



## The development of the highway network in Poland and the future development of polish ferry shipping

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### Abstract

The aim of this paper is to emphasize the role of the developing network of roads and motorways in the Polish economy and its impact upon expanding competitive solutions in alliance with the ferry shipping industry. The paper begins with an assessment of Poland within its geographical location in Europe and of its economic connections with other European nations. The first part of the paper presents the current situation of road infrastructure in Poland. The second part presents the proposed transport corridors which cross a series of European countries and the plans for development of the sections of these routes located in Poland. The next part assesses the advantages for Poland and for ferry shipping in particular.

*Keywords:* Highways; Ferry shipping; Poland.

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### Introduction

One of the Baltic Sea countries, Poland is located on four European transit routes North–South and East–West. Its strategic transit location provides an important opportunity for development for Poland as a whole. The ports of the Scandinavian countries and Denmark in particular assume the foreground for Polish ports and these countries are characterised by a high level of economic development and living standard for their inhabitants. Meanwhile the countries lying along the North-South transport corridor such as: Poland, the Czech Republic, Slovakia, Hungary and Austria (the Central European states), and Romania, Bulgaria, Greece, Turkey, the countries of the former Yugoslavia and North Italy (the South–East European states) are the hinterland for Polish ports. This basic hinterland should also include Lithuania, Latvia, Estonia, Russia (Kaliningrad), Belarus and West Ukraine. The hinterland for the port of Szczecin-Swinoujscie in north-west Poland is also Germany and includes about 40 million citizens. The countries belonging to the near hinterland for the Polish based ferry shipping industry occupies an area almost 50% bigger than the area of the foreground (over 1780 km<sup>2</sup>) and more than 143 million people live there.

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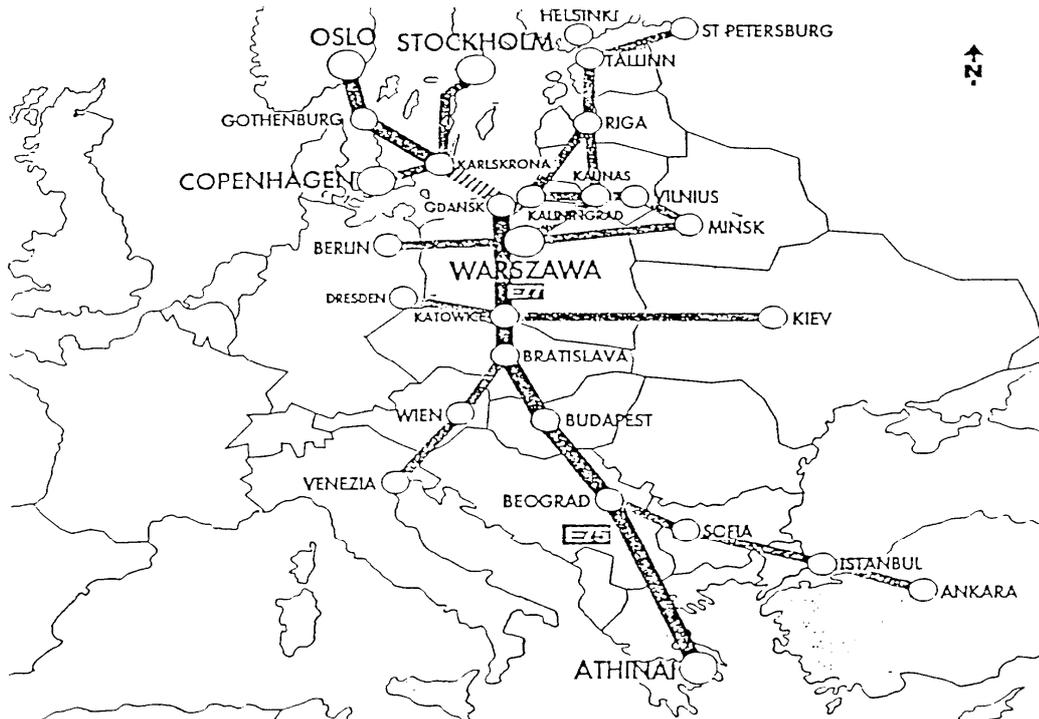


Figure 1: location of Gdansk and Gdynia ports in the North–South transport corridor.

