

An estimated year 2005 demand for Polish container activity may subsequently be estimated based on the information contained in the macro-economic frame:

Demand forecast (TEU/'000)

1st trend	:	12.5 - 9.0
2nd trend	:	6.5 - 5.0
3rd trend	:	4.0 - 3.0

Total number of containers (thousand TEU)

High case	:	507
Low case	:	122

(2) Container Terminal

The container terminal at the port of Gdynia can accommodate containers up to 140 thousands TEU. So, for the low case, the current capacity of the port of Gdynia would be sufficient. But, for the high case, the number of containers are quadrupled and the capacity of the port of Gdynia is far below demand.

The number of containers is heavily influenced by several factors to include economic vitality and characteristics of the hinterland. The port complex of Gdansk and Gdynia could gain new hinterlands which would increase the forecasted number of containers. This would lead to the expansion of the container handling capacity of Gdansk - Gdynia Port Complex.

The Port Complex of Szczecin and Swinoujscie has similar possibilities. The port of Szczecin, which provides the shortest access to Berlin, could provide the cheapest transport service from the sea not only for bulk cargoes but also for containers. Therefore it is worth investigating the opening of a new feeder container service from the ports of Hamburg and Bremerhafen to Szczecin, considering Berlin as the hinterland of the port of Szczecin. A new container feeder terminal might be needed for this service, however, a new terminal could be constructed as a multi purpose terminal in the early stages.

The Port of Szczecin is located 60 km upstream from the mouth of the Oder River, which requires port dredging to increase the draft. The Maritime Office at Szczecin carries out maintenance dredging works of an annual volume of about one million cubic meters. Therefore, it is obvious that container terminal planning at the port of Szczecin should take this into serious account.

4) Energy Terminal

Due mainly to the high production cost, the volume of coal production is expected to decrease in Poland. Some import of coal is even expected. According to the IEA report (ENERGY POLICIES; POLAND 1990 SURVEY), the Energy Department, Ministry of Industry predicts that some 26 million tons of oil and oil products are expected to be imported for the year 2005. And for natural gas, it is predicted that Poland would need some 15 Mtoe of import. Poland also needs, according to the Department data, some 14.7 Mtoe of coal imports and 10.8 Mtoe of export.

In terms of handling capacities, problems with the export of coal are not foreseen. However, since all the coal handling facilities are for outflow purposes, modifications for import shipments are needed. Currently, the ports of Gdansk, North Port and Swinoujscie have a specialized terminal for coal. The terminals could be adapted for export purposes without difficulties based on the existing business traditions, workers and techniques.

The specialized oil terminal at the North Port of Gdansk currently has a capacity of some 8 million tons a year. The port of Gdynia also has an oil terminal with a capacity of 2 million tons a year. The volume of oil (and oil products) imported by sea depends on how much Poland receives from Russia. Recently, Russian production has faced technical problems and it is likely that Russian exports will continue to decline in the future. Poland should, from a national security perspective, seek alternative sources for its oil imports.

Therefore, it seems certain that the volume of oil imports through sea ports would increase on the order of 10 million tons, thus requiring the expansion of the oil terminal. The oil terminal of the North Port of Gdansk can accommodate large ships with draughts of up to 16 meters and has enough space for the expansion.

As for natural gas, several alternatives are being discussed, including importing from Algeria by sea through Gdansk. The priority for the Gdansk alternative is not high at the moment; however, taking into account the domestic turmoil in Yugoslavia, the Gdansk alternative might emerge as a priority project.

#### 5) Grain and Animal Fodder

During the former regime, the agricultural sector remained virtually inactive. Now and in the future, the sector is expected to gradually improve their productivity. Generally speaking, Polish agriculture is reported to possess export potential for rye and oats. Together with the modernization and development of the Polish livestock industry, imports of animal fodder would increase.

Currently, no Polish products of any kind are thought competitive in the international market except agricultural products. If so, Poland should make every effort to sell Polish agricultural products abroad. Port facilities for agricultural products are not sufficient in terms of quantity or quality. As a first step, new grain handling facilities with an annual handling capacity of about a million tons are required. Currently, new grain terminals are being planned at some ports, however, they should be carefully examined from the port planning point of view because grains have to clear strict health standards and satisfy consumer's demands.

