

**RENATA CZERMAŃSKA**

Department of Economics and Law  
Maritime Institute, Gdańsk, Poland

## DEVELOPMENT OF INTERMODAL CARGO TRAFFIC IN POLISH SEAPORTS

### *Abstract*

*In the paper, general trends of intermodal cargo traffic through Polish seaports are discussed. The rates and directions of development of unitised cargo (in containers, containers on chassis, on trucks, trailers, rail trucks), transported in land-sea container, ro/ro and ferry traffic, are presented.*

*The intermodal transport system is used in Poland since many years, and much experience was gained both with respect to organisation and to techniques of transportation. Though in the last years development of this system of transport faces numerous obstacles, and is limited by many factors, it nevertheless shows a general positive trend.*

### **Container traffic**

In spite of the difficult situation in Polish foreign trade at the beginning of the 80ties and during the transformation of the economy of Poland and transit countries in the 90ties, container traffic through Polish ports shows a systematic growth. In 1985 in Polish ports handled 831 thousand tonnes of containerised cargo, in 1995 it was 1400 thousand tonnes, and in 2000 this type of traffic increased to 2339 thousand tonnes (Table 1)<sup>1</sup>. The average rate of growth during the last 5 years was 110.8%.

Predictions of future container traffic through Polish ports are also positive. According to forecasts developed for these ports, container traffic shall increase annually by 6-8%, i.e. at the globally predicted level. For example, in forecasts developed by the Institute of Shipping and Logistics in Bremen, global container handling will increase on average by 7.5% annually in the period 2000-2005, and during the next 5 years by 7% annually.

Independently of the constant growth of container traffic in Polish ports, during the last years there is also a positive trend in the increase of fully loaded containers and decrease of

---

<sup>1</sup> In accordance with the principles of port statistics, in Polish ports the volume of cargo handled in containers is represented by the gross weight of the cargo, i.e. the summary weight of cargo, packing, pallets and of own weight of the containers.

empty ones. In 1990 containers with cargo formed 65.2% of the total number of containers handled in Polish ports, in 1995 the participation was 72.3% and in 2000 it increased to 72.8%. Lower transportation of empty containers to be loaded in other countries, which, as is known, is related to the imbalance in Polish exports and imports, certainly decreases the cost of this transport system.

Table 1. Container traffic through Polish seaports in the period 1995-2000

Specification	Units	1995	1996	1997	1998	1999	2000
<b>TOTAL</b>	thous. tonnes	1 400	1 618	1 819	2 107	2 063	2 339
	thous. TEU	155	170	183	226	208	228
	quantity	104 033	115 644	124 375	187 226	136 752	149 109
Gdańsk	thous. tonnes	8	6	11	13	39	153
	thous. TEU	2	1	2	3	5	18
	quantity	2 216	2 129	1 798	1 798	3 466	11 493
Gdynia	thous. tonnes	1 329	1 560	1 783	2 043	1 914	1 994
	thous. TEU	140	157	177	213	191	188
	quantity	91 532	103 937	118 728	178 872	124 493	123 125
Szczecin	thous. tonnes	63	52	25	51	110	192
	thous. TEU	13	12	4	10	12	22
	quantity	10 285	9 578	3 849	6 556	8 793	14 491

Simultaneously, the increase of containerised cargo traffic through Polish ports shows higher dynamics than the increase of conventional (non-containerised) general cargo. This is reflected in the constant growth of containerisation of general cargo in Polish ports. The participation of containerised cargo in the total general cargo traffic, which is a measure of the quality and modernity of general cargo handling techniques, increased in the period 1995-2000 from 14.6% to 21.1%, in that in the Port of Gdynia from 35.3% to 47.0%. However, in spite of the constant improvement of this indicator, Polish ports, especially Gdańsk and Szczecin, still have a low position on the list of European ports with respect to the quality of handling of general cargo. This results mainly from the low supply of such cargo, which additionally is limited by the development of land transportation of containers to West European ports.