Source: Szwanowski, S. (1996) *Adaptation of Gdansk agglomeration ports to the service of fast ferry connections*, in Roe, M.S. *International studies in shipping policy and management*. University of Plymouth, Plymouth.

From 1st of May 2004, Poland has been a member of the European Union. Thanks to the continuous integration of Poland with the other European countries it can now play a part in the whole EU area characterised without internal borders where free movement of people, goods, services, capital and ideas is encouraged and sustained.

### **The current situation of road infrastructure in Poland**

The present condition of road infrastructure in Poland is one of the greatest barriers to the growth of the Polish economy and more specifically it has serious impacts upon specific industrial and commercial activities. One such activity vital to the improvement of Polish overseas trade is Polish ferry shipping centred on the three main Polish Baltic Sea ports of Gdansk, Gdynia and Szczecin-Swinoujscie. The existing highway network does little to ensure the provision of a suitable quality of service for both passenger and freight carriers. Poland still has less than 300 km of motorways whilst Germany, a neighbour and of comparable physical size, has over 11,000 km. In addition, the physical and technical condition of most of the other existing roads in Poland is very poor and it has been estimated that substantial repairs are needed to 63% of the length of all Polish highways to make them reach general European standards (Figure 1).

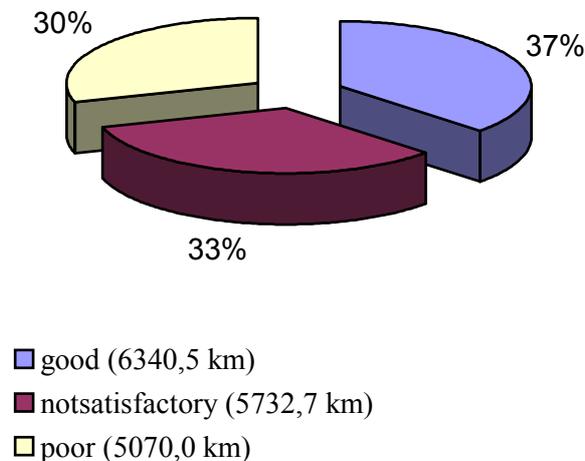


Figure 2: Estimation of the technical situation of highway pavements in Poland (2005).  
 Source: Polish Ministry of Infrastructure.

The improvements needed to the non-motorway highway network includes a range of different repair works: reinforcements, smoothness, improvements to non-skid properties and ensuring that pavements are watertight.

In addition to this undesirable situation, both the quantitative and qualitative situations that exist in the Polish economy inhibits growth in both passenger travel and freight transport, something that is becoming a severe problem following Poland's entry into the European Union in 2004. Poland actually possesses a far too small highway capacity with at present only 3% of Polish roads with a breadth of more than eight meters. Such parameters are far worse than general European standards or the situation found in most EU countries. In addition there are almost no domestic nor international roads in Poland that provide standards in operating conditions that meet the demands of TIR movements. Within the European Union, the standard axle pressure that roads should provide for heavy goods vehicles is 115 kN, whilst Polish roads are constructed in the main for axle pressures ranging from 60 to 80 kN. Only a very small proportion of Polish roads can accommodate truck axle pressures of 100 kN.

The demands in terms of the range of road movements continues to grow. The estimates for 2005 suggest that about 9000 vehicles drive a day on what Polish international motorways there are, about 6500 on other international roads and 3000 on domestic roads.<sup>1</sup> During the last 10 years these movements have more than doubled. This is a result amongst others of the fact that road vehicle transport is now responsible for over 80% of freight carried. In addition (and perhaps more significantly) car ownership has also increased by about 70% in the same time period so that now every third Polish citizen is an owner of a car.

As a consequence of this situation, Poland is not attractive for freight transit movements. The shortage of motorways, the substandard and deteriorating condition of

<sup>1</sup> Klimek, H. (1999) *Motorways in Poland – opportunities or threats for success for maritime ports*, (in) Competition of maritime transport. Economy of maritime transport. Scientific exercises of University of Gdansk, Gdansk.

road surfaces, the shortage of grade separated road junctions, the failure to design roads for heavy truck movements, the absence of by-passes around city centres and the small number of bridges and viaducts causes foreign exporters to avoid Poland where they can and to direct their goods (particularly in Eastern Europe for the Swedish and Norwegian markets) to the much better developed network of German motorways with clear ramifications for Baltic Sea ferry operators operating out of Poland. This in turn leads to a reduction in competitiveness for Polish Baltic ports and also a reduction in opportunities for the development of the Polish economy resulting in deficiencies in international trade, worker mobility and earning foreign capital.