#### 6) Necessity of Reviewing Demand on a Regular Basis

Demand forecasts are, at the moment, viewed in uncertain terms. In addition, institutional transformations such as a new Port Law are expected in future. Therefore it is recommended that demand be reviewed on a regular basis. This will permit periodic review of potential projects and their supporting implementation scheduling as well as financial analyses.

Table 6.2.2 Scope of Business of Port Authority in Selected Countries

Business Items of Port Authority	Port, Country	Yokohama, Japan	New York, U.S.A.	London, U.K.	Rotterdam, Netherlands	Dalian, PRC	Manila, Philippines	Bangkok, Thailand	Santo Tomas, Guatemala	Rio Haina, Dominica	Valparaiso, Chile	Port Kelang, Malaysia	Singapore, Singapore	Hong Kong, Hong Kong	Keelung, Taiwan
1. Ownership (Quaywall)	● <sup>2)</sup>	● <sup>2)</sup>	○	○	○	○	● <sup>2)</sup>	○	○	○	○	○	○	○ <sup>4)</sup>	○ <sup>4)</sup>
2. Berth Appointment or Permission of Use	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
3. Fee and Charge <sup>000</sup>	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
4. Statistics	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
5. Water Traffic Control in the Area				○		○							○	○	○
6. Customs Clearance															
7. Quarantine															
8. Immigrations															○ <sup>3)</sup>
9. Traffic Control			○		○		○		○				○		○ <sup>3)</sup>
10. Police and Firefighting		○	○		○	○	○		○				○		○ <sup>3)</sup>
11. Permission of Use on Shed and Heaping Yard	●		○		○	○	○		○		○	○	○	○	○
12. Container Yard Operation			○		○		●	○		○		○			
13. Container Freight Station Operation			?		○		○	○		○		○			
14. Stovedore			○		○			○		○		○			○
15. Longshore Cargo Handling			○		○		○	○		○		○		○	○ <sup>5)</sup>
16. Lighterage					○					○		○			○
17. Warehouse			○		○		○	○		○		○			○
18. Truck Transportation			○												
19. Railway Transportation			○		○ <sup>5)</sup>										
20. Towage			○		○		○	○				○	○		○
21. Line Handling			○		○		○	○				○	○		○
22. Oil Bunkering and Water Supply							○	○	○			○	○		
23. Pilot				○	○			○	○			○	○	○ <sup>6)</sup>	
24. Tally and Weighing Service					○		○	○				○	○		○
25. Pollution Prevention	○				○				○			○	○		○

Note:

○ Under the control of the port authority

● Leased berths and facilities are under the control of organization other than the port authority

1) Facilities are operated under the Turn-key systems, which approves exclusive use for lessees.

2) Approval has been granted to the ownership of facilities by private companies.

3) These functions are usually under police jurisdiction. However, almost all of the worker's salary is paid by the port authority.

4) The degree of control authority is different for individual berth lessees.

5) Activities are limited within the port area.

6) Private companies engage under the license by port authorities.

Source: OCDE (Original in Japanese)

## 6.2.4 Port Administration

### 1) Institutional Frame

There is no single optimum solution on the institution and organization of ports on which port related people all over the world would agree to. Every country can have its own port institution and organization structure or structures (Table 6.2.2). The current Polish system of Maritime administration is based on the Act of March 21, 1991 (DZ.U. of 1991 No. 32, POSU.131). According to the Act, the Minister of Transport and Maritime Economy carries almost all responsibilities for the administrations of Polish ports including economic matters, and exercise this power through the Directors of the Maritime Offices. The roles and functions of the Maritime Offices are very broad, including policy making and enforcement functions.

A port is a unique place where a variety of functions take place, ranging from those similar in nature to a city to activities of a major commercial enterprise. Further, a port functions as a terminal where sea transport and land transport meet. A centralized entity is therefore desirable which manages and administers the whole port complex as a single system. The Polish ports are grouped under the Port Authority, a title frequently used in Western countries. However, the authority actually functions as a port enterprise without any managerial or administrative power; this situation should be rectified.

### 2) Legal Frame - New Port Act

Recently, the Ministry of Transport and Maritime Economy (MTME) has initiated discussions on a new port act including institutions and organization, recognizing the necessity of the creation of a Port Authority. It has appointed three specialists for the study of conceptual framework for the creation of the new Port Act. The Polish people have a good opportunity to decide upon the best port system through discussions and negotiations. The outcome is not expected in the near future due to the complicated issues involved and also the situation of the national Parliament; however, Poland definitely needs a new framework in which ports can operate efficiently and energetically.