In the last years the development of container traffic through Polish seaports is limited by many factors. New economical principles, introduced during the period of transformation significantly changed the conditions of functioning of maritime businesses. First of all, the introduced free flow of cargo through the State borders, and the possibility of selecting by the shippers and forwarders the transportation route on the basis of price and quality criterions, supported the development of competition of the large West European ports and of the land means of transport. Liberalisation of economical activity in the country resulted also in the appearance of numerous private truck and rail Polish businesses and businesses with participation of foreign capital, which took over a large part of the container transportation market from and through Poland in relations with West European ports. This limited the number of containers directed to Polish ports. In effect, the process of "running away" to West European ports of a part of the general cargo, especially containerised, systematically strengthened.

The largest part of land container transports is realised by the Polish-German company "Polzug", which offers regular services by block trains between the German ports Hamburg/Bremerhaven and land terminals in Poland. Since its appearance in 1992, the company steadily increased the network of serviced by it terminals in Poland, and then started to form container trains from Polish terminals to the east. Transports realised by this company increased with the extension of the network of terminals included in these connections (Table 2), and at present they form about a third part of all container traffic in Polish ports. The largest number of containers is directed to Hamburg (e.g. in 2000 it was 46 747 TEU, i.e. 92% of all the transports by these units).

Table 2. Container transports of "Polzug" between Poland and Hamburg/Bremerhaven in the period 1995-2000

Specification	1995	1996	1997	1998	1999	2000
	TEU					
<b>TOTAL</b>	<b>23 430</b>	<b>27 478</b>	<b>36 891</b>	<b>45 120</b>	<b>48 800</b>	<b>50 812</b>
Export	12 871	14 340	18 540	15 792	15 128	15 244
Import	10 559	13 138	18 351	29 328	33 672	35 458

This large, over twofold, increase of container transports by rail during the last 5 years has significantly limited the development of container traffic through Polish seaports and of the maritime feeder services. The good results attained by "Polzug" are due to many factors. This carrier offers advantageous conditions of intermodal transport in door/door relations in the whole area of Poland, offering also shorter times and lower prices than the Polish rail carrier, which supplies containers to/from Polish seaports. Besides, customs clearance is ensured in all the terminals, and at the border only transfer clearance is carried out. It is also worth pointing out, that besides container transports in relations with Hamburg/Bremerhaven, "Polzug" transports containers also in internal relations. The volume of container transports realised by the company on the internal market in 2000 was about 4 220 TEU.

However, it is thought that the largest number of containers in relations with West European ports is transported by road, by numerous private truck businesses, functioning on the transport market. There are no statistics, which would allow to determine the volume of these transports. In the context of the transport policy of the European Union, directed at protecting the environment and reducing congestion on roads and border passes, it may be expected that in the coming years the role of road transport in container carriage between Poland and the West European ports will decrease, while short sea shipping will increase.

The general increase of container traffic through Polish ports is of course connected with the opening in 1979 of the Baltic Container Terminal in the port of Gdynia, operated at present by the "Baltic Container Terminal Sp. z o.o." (BCT). This terminal since many years is the main place where land/sea container transports are serviced. At present over 85% of the whole container cargo volume passing through Polish ports is handled in this terminal, and the throughput shows a permanent growth trend.

The exceptionally high, since 1995, dynamics of container handling at the BCT is due both to the active operation of the company "Spedycja Polska Spedcont", which at present

is the biggest intermodal transport operator in Poland, and to the formation of the earlier Polish and now Polish-Chinese company "Baltic Container Lines" (a partnership of the Polish Ocean Lines, Port Gdynia Holding S.A., C. Hartwig Gdynia and Chipolbrok). This company started regular container services by sea to Hamburg and Bremerhaven, and to the Baltic States' and Russian ports.

Beginning from 1994, "Spedcont" organises and realises container transportation by block trains between the BCT in Gdynia and a network of own, well equipped container terminals, located inland (in Łódź, Poznań, Warszawa, Sosnowiec, Nysa). In its offer "Spedcont" includes carriage of the cargo by road transport directly to the receivers. The influence of operation of this company on the volume of container traffic through the port terminal is shown by the permanent growth trend of realised by it container transports, which increased from 5.4 thousand TEU in 1995 to about 30.0 thousand TEU in 1999.