### **Transport corridors**

Poland, thanks to its geographical location and the potential capacity of its domestic market, has enormous potential for economic development serving markets to both the east and west and also as a transit route for north-south movements between South-East Europe (The Balkans, Greece, Turkey), and the Middle East and Scandinavia.

Taking advantage of the potential that Poland displays depends however, on taking the decision to develop the existing system of roads and motorways. This in turn will have undoubted benefits for the ferry industry located in Poland in the three major ports of Gdansk, Gdynia and Szczecin-Swinoujscie. The key improvements needed for highways, particularly for the future development of Polish maritime transport, rests with the A1 motorway, representing the Polish stretch of the International North-South (TEM) motorway and also the A3 motorway, which will connect the ports of Swinoujscie and Szczecin with the southern border of Poland. The A1 motorway is one section of the third North-South Transport Corridor passing through the Polish Baltic ports of Gdansk and Gdynia, and eventually reaching the countries of the Near East, the basin of the Black Sea and the Mediterranean Sea.

The idea of pan-European transport corridors came into being at the 1st EU National Transport Conference in Prague in 1991. During that conference, the initial plan for European transport networks was agreed. As well as new proposals (such as those which incorporated Polish motorways), the plan also included existing agreements concerning the rebuilding and modernization of many major roads connecting a substantial number of European Union countries and beyond.<sup>2</sup>

The concept of building a North-South Trans-European Motorway had already been developed many years earlier in 1972 under the pre-transition regime. The motorway was to have its origin in Gdansk and would pass in the direction of the Mediterranean Sea and farther on via Turkey to the Ports of the Persian Gulf.<sup>3</sup>

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<sup>2</sup> Andruszkiewicz, W. (1997) *Port in Gdansk and the other Polish maritime ports in multimodal land and maritime transport*, (in) Gdansk on transport map of Europe. The Scientific Session, 50<sup>th</sup> Anniversary. Polish Economic Company, Gdansk.

<sup>3</sup> Andruszkiweicz, W. (1997) Why building of Transeuropean Motorway North-South (TEM/A-1) has its beginning in Rusocino located on the South form Pruszcz Gdanski instead in Port of Gdansk? *Spedycja i Transport*, Nr 3/97, pp. 31 - 34.

The European Economic Commission and the United Nations agreed plans for the building of three main transport corridors which would run North–South across European space. The first of them has its beginnings in the United Kingdom near to London, crosses the English Channel, France, Spain, the Mediterranean Sea in the region of the Gibraltar Strait and then through North Africa and ultimately in the direction of West Africa. The second corridor begins in Denmark, crosses Germany, Italy, Sicily and the Mediterranean Sea to North Africa. The third corridor, the most important for Poland, begins in Finland, crosses via the Baltic Sea to Gdansk and Gdynia and then passes through Poland to the Czech Republic, Slovakia, Hungary, Austria, the Balkans, Greece, Turkey and on eventually to the Persian Gulf and Middle East. This proposed motorway route is one of the longest in the world stretching some 10,000 km including a number of formal branches. By 2005, some 4,000 km of the motorway has been constructed and the next 3,000 km are in the building stage. Another 3,000 km are currently being designed. The beginning of the motorway in Poland is located in the ports of Gdansk and Gdynia and the Polish stretch of this TEM is numbered motorway A1. The construction of this motorway would create the shortest traffic artery connecting Southern Europe with Sweden and the remainder of Scandinavia. In 1997 at the 3rd EU Transport Conference in Helsinki, the concept of transport corridors was completed with the introduction of Motorways of the Sea representing the sections of proposed trans European motorways that crossed seas including the Poland-Scandinavia section of the A1. The total number of corridors was increased to 10.