### 3) Port Authority

Ports constitute an important part of the transport chain, serving as the terminal between sea and land transport. They have a large influence on the national economy and vice versa. Moreover, in Poland, ports have for about 40 years been developed and supervised by the national government. So, every administrative process has been developed by the central government to port direction, and vice versa.

On the other hand, ports have close relations with local society and economy. They function as cores of the local community and their prosperity and downturns have direct influence on the local society and economy. Taking into account its character and influence on both the national and local economy, the Port Authority should be an organization where national and local interests are synthesized and incorporated. The Authority should be a body responsible for development, management and upkeep of the port. The major roles and functions of Port Authority may be regarded as follows:

- (a) to draw up a future development plan of the port;
- (b) to construct port infrastructures and to install facilities and equipment;
- (c) to administer and manage the port area (water and land);
- (d) to set port tariff and levy;

- (e) to regulate various activities inside the port;
- (f) to gather information and to compile port statistics; and
- (g) to initiate other activities which might be deemed necessary for the development, management and upkeep of the port.

#### 4) Roles of the National Government

In the new Port Act, roles, functions and responsibilities of Port Authority and National Government should be clearly defined. Basically, the Port Authority should autonomously deal with operational aspects related to the efficient management of port activities. In contrast, the state government should deal with the national port planning including national strategy for port development and act mainly as a supporter, intermediary and coordinator of the ports.

Apart from the new Act, the role of the state government remains very important. Especially in the short term, financial conditions are extremely limited, nevertheless, Polish ports must keep pace with hinterland demands while the new port institutional framework is being settled. Poland should use its limited natural resources as effectively as possible. Over-investment or duplication of investments should be avoided. Therefore, the role of the state government as an intermediary and/or coordinator is crucial.

In order to formulate the national port plan and other necessary measures for the efficient operation and fair competitive environment, the national government should be guaranteed easy access to port information. It might be deemed necessary, in the new port law, to oblige port authorities to report periodically to the government.

#### 5) Clustering Ports into two Complexes

Taking into account the above and the locational distribution of major Polish ports, it seems useful to cluster the ports into two port agglomerations, that is, Gdansk-Gdynia Port Complex and Szczecin-Swinoujscie Port Complex. A Port Authority should, hopefully, be established for each Port Complex to administer and manage each port complex as a single unit. At the moment, it is easy to understand why this kind of concept causes political disputes (especially for the Gdansk-Gdynia Port Complex). However, this approach seems worth investigating; at least the national government should adopt this approach for the national port strategy.

#### 6) Port Plan

A hierarchy of port plans could be as follows:

- (a) National Port Plan
  - \* Role of each port
  - \* Priority of investment
- (b) Port Master Plan
  - \* Long-term pattern of port development
- (c) Port Project Plan
  - \* Development plan of individual port programs or projects

At the national level the role of each port should be defined. Then at the port master plan level, a long-term pattern of port development should be postulated. Finally, in the project plan, individual projects/programs would be formulated within the framework of the port master plan.

Procedures to formulate the plans should also be defined. As already described, ports act in close cooperation with various activities such as other transport sectors, industries, commercial businesses, as well as local and central governmental authorities. Therefore proper processes are required to harmonize these interests into a comprehensive plan. At the same time, port development exerts direct influences on the use of national land and vice versa. Therefore, the port plan should constitute part of an overall national land use plan; some guidelines are needed to secure the integration of these two plans.

#### 7) Port Financing

A financing system should also be included in the Act. Generally speaking, a port cannot necessarily finance all the required investments, especially those infrastructures that do not yield direct revenues to the port. At the moment, and in the past years under the old regime, Polish ports have operated profitably. But the profitability of the Polish ports will probably decrease in the near future due to increasing domestic and international competition as well as changes in international settlement transactions.

Taking the above into consideration, the best financing rule might be regarded as follows. Government (central and/or local) should take a part in financing such public port facilities as water area, channel, breakwaters, wharves, environmental protection and ship safety. For other facilities, a basic concept for cost allocation might be based on the "beneficiary pay" rule. When planning a project, beneficiaries and their degree of benefits should be identified, and the cost allocated in proportion to the benefits accrued.