After a period of systematic decrease, some increase of container traffic is lately observed also by the ports of Gdańsk and Szczecin. Even though these ports have no specialised terminals, the existing in them container handling potential since many years is far from being fully utilised. However, in result of activities of these ports aiming at attracting new feeder lines to/from West European ports, also because of the development of existing in these ports terminals and planned building of new container terminals, it may be expected that the role of these ports in land/sea container transports will grow.

At present, the biggest limitations in container supply occur in Gdańsk. A significant part of the containers instead by sea is transported from this port to Hamburg/Bremerhaven by train, by the "Polzug" company. For example, in 2000, of the 11 493 containers handled in Gdańsk 1 866 containers remained in land transportation and were carried by "Polzug". In the previous years "Polzug" participation was much larger, and e.g. in 1999 it was about 32%. However, due to active marketing, attracting to Gdańsk new ship-operators, opening new regular shipping lines and realising many new investments, the last two years show improvement and reversal of the hitherto decreasing trend of container traffic through this port.

In the process of preparing Gdańsk for bigger containerised cargo volumes, the Gdańsk Container Terminal was established (as a joint venture of many enterprises) and began operations in December 1998. Also the Szczecin Quay was adapted for the new terminal while utilising the existing infrastructure. In its present state this terminal can handle 35 000 TEU per year and can serve any ship used in feeder services on the Baltic. At the same time, after talks with ship-operators, forwarders and feeder line operators, new regular container lines are opened, both in the form of feeders to West European ports and of regional (short sea) services to Baltic Sea ports. Effects of these initiatives are already visible. In 2000 the Gdańsk Container Terminal (GCT) handled 18 000 TEU, more than doubling the amount of the previous year. From the beginning of 2001 further development of the GCT is continued, aiming at improving the quay and the container handling facilities to allow simultaneous servicing of two container carriers. A new, relatively large, 860 TEU capacity container carrier started sailing from Gdańsk. In order to increase unitised cargo supply, the port has started intensive actions to open, within the land/sea transport corridor, a regular intermodal rail connection for containers and trailers, and also for bulk cargo, from the ports in Odessa and Iliichevsk. The planned new railway connection will allow carrying cargo from the Black Sea region to Scandinavian and West European ports at competitive prices and in less than half the time needed to transport it by the traditional route through the Mediterranean Sea.

In the light of developed forecasts, predicting a significant increase of container traffic through Baltic Sea ports to about 2 million TEU, the Port of Gdańsk intends to become an important centre in the Baltic Sea region, and to take over a large part of this cargo volume. That is why it is planned to build a modern container terminal with annual handling capacity of 500 000 TEU, able to receive, without intermediary action of large European ports, big ocean-going vessels of 3-4 thousand TEU capacity. The Gdańsk terminal would serve all Polish forwarders. It is expected that about 70% of the containerised cargo would be to or from Polish receivers (consignors). Feeder vessels would carry the rest of the cargo to other Baltic ports. The terminal will be built in the North Harbour, which has the most suitable hydrotechnic conditions, big capacity for development, and good access from sea and land. The pre-condition for the terminal is to present an attractive offer and to gain forwarders.

Similar activities to increase container traffic are taken up by the Port of Szczecin. Its container terminal has been modernised. Interest in the port increased, especially from the German transit clients, after Szczecin was included into the feeder service network to Bremerhaven and Hamburg, and to Hamburg, Bremerhaven and Felixstowe.

### **Handling of other unitised cargo**

Servicing of other unitised cargo, called ro/ro units (devices and means of transport with or without cargo), is realised at specialised berths in ferry and container terminals, using the horizontal cargo handling system. Mostly this is cargo on trucks, trailers, semi-trailers, in containers and in rail trucks, handled by ferries or ro/ro vessels. As in the case of containerised cargo, traffic of this type of cargo through Polish ports shows a distinctly growing trend since many years (Table 3 and Figure)<sup>2</sup>. During the period 1995-2000 they increased on average by 8.1% annually.