Unfortunately, the Polish part of the project has not been finished some 30 years after the inception of the idea of building motorway A1. One of the main reasons for this has been the shortage of financial resources. Since 1993, from the moment when it was realised that Poland could not afford free motorways, it was decided, like many other West European countries including France and Italy, to construct tolled roads. The new programme was agreed in 1994 taking into consideration building of 2,600 km of tolled roads during the next 20 years – an average of 160 km of motorways a year. According to this new plan there was to be built the four following motorways:

- A1 (597 km) from Gdansk via Lodz, Katowice to Gorycze near to Rybnik;
- A2 (626 km) Swiecko – Poznan – Warsaw – Terespol;
- A3 (440 km) Szczecin – Gorzow – Zielona Gora – Legnica – Lubawka;
- A4 (738 km) Zgorzelec – Wroclaw – Katowice – Krakow – Medyka.

However it soon became clear that this ambitious plan was not realizable and as a result the Polish government had to reduce the length of planned roads by 600 km. However, this reduction in highway length could not help sufficiently. The severity of the problem became clear when it was realized that in order to adapt Polish roads (not including motorways) to European standards there was needed up to 2015 about 90 milliards zlotys, that is to say more than a half of the entire budget of the country. Motorway construction would be in addition to this.

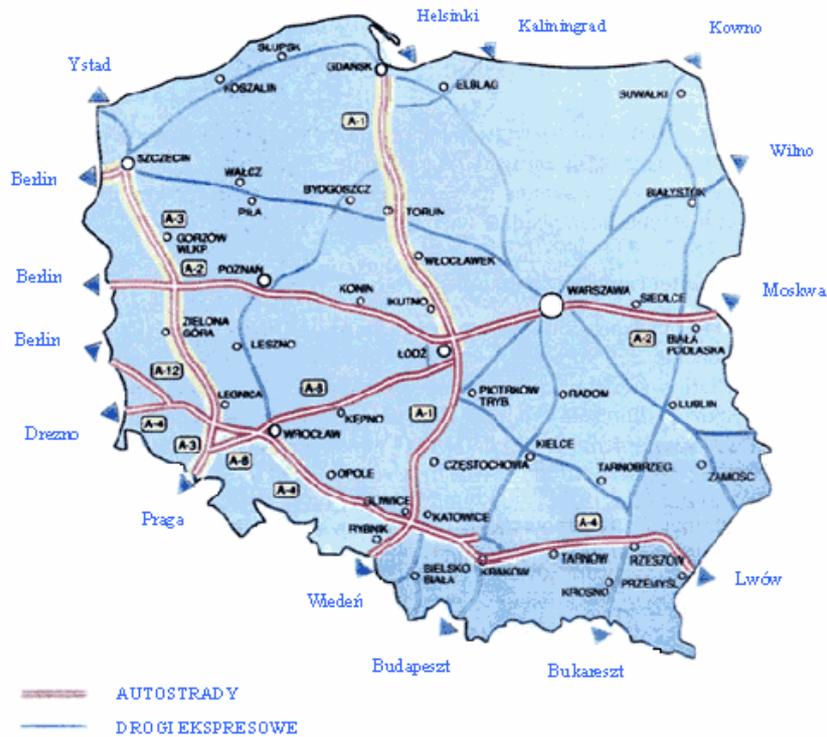


Figure 3: planned motorways and express roads in Poland.  
 Source: Ministry of Infrastructure.

### The latest plan for the roads and motorways network of Poland

In 1998 the Polish Ministry of Transport and Maritime Economics concluded a project entitled “Transport Policy of the Country for 2000–2015; Years for Eco-development”. The project examined the ways of creating the necessary conditions for the integration of the Polish highway transport network with the European network and suggested possibilities for improving new technologies for multi-modal transport and the construction of European transport chains. It was concluded that 7% of Polish gross domestic product a year should be spent upon the development of transport in order to achieve these aims within the next 10 years. Contained within the conclusions of the project were aims at integrating the Polish economy including building the following planned transport networks:<sup>4</sup>

- the modernization and construction of road and railway networks forming part of the Trans-European transport corridors (TINA) including activating a programme of raising standards and consolidating road surfaces and bridges;
- the improvement of the management system for roads and traffic movements and improved control of compliance with rules concerning safety of highways.