#### 8) Environmental Matters

Although Poland has ratified some international conventions on environment and safety, there still remain many conventions and annexes which Poland needs to ratify. These requirements bind Poland for its integration with the European Community. Poland is in a lack of facilities for protection of sea port environment including collection of refuse from ships, water treatment facilities, and land treatment facilities for refuse and sewage collected from ships.

As discussed by the related agencies, the priority investment projects should be implemented in a step wise manner:

- (1) investments concerning the collection and utilization of solid and liquid waste from ships;
- (2) investments on specialized ships to fight oil slicks and purchase of appropriate equipment; and
- (3) investments related to the basic hydraulic engineering infrastructure of ports.

A "Polluter Pay Principle (PPP)" should be a basic rule for the investments and operation. However, the government needs to be fully involved in their financing to expedite the ratification of international conventions toward the integration.

## 6.3 Sea Transport

### 6.3.1 Shipping Service

#### 1) Required Role of Polish Shipping Service

The three major Polish shipping companies are now formally state enterprises. However, they receive no financial support from the national government, nor does the government intervene in their activities. They establish their own strategy for their maximum possible profit and perform their business accordingly. Polish shipping companies have been making profit even during the difficult times in the world shipping business, partly because of low wages and the exchange rate and partly because of the Polish international competitiveness. As Poland has been undergoing a transition to a free market economy, Polish shipping companies should make an effort to carry Polish cargo stably, strengthen ferry services to Scandinavian countries and increase cross trade turnover. To comply with these requirements and also to cope with the hard times of the Polish shipping business, Polish shipping companies should further improve their competitiveness to collect and transport cargoes.

#### (1) Stable Transportation of Polish Cargo

While under the centrally planned economy, Poland exclusively used Polish shipping companies to carry Polish exports and imports, for example, coal, industrial products and industrial raw materials. Therefore, the share of cargo handled by the Polish fleet was quite high. But due to the liberalization in recent years, this share has started to decrease. In 1990, the share of the national flag was 26.7%, which means a large part of foreign trade goods are carried by foreign flag vessels.

Polish shipping companies have attached a great importance to the cross trade business since the foreign trade cargo volume to and from Poland has been decreasing. Currently, however, future trend of the world shipping market is uncertain and it is difficult to foresee that Poland's advantage in exchange rates can continue for the future. Therefore, Polish shipping companies should regard the Polish market, their home ground, as a reliable market to reap benefits in the long term.

Polish liner cargo transported through foreign ports have been increasing, especially container cargo. Furthermore, the share of Polish liner cargo handled at Polish ports has been decreasing as well. These facts would result in a decline of the Polish fleet turnover. Polish shipping companies need to strengthen their competitiveness to collect cargoes at Polish ports based on their advantages including their inland transport service networks.

#### (2) Improvement and Expansion of Ferry Service

In recent years the number of Polish tourists going abroad has increased because of the new political climate and economy. Similarly, the number of passengers travelling in the direction of the Baltic Sea by sea has also increased. In Polish ports, most ferry lines call on Swinoujscie. Swinoujscie has a ferry lines to Ystad (Sweden), Copenhagen (Denmark), so it is the most important port in terms of ferry transport to Scandinavian counties. Furthermore, these ferry lines also serve as transport routes for the cargo to and from Scandinavian countries as well as Austria, Hungary and Czechoslovakia.

These routes are extremely important for the Polish integration with the international community. However, the capacity of ferry transport is in shortage, particularly of berth capacity. In addition, ferry boats are too old to assume the important role of artery to the Scandinavian countries. Therefore, it is required that the ferry service be improved and capacity be expanded as quickly as possible. It will be necessary to initiate a study on future demand for ferry services to and from Russia, Lithuania, Latvia and Estonia.

### (3) Improvements of Cross Trade Business

In recent years Polish shipping companies have successfully made inroads into the cross trade business. Cross trade turnover of Polish shipping companies grew 2.2 times in 1990 compared to 1980. This growth occurred because Polish shipping companies placed an emphasis on the cross trade business since the domestic Polish market was in a downturn.

Access to the field of cross trade business not only brings in foreign currency to Polish economy, but also strengthens the competitiveness of the Polish shipping companies. The Polish shipping companies should engage in the cross trade business in connection with the Polish ports based on their competitiveness. Potential markets are those transit cargoes to and from inland neighboring countries including Austria, Hungary, Czechoslovakia through Polish ports.