In accordance with the basic essence of ferry transport, this form of transportation in Poland is closely connected with Baltic Sea shipping. Traditionally, Polish ports maintain year-round and seasonal ferry connections with Scandinavian ports, and these lines show a steady increase of cargo traffic.

On the background of the generally growing trend in cargo volume in ferry terminals (berths), cargo on trucks and semi-trailers shows especially high growth dynamics, while the number and quantity of cargo in rail trucks is steadily decreasing (Table 3). Only during the last 5 years the number of handled in Polish ports trucks and trailers (semi-trailers) with general cargo grew from 81 003 to 147 493. During the same time the number of rail trucks decreased from 35 219 to 18 747.

The Ferry Terminal at Świnoujście plays a basic role in the service of land/sea ferry transports in the Polish intermodal transport system. At present about 79% of cargo carried by ferries from Polish ports passes through this terminal.

---

<sup>2</sup> The magnitude and dynamics of growing ro/ro traffic trend do not include cargo in containers transported by sea on trailers and semi-trailers, which, in accordance with principles of port statistics and of the Central Statistical Office, are recorded in the group "containers". In ferry terminals, container traffic in the form of ro/ro units is marginal. In the period 1998-2000 such traffic was only 2-3% of the total cargo handled in this technique in the BCT, while in earlier years it was 16-20%.

Table 3. Traffic of ro/ro units in Polish ports in the period 1995-2000<sup>1</sup>

Specification	1995	1996	1997	1998	1999	2000
	thous. tonnes					
<b>TOTAL</b>	<b>2 184</b>	<b>2 153</b>	<b>2 413</b>	<b>2 568</b>	<b>2 618</b>	<b>2 882</b>
<b>Gdańsk, total</b>	77	16	26	32	35	52
- trucks and trailers	77	16	26	32	35	52
<b>Gdynia, total</b>	<b>605</b>	<b>737</b>	<b>931</b>	<b>1 037</b>	<b>1 001</b>	<b>1 015</b>
- trucks and trailers	605	737	931	1 037	1 001	1 015
in that:						
on ships	416	501	614	617	547	587
on ferries	189	236	317	420	454	428
<b>Świnoujście, total</b>	<b>1 502</b>	<b>1400</b>	<b>1 456</b>	<b>1 499</b>	<b>1 582</b>	<b>1 815</b>
- trucks and trailers	901	907	1 015	1 100	1 203	1 417
- rail trucks	601	493	441	399	379	398

<sup>1</sup> Net weight of cargo (without own weight of means of transport) and without cargo in containers.

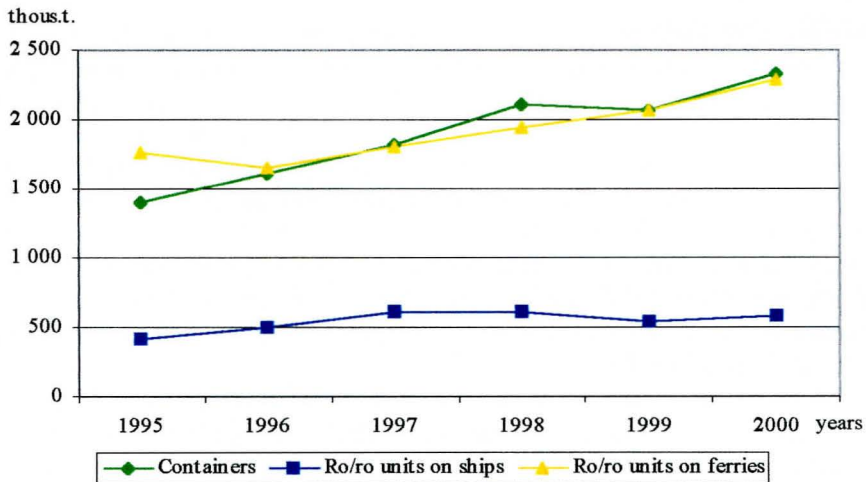


Fig. Development of container and ro/ro unit traffic through Polish seaports in the period 1995-2000.