<sup>4</sup> Polish Ministry of Infrastructure

The programme of constructing road infrastructure in Poland consists of three main parts - motorways, express roads and accelerated roads. The aim of the programme is the creation of an efficient and effective transport network, including contributions to four priority European corridors:

- I Helsinki – Tallinn – Riga – Warsaw.
- II Berlin – Warsaw – Minsk – Moscow – Niznyj Nowograd.
- III Berlin – Drezno – Wroclaw – Krakow – Przemysl – Lwow – Kiev.
- IV Gdansk – Warsaw – Katowice – Zilina.

As part of the Polish contribution to these networks it was decided to build the three following motorways by the year 2015:

- A1 – Gdansk – Torun – Czestochowa.
- A2 – Swiecko – Poznan – Warszawa – Terespol (on the border with Belarus).
- A4 – Zgorzelec – Wroclaw – Gliwice – Katowice – Krakow.

However, the plan to build motorway A3 in the near future, the most important investment within the western maritime region, was almost immediately interrupted. The motorway was to have its beginning in Szczecin and pass by Gorzow, Zielona Gora, Legnica and Lubawka to reach the border with the Czech Republic. The motorway was subsequently limited to the stretch between Szczecin and the beginning of motorway A2 (see Figure 2) and farther on was to be replaced by Express Road S3 from Zielona Gora. The building of the S3 road should be finished earlier than the motorway would have been and the cost of its construction is likely to be lower by about 30%. Besides this plan, the building of Express Roads connecting Wroclaw (via Poznan) with Bydgoszcz, Bydgoszcz (via Warsaw) with Lublin and the border of the country, and the border of Poland with Slovakia (via Krakow, Kielce, Warsaw, Bialystok) with the border of Lithuania, is planned according to the transport network programme. This key network is to be completed by a number of domestic roads amongst others including: Szczecin–Bydgoszcz, Katowice–Kolobrzeg, Gdansk–Warsaw, and Rzeszow–Bialystok. It is planned to build 1572 km such roads by the end of 2015. Earlier it had been the plan to build about 23,000km of such roads but because of the shortage of financial resources, this aim was clearly unrealistic.

During the activities of the project - in the period between 2004 and 2006, and with the long-term perspective up to 2008 – there is planned to be realized the following tasks:<sup>5</sup>

- connecting Warsaw with Swiecko and the western border of Poland by Motorway A1;
- connecting Tarnow, Krakow, Katowice and Wroclaw with Germany by Motorway A4 and A18 (In Germany Motorways nr 4 and 15);

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<sup>5</sup> Ibidem.

- connecting Gdansk, Grudziadz, Motorway A2, Lodz, Czestochowa with the Czech Republic (at Gorzyce) by Motorway A1;
- modernisation of Motorway A6 from Szczecin to the Polish border at Kolbaskowo (with connection with Germany and Motorway nr 11) [plans for 2004 and 2005];
- building Express Road nr S8 from Warsaw to Wyszkow;
- building Express Road nr S22 connecting Gdansk with the Polish border at Grzechotki (and then onwards to Russia).

In addition it is intended to reconstruct a part of a number of roads in order to adapt them to a standard of pressure of 10 tons per axle between 2004 and 2006. The roads to be modernized are as follows:<sup>6</sup>

- nr 1 Torun – Lodz (144 km).
- nr 2 Warsaw - Terespol (132 km).
- nr 4 Krakow - Tarnow (56 km).
- nr 4 Rzeszow - Radzynie (70 km).
- nr 50 Sochaczew – Mszczonow – Grojec – Minsk Mazowiecki (140 km).

Further developments in the Polish plans include related improved facilities for the domestic roads network, which are proposed in the Treaty between Poland and the European Union. These include rebuilding roads nr 5, 7, 12 and 17 between 2007 and 2013. The roads will be adapted to accommodate pressures of 11.5 tons per axle.<sup>7</sup>

In order to realize all these aims in the re-building of the highway infrastructure in Poland, there is needed a degree of substantially increased financial resources. The following sources of finance have been suggested and will be followed up: public sources (taxation), planned fuel payments, EU grants and loans; and credits from the other international financial institutions.