## 2) Development Plan of Polish Shipping Services

Polish shipping companies need to improve the quality of their services, increase their transport capacity, and raise the efficiency of management and operation so as to cope with the new international environment.

### (1) To strengthen their ability to collect Polish cargo and transit cargo through Polish ports

In order for Polish shipping companies to increase their share of loading of Polish cargo and transit cargo through Polish ports it is necessary to increase the frequency of ship calls at Polish ports, to re-arrange the shipping schedule to satisfy the needs of customers, and to increase promotional activities in Poland as well as in the countries which can be potential customers of transit cargo through Polish ports.

#### a) To increase frequency of ship call to Polish ports

It is necessary to increase the frequency of calls to Polish ports in order to increase the turnover of Polish cargo. If the frequency increases, especially in the liner shipping services, more customers would use Polish shipping companies. Moreover, if the frequency increases, the time loss might be reduced. But Polish Ocean Lines (POL), the only liner service shipping company in Poland, recently stopped making direct call to Polish ports on its major service routes of the North Atlantic service route, the US Gulf service route and the Far East service route. POL stops at Bremerhaven on the North Atlantic service route and the US Gulf service route, or Hamburg on the Far East service route. This is because of the insufficient cargo volume as well as inefficient port operations at Polish ports. The modern and large-sized container vessels are assigned exclusively to the major international routes for their maximum operational efficiency.



After the suspension of direct liner services, POL introduced feeder services from Hamburg and Bremerhaven to the Polish ports, Gdynia or Szczecin. A semi-container ship with a loading capacity of 750 TEU has been assigned to the Gdynia route on a weekly basis, and a conventional general cargo ship with a capacity of 50 TEU has been assigned to the Szczecin route on a once every two or three week basis.

POL does not intend to increase the frequency of these feeder services now because of insufficient cargo volume, only 500 TEU or 750 TEU capacity. This creates, however, a vicious cycle. The customers must expect several day's time loss so they eventually stop using Polish ports and as a result the cargo volume tends to decrease further. If the Polish customers begin to carry their cargo not to Polish ports but to Hamburg or Bremerhaven, POL will eventually lose their customers. Once other transport routes to major international ports have been established, it will be difficult to bring the customers back to Polish ports.

In the future, Polish container cargo is expected to increase, and Polish ports still have the advantage of being the closest port to Hungary and Czechoslovakia. Furthermore, Polish ports could be the international outlet to Byelorussia, the eastern part of the Ukraine as well as Lithuanian, Latvia and Estonia. Future prospects should be duly taken into account on deciding shipping schedules. Frequency of the feeder services to German ports need to be increased, preferably two or three times a week. Introduction of smaller ships or two feeder ships currently plying different routes to Gdynia and Szczecin might be an idea.

In the field of tramping service, Polish Steamship Company (PSC), the only tramping service shipping company in Poland, has also decreased the share of Polish cargo in its turnover to about 20-25%. This is because Polish bulk cargo volume, for example coal, has been decreasing, so PSC had to attach more importance to cross trade business.

- b) To improve the connection between sea and land transport in Poland and the surrounding countries

One of the important reasons why Polish general cargo directly goes to foreign ports is that Polish ports are not satisfactory for customers in terms of efficiency including under-development of inland connection as well as cargo information dissemination. Good inland connection and cargo information are crucially important to customers. A Japanese shipping company purchased a major Dutch transport company for facilitating inland transport services as a first step in participating into the European market.

POL, however, is in a position to provide inland trucking services by themselves: in the European market POL possesses 90 trucks and drivers and operates inland transport. In order to improve the service, POL should strengthen the transport service network in Poland and surrounding counties, making the most of their inland transport system. Also, POL intends to establish a joint venture forwarding company with C-Hartwick and Port Authority of Gdynia. POL should take these advantage to improve competitiveness.

Cargo information system is necessary to provide customers with real time information about their cargoes. This type of service has become common especially in container transport service. Lack of timely information dissemination system lowers competitiveness.

