased. A good sign for this positive development is the truck ban also on Saturdays.[38]

However, in order to change the transport time and enable more transports at night time the transport means must be environmental friendly. The trains must have new technology which reduces the noise and allows an operation also in urban areas at night time.

8.4. Regional one-stop shop for oversize transport permissions

Since 2007 there is a new permission system for oversize transports in Germany. It includes all authorities of the 16 federal States and is called VEMAGS (Verfahrensmanagement für Großraum- und Schwertransporte).

The VEMAGS homepage can be found under: http://www.vemags.de

The VEMAGS-system is a tool which was developed to simplify and quicken the permission process of oversize transports all over Germany. It was initiated by the European Union aim-ing to provide a comprehensive system for oversize transport in the whole EU-region.

VEMAGS replaces the earlier telefax-method which had long waiting times and high transfer costs and was not economical anymore. The new system provides the whole process beginning with the application up to the approval and the actual transport in the road in real time. Important industries like construction industry and the energy sector asked strongly for such a new system.
Outlook:

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[38] time-news.de, LKW-Fahrverbot, 30.06.2010.

The VEMAGS-system was developed accordingly to EU expert group "Abnormal Road Transports". The EU member states agreed to establish a nationwide service system for oversize transports. The German solution is the VEMAGS. VEMAGS is strengthening the relationship to other countries and their systems, e.g. Scandinavian countries, Austria, and Switzerland. An international approach is complicated though and almost not possible due to high price differences of the transport and the bureaucracy in individual countries. The EU-Project "Oversize Baltic" developed an Oversize Transport Information Network, which combines the VEMAGS, the Swedish Permission system TRIX, and the Polish permission system in one platform (www.otin.transport-oversize.eu/).

VEMAGS itself shall be developed further. An additional route mapping shall be implemented to increase the efforts for the individual route mapping for the applicants. This can be done through the implementation of a road database including bottlenecks like bridges, railways, etc.

8.5. Economic aspects

As every transport the oversize transport should be as economical as possible. For the transportation firm it is necessary to know and maybe to be able to reduce the time costs (e.g. working hours for vehicles and staff, insurances and wages) and distance costs (e.g. fuel consumption, maintenance costs, fines and damage liabilities) of their business.[39] Most of the fixed costs (e.g. motorway tolls, permission fees and drivers expenses) are external costs which cannot be influenced by the transportation firm itself but by optimized legal regulations and policies.

One way could be a bundling of transports, either of the same products (e.g. windmill blades or ship engines) or with the same size or weight (e.g. port cranes and offshore cranes) in order to reach economies of scale. However, most of the oversize cargo is so over-dimensional that a further bundling with other cargos or cargo types is practically not possible. It seems only reasonable to define certain routes for certain dimensions of cargo which allow an uncomplicated and fast transport on these routes. These routes are called corridors where the bundled transports are then delivered. The transportation firm Kübler[40] in Germany defined some of these corridors already for the inland waterways in Germany and also the connections to the inland ports Mannheim, Duisport and other ports in South Germany. The corridors connect the North Sea and the ARA-ports through the whole of Europe with ports in the Black Sea Region. Kübler owns special legal permissions for the transport of oversize cargo on these corridors and has checked all possible bottlenecks (e.g. bridges and curves) according to the dimension of the cargo. Now they

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39 Blauwens et al., Transport Economics, pp. 73.

40 Kübler Spedition, 14.07.2010.

can offer a fast and very economical transportation of oversize cargo to their clients.[41]

The oversize transport corridors and networks are also very efficient in Mecklenburg-Vorpommern. There is no defined route which functions as corridor so far, since the oversize cargo which is transported in this region so far is treated more or less individually. However, for example the company Nordex which delivers around 60 windmill blades every week has significant reasons to establish good connections to and from their construction plant. That is why they invested privately in the enlargement of the "Hinrichsdorfer Straße"[42] (see chapter 0). This enlargement has not only impacts on the industrial logistic of the region but also positive effects on the passenger traffic because congestions, indirections and road blockings are circumvented.

According to the permission process through the one-stop-shop VEMAGS this procedure is also simplified and enables a short-time transportation. The introduction of VEMAGS makes cost savings possible for personnel, organization and information methods (e.g. the police as controlling part is involved right from the start) (see chapter 0).

9. Conclusion

The previous analysis shows the oversize transport market of Mecklenburg-Vorpommern in detail. The current economic situation of the federal state promises an ongoing development of the innovative technologies and increasing export possibilities for future years. The construction of wind power generators, onshore as well as the more advanced offshore windmills, and the progress in the building of specialized vessels in the shipbuilding yards are an outstanding economic element of this region. Together with these developments the transport and logistics strategy will grow as well.

The main oversize cargos are defined as the windmills of the local producer, parts and segments for the maritime industry and shipyards, and also agricultural equipment. Furthermore, Mecklenburg-Vorpommern is not only an innovative location for new technological developments and construction but also a very important transit market for oversize cargo. The main partners for the transit trade of Mecklenburg-Vorpommern are the Scandinavian countries, Baltic States (with further connections to Russia), Poland, South Germany and neighboring countries to the South. The increasing demand for oversize transports of the Baltic States and Russia will strengthen Mecklenburg-Vorpommern even more as a transit and export market.

As this analysis shows Mecklenburg-Vorpommern has the logistical potential to fulfill the requirements in the transport strategy for oversize transports which will definitely increase further in the future. The main transport routes

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41 Kran- & Hebetechnik, 26.11.2009.

42 Ostseezeitung, 27.03.2010.

already exist and tend to be renewed and enlarged in the next years. Also the seaports are assumed to be well prepared for oversize transports and are able to fulfill the positions as logistics centers of Mecklenburg-Vorpommern.

Even though the one-stop-shop for oversize transport permissions was the first step, better cross-border legislation and regulations need to be implemented in order to harmonize the oversize transports in the South Baltic Sea Region. Further optimizations need to be found for the already limited capacities of the motorways and railways of the federal state. A further increase of individual public transport and the freight transports can be expected which might lead to even higher maintenance costs (e.g. faster abrasion of the roads), more likely congestions both for passenger and freight transport, and less safety. This might have an influence on limitations for oversize transports with higher restrictions on safety, allowed transport times and permission fees.

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