The cost of building these 1572 km of roads is about 10bn euro including an average price of building 1 km of motorway in Poland of 4.1m to 5m euro. In Silesia, because of the damages caused by the mining industry over many decades, the price of 1 km of motorway is twice as high. Constructing tolled motorways can help recover these costs and also create profits for the operators. According to the USA consulting company Wilbur Smith, between 75,000 and 94,000 vehicles a day will use the motorway facilities partly dependant upon the price chosen. According to more optimistic forecasts it could even be between 15,000 and 22,000 vehicles a day.<sup>8</sup>

Only decisive actions at a political level, particularly in terms of creating appropriate financial conditions, will create the basis for realizing these plans for the highway network in Poland. An appropriately designed and powerful organizational structure will also be needed to activate and direct motorway construction or else little will occur. Finally, a sufficiently streamlined and well designed regulatory regime will also be important.

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<sup>6</sup> Ibidem.

<sup>7</sup> Ibidem.

<sup>8</sup> Ibidem.

### **The advantages for Poland**

The creation of a well developed and appropriate highway network for Poland should be a priority for the Polish government and is now essential following membership of the European Union. It is motivated by many different and undeniable advantages. In particular ensuring the good condition of Polish roads and increasing of number of cross-roads free from the possibility of collisions will have a major influence for improvement of safety and the reduction in the number of accidents which currently occurs.

Economic advantages also clearly play a very important role. Included among them is the activation of international trade, an improvement in the accessibility of particular cities and regions, the possibilities for developing new areas for the employment market and a general reduction in the time for travel. Development of the road network encourages integration between different centres of economic and cultural development and increases access to high level services and different branches of industry.

However, apart from these advantages it is perhaps most necessary to acknowledge the transit advantages, both in the range of passenger transport and goods carriers and it is here that the links with current and potential ferry operations from Polish ports is most apparent. An increase in transit traffic has a clear influence upon the activation of development of Polish maritime ports in addition to its impact upon ancillary services including amongst others: hotels, gastronomy, fuel suppliers and tourism. It also has a significant and beneficial influence upon the development of other branches of industry (for example food, clothes) which may be given advantages by additional transit facilities encouraged by highway improvements.

#### *The Polish motorway network and the ferry shipping sector*

In 2005, in Poland two Polish (Polferries and Unity Line) and one Swedish ferry company (Stena Line) are operating across the Baltic Sea. Polferries' services operate from Gdansk to Nynashamn (Sweden) and also compete with Unity Line on the line from Swinoujscie (Poland) to Ystad in Sweden. The Swedish operator Stena Line serves the connection between Gdynia and Karlskrona (Sweden), where two passenger/car units and one passenger/car/trailer ferry are in operation.

These ferry carriers from Poland are mainly attractive for movements in two transport corridors which run North–South:<sup>9</sup>

- Western – connecting Scandinavia and Denmark with Germany and Poland, where about 9 million passengers, 2 million cars, more than 1 million trailers and more than 130,000 rail wagons are carried each year;

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<sup>9</sup> *ShipPax Statistics 01. The Yearbook for Passenger Shipping Traffic Figures*. Halmstad, Sweden 2001, s. 83 – 126.

- Central - connecting Sweden and Finland with the agglomerations of Gdansk, Riga (Latvia) and Klaipeda (Lithuania), where more than 400,000 passengers, 60,000 cars and 21,000 trailers are carried each year.

The share of Polish ferry operators in the German market is currently very small with nearly all carriage on ferries serving Polish ports peripheral in character with limited freight transport and tourist traffic. The most important route in this western sector for Poland is the connection from Gdynia to Karlskrona in Sweden, on which the movement of passengers has increased by about 40% over the last 20 years.

The biggest role played by ferry shipping in Poland is that connected with marine tourism. The most important customers are citizens from Sweden, Finland, Norway and Denmark. In last few years the number of passengers arriving from those countries increased substantially and with the expansion of the EU, these numbers are bound to increase. The number of travellers from Scandinavia to the countries of South Europe (for example to Italy, Greece and Spain) has also increased dramatically. In 2004, about 20% of all inhabitants of the Scandinavian countries crossing Poland traveled to South Europe. In all in 2004, there were around 450,000 foreign passengers (mainly from Sweden amounting to around 50 % of the total).<sup>10</sup>

In recent years the Scandinavian countries have become increasingly more popular with travelers from the rest of the European continent as well attracted by the environment offered by Norway and Sweden. Every year over 4 million passengers travel on ferry lines connecting German and Polish ports with Scandinavia although the large majority of these use German ports. Poland is transited only by about 5% of passengers from the south of Europe. However, thanks to the integration of Poland with the EU, the number of passenger movements via Polish ports is likely to increase because of its strategic location lying along the shortest communication routes in a North-South direction.