After recent extension and modernisation, this terminal is one of the largest ferry terminals in Europe, and forms an important element of the Polish transport infrastructure. It is also a key communication node in the North-South passenger and cargo transport system. In result of investments, consequently carried out for many years, three new ferry berths were built, and two berths were modernised. The whole technical and transport infrastructure also was developed and modernised. At present the terminal has five ferry berths (two for rail/truck ferries and three for passenger/truck ferries) and can service 810 thousand passengers, 150 thousand cars, 60 thousand rail trucks and 2 620 thousand tonnes of cargo. However, the existing handling capacity is not sufficiently utilised. Each day only four ferries sail from Świnoujście, while the terminal could receive 15 ferries daily.

Another important centre for handling cargo in other cargo units, transported by ro/ro vessels and ferries, is the BCT in Gdynia. Besides servicing container transports, this terminal handles significant amounts of general cargo and cargo in containers on trucks, trailers and semi-trailers, and this traffic is constantly growing.

Especially quickly traffic is developing at the ferry service stand located at the ro/ro berth. In the period 1995-2000 the volume handled at this berth has increased by 121%, and the number of serviced trucks, trailers and semi-trailers (with cargo and empty) has grown from 7 807 to 17 043 units.

In order to increase handling capacity, the Gdynia Sea Port Authority (owner of the terminal) decided to move a part of the ro/ro cargo activities (paper and steel on trucks and semi-trailers) from the BCT to the region of Basin V. This not only will provide more space at the BCT quay for container vessels, but also will provide additional storage and handling capacities, especially for transit cargo from e.g. Russia, which cargo is at the terminal unloaded from containers and loaded onto trucks.

Besides, a car distribution centre (Baltic Auto Center) has been built behind the BCT. This centre services about 90% of the cars imported to Poland by sea. The centre has storage places for 10.000 cars, and in 2000 handled about 48.000 cars, mainly Japanese.

Because in the Baltic region, in sea transport of containers and other units, the ro/ro system is preferred (as proven by the numerous liner connections of this type), and because a further growth of general cargo traffic is expected in this region (6-10% annual growth during 10 nearest years), the Port of Gdynia intends to compete for this cargo. In 1998 the port started to build a modern ro/ro terminal. The terminal will have the largest in Polish ports potential for servicing ro/ro vessels, and it is planned that it will take over all ro/ro activities. This in effect will increase the capacity of the BCT to handle lo/lo containers.

With respect to land/sea transportation, the importance of the ferry terminal in Gdańsk is rather small. It is planned to increase its possibilities and to improve the conditions of servicing ferries. Moving the terminal to another location in the port, with better possibilities of development, is considered. For the nearest future, many modernisation works are planned (including extension of the quay by 42 metres) to ensure a quick improvement of services offered to ferries in this port, especially navigation conditions during berthing.

## Literature

- [1] Czermańska R., 1999, *Development of intermodal transport in Europe*. Prace IM No. 735, Gdańsk (in Polish).
- [2] Czermańska R., 2000, *Development of land/sea intermodal transport in European Union countries and in Poland*. WW IM No. 5709, Gdansk (in Polish).
- [3] *Maritime Economy. Statistical Review for 1996-1999*. Prace IM, Gdańsk 1996-1999 (in Polish).
- [4] Neider J., 2000, *The volume and structure of Polish foreign trade cargo and its servicing by various branches of transport*. "Namiary na Morze i Handel" No. 9 (in Polish).
- [5] *Materials of the representative of the Port of Hamburg in Warsaw* (in Polish).
- [6] *Statistical materials of the Baltic Container Terminal Co. Ltd.* (in Polish).
- [7] *Statistical materials of Polish Baltic Shipping* (in Polish).
- [8] *Statistical materials of port enterprises* (in Polish).

- [9] *Spedcont – the largest combined transport operator*. “Namiary na Morze i Handel”. February 2000 (in Polish).
- [10] *Ro/ro terminal in Gdynia*. “Namiary na Morze i Handel”, February 2000 (in Polish).
- [11] *Transport, its effects 1995-1999*. Central Statistical Office, Warszawa 1996-2000 (in Polish).