Within the Polish ferry market two basic groups of passengers can be identified. The first of these are residents from Poland who make up about 40% of all ferry passenger movements passing through Polish ports.<sup>11</sup> Amongst this group it is worth noting:<sup>12</sup>

- tourists going on vacation to Scandinavian countries and Denmark (mainly in the summer season);
- participants of marine cruises;
- Polish drivers of trucks and other passengers going to Scandinavia and Denmark for business.

The second group consists of foreign passengers making up around 50% of those carried. Amongst this group should be noted:<sup>13</sup>

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<sup>10</sup> Institute of Tourism.

<sup>11</sup> Unity Line.

<sup>12</sup> Urbanyi - Popiołek, I. (1998) *Market of ferry shipping in North Europe*. The University of Gdansk, Sopot.

<sup>13</sup> Ibidem.

- Scandinavian and Danish citizens traveling to Poland for vacation (commonly with Polish connections with their family living abroad) mainly in the summer season;
- inhabitants of Scandinavian countries, Denmark and Central and South Eastern Europe transiting through Poland;
- foreign drivers of trucks;
- foreign participants of marine cruises.

The other identifiable group of customers is made up of institutions. Amongst them we should mention first of all companies organising conferences and courses for their workers on board ferries and also private schools organising different meetings for pupils.

In the case of cargo traffic, Scandinavian countries and Denmark play the key role for Polish based ferry shipping. However these countries have only a small share of their foreign trade with Poland totaling in terms of exports and imports between 8 and 8.5%. Comparing the trade of Poland with these countries, the biggest share – also in terms of total exports and imports is with Denmark which has 30% of Polish imports and 32 % of exports in 2004. Sweden co-incidentally has the same pattern of trade. Finland is less significant with about 29% of Polish imports and 8% exports. The smallest share is with Norway with about 9% of imports and 8% exports. Electrical machinery, food, chemicals and light industrial goods play the most important role in the structure of cargo movements.

The share of goods trade from the Eastern Baltic countries of Lithuania, Latvia and Estonia remains of little importance in Polish foreign trade with about 2.3% of Polish exports and 0.4% of imports<sup>14</sup>.

A very important market for Polish based ferry shipping is the transit of general cargo. In Polish ports this category represents about 80% of total cargo each year.

The main countries for Poland with respect to international transit trade are the Czech and Slovak Republics. Other countries, which commonly use Poland for transit are: Belarus, Ukraine, Russia, Hungary, Romania and Austria (Table 1). Taking into consideration the export and import trade of Poland, trade with the Baltic States and Baltic Sea transit crossings, the share of Polish based ferry shipping of the general cargo trade is about 12%.

According to various forecasts, the demand for ferry operations from Poland should increase as a result of the intensification of international trade between Poland and Scandinavia, Denmark and other European Union countries located along the North-South transport corridor. Passenger movements between these countries will increase also. According to the Polish Organization of Tourism, the number of foreign citizens arriving in Poland will increase by about 2.5% a year for the next 10 years. This increasing trend is also forecast for Polish citizens traveling abroad.<sup>15</sup> The growth up to 2010 is expected to be about 1.9 million passengers, 450,000 cars, 200,000 trailers, 75,000 rail wagons and from 3.5 to 4.0 million tons of general cargo.<sup>16</sup>

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<sup>14</sup> *Transport – results in 2000 years*. GUS, Warsaw 2001.

<sup>15</sup> *Tourism in 1998*. GUS, Warsaw 1999.

<sup>16</sup> Tubielewicz, A. (ed.) (1994) *Forecast of development of container in Port of Gdynia*. Technical University of Gdansk, Gdansk.

Table 1: general cargo transit reloading in Polish ports 1997 [000tons].

<i>Transit Countries</i>	<i>Gdynia</i>			<i>Szczecin-Swinoujscie</i>					
	<i>Gdansk</i>								
	Import	Export	Total	Import	Export	Total	Import	Export	Total
Slovakia	3.2	34.3	37.5	9.6	0.7	10.3	7	441	448
Czech Rep.	2.1	27.7	29.8	8.1	2.0	10.1	8	305	313
Russia	1.5	0.1	1.6	2.5	1.0	3.5	1	1	2
Belarus	0	0.9	0.9	-	0.1	0.1	-	-	-
Hungary	0.8	-	0.8	0.05	0.04	0.09	-	-	-
Lithuania	0.2	-	0.2	-	-	-	-	-	-
Latvia	-	-	-	-	-	-	-	-	-
Ukraine	-	-	-	0.09	0.02	0.11	-	-	-
Austria	-	-	-	0.01	-	0.01	-	-	-
Estonia	-	-	-	-	-	-	2	-	2
Luxembourg	-	-	-	-	-	-	0	1	1
Other Countries	-	-	-	0.05	0.3	0.35	-	-	-
Total	7.9	63.0	70.8	20.4	4.16	24.56	18.0	748.0	766

Source: Anonymous (1999) *Bearings for Sea and Trade*, Nr 18/1999, p. 14.

Table 2: forecast of passenger and cargo turnover in Polish ports in 2010.

<i>Specification</i>	<i>Swinoujscie</i>	<i>Gdansk/Gdynia</i>
Passengers [thousands]	1000	800-900
Cars [thousands]	250	180-200
Trailers [thousands]	180	70
Rail wagons [thousands]	45	30
General cargo [millions of tons]	2.8-3.0	0.7-1.2

Source: Tubielewicz, A. (ed.) (1994) *Forecast of development of container in Port of Gdynia*, Technical University of Gdansk, Gdansk.

In the near future the potential exists for new inland motorway based routes to be developed through Poland which will attract traffic away from the Polish ferry sector. This is especially the case on the East-West route running from Russia, through the Baltic States and Belarus and Poland and on to Germany and Western Europe. Currently some of this traffic uses Polish based ferry operators for some of their route (for example trucks make great use of the Tallinn-Helsinki ferry operations rather than Poland-Finland links because of the problems of transiting Poland). Meanwhile, the development of North-South motorway links targeting Polish ports would have a dramatic effect upon Polish based ferry operations as it would provide a viable road based alternative to the current trend of avoiding Polish ports and using those in Germany, Lithuania and beyond which have better road links. Polish ferry carriers will continue to have to function under pressure of a developing transport system for some years: in other words freight taking land and marine (ferry and ro-ro) services from

Moscow, St. Petersburg, Riga and Tallinn traveling via the ports of Finland to West Europe avoiding Polish ports. The development of new motorways would make routes via Poland more attractive.

Consequently, in order to develop Polish ferry shipping operations beyond their currently limited activities there is a substantial need to build a network of motorways and in particular to complete the North-South proposals which remain largely unfinished despite a planning period now exceeding 30 years. Sources of finance remain the main problem and need to be acquired from other than the Polish state which in the foreseeable future will not have the resources to devote to this issue. Grants and loans from the EU, income from fuel taxation, and proposals for road pricing and private sector investments remain alternatives much talked about but with little progress. Without this investment, Polish ferry shipping activities will remain insignificant despite Poland's strategic location and port facilities.

If we accept the prognosis of the Polish Ministry of Infrastructure, the forecast increase of cars and truck/trailer movements in Poland in the next 10 years confirms the necessity to build the A1, A2 and A4 motorways in particular. If this does not happen we can expect that much of the traffic between the Balkans, South-East Europe, Slovakia, the Czech Republic, the Middle East and Scandinavia/Finland will continue to use ferry services across the Baltic which avoid Polish ports and the services that they offer.

## Conclusions

Without a modern and fully developed motorway system which mirrors that found in the established countries of the EU, Poland will have few opportunities for the effective functioning and revitalization of its ferry shipping industry which has the potential to create wealth and employment for the country. Currently financial problems make the construction of these roads and associated ferry facility developments unlikely leading to the continued diversion of North-South movements of cargo and passengers to the Baltic States and Germany highly probable.

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