- c) To strengthen promotional activities for the Polish cargo and transit cargo through Polish ports

The Polish fleet was once able to receive Polish cargo without competition under the centrally controlled system. Public corporations for import and export were monopolizing the foreign trade of Poland; they used Polish shipping companies exclusively. Polish shipping companies had only to load and carry these cargo which were carried into the port area in accordance with the shipping companies' instruction. Under such a system, Polish shipping companies did not need to conduct any promotional activities. But, the economic structure has changed toward liberalization. Polish shipping companies need to focus on the efforts to attract customers and cargoes. They need to initiate marketing activities to understand the market and provide required services to their customers. The activity should be first initiated in Poland then extended to the neighboring inland countries. This might necessitate the establishment of new offices for promotion for example, in Byelorussia, the eastern part of the Ukraine, Lithuania, Latvia and Estonia.

## (2) Improvement and Expansion of Ferry Transport System

- a) Construction of ferry terminal in Swinoujscie

Presently, the capacity of the ferry transport is not sufficient. This is particular true for Swinoujscie Port. In Swinoujscie, Polish Baltic Shipping Company (PBSC), which specializes in passenger/car ferry service, operates passenger/car ferry boats and a Ro-Ro ship on the routes from Swinoujscie to Ystad (Sweden), Copenhagen (Denmark); POL operates rail/car ferry boats which carry wagons of PKP and trucks to Ystad. These vessels call six or seven times a day. In accommodating this frequency, Swinoujscie has only two berths. PBSC owns the ferry terminal, and started to expand this terminal to handle the increasing passengers to and from Scandinavian countries.

This terminal is used together with PKP and POL, so the national government had formerly provided a substantial subsidy to PBSC. But, as a result of a series of economic reforms, the subsidy was drastically reduced, and now PBSC faces difficulties in finding financial resources. Presently, PBSC is looking for foreign partners in Germany, Denmark and Sweden. The ferry demand for 2010 is estimated to be 1,500,000 passengers, 350,000 motorcars, 140,000 lorries, 60,000 wagons and 2.4 million tons of general cargo. In order to deal with this demand, six ferry berths are planned which includes modernization of two existing berths. A new terminal building with an area of 10,924 sq.m is also planned (Fig. 6.3.1). Presently, the first phase of construction has been started excluding a berth located at the southern end. The estimated cost of this step is about US\$ 102 million.

b) Modernization of the ferry boats

The ferry boats of PBSC assigned to the routes to Scandinavian countries are outdated. New ferry vessels need to be acquired. PBSC has 6 ferry boats, which were built in 1966 (25 years old) to 1979 (12 years old). PBSC has been making an effort to maintain the level of service, for example, by renovating the interior of ferry boats. However, in Western countries, ferry boats are usually replaced after 10 years. Therefore the ferry boats of PBSC need to be replaced and modernized as soon as possible. PBSC has a plan to replace two ferry vessels by 1993.

c) Strengthening of promotional activities

On the Baltic sea, more than 10 ferry service routes link Scandinavian countries with Poland and Germany (Fig. 6.3.2). The nearest route to Swinoujscie is the route from Sassnitz to Trelleborg (Sweden); the service of this route is more frequent than that of from Swinoujscie to Ystad. The former route is plied five times a day and the latter only three times. It is expected that the competition will become fierce between these ports. PBSC should modernize the ferry boats and the terminal at Swinoujscie so as to raise its ferry transport capacity to a competitive level. In addition, PBSC should strengthen promotional activities to customers by taking account of the PBSC's excellent safety record (PBSC ferry boats have never been involved in a disaster at sea) and there is no prohibition of truck traffic on Sundays.

At the same time, a study on the future demand of ferry traffic should be conducted, namely, a study on the ferry demand of the CIS Republics, Lithuania, Latvia, Estonia and Stockholm agglomeration.

(3) Improvement in International Competitiveness

It is necessary to improve the quality of transport service, at internationally competitive prices

a) Improvement in the quality of transport service

Especially in the field of the liner shipping service, it is necessary to provide cross trade customers with high quality transport service by providing a smooth connection between sea and land, a transport information system and so on.

In container transport, the customer's need for "door to door" services become higher, so Polish shipping companies need to improve the connection of sea and land transport. As an example, Japanese shipping company makes use of the inland terminal of its subsidiary, the network of its exclusive double-stack train (DST) and cooperates with the trucking companies in the U.S.A. so as to improve "door-to-door" transport service and cope with severe competition on North American-Far East container service routes. Another company purchased a well known forwarding company in the U.S.A. to improve its inland transport services. POL already owns land transport equipment in the U.S.A. and operates land transport service. POL should further improve its sea and land transport service. An information system by which a shipping company can provide up-to-the-minute cargo information is necessary especially for the container transport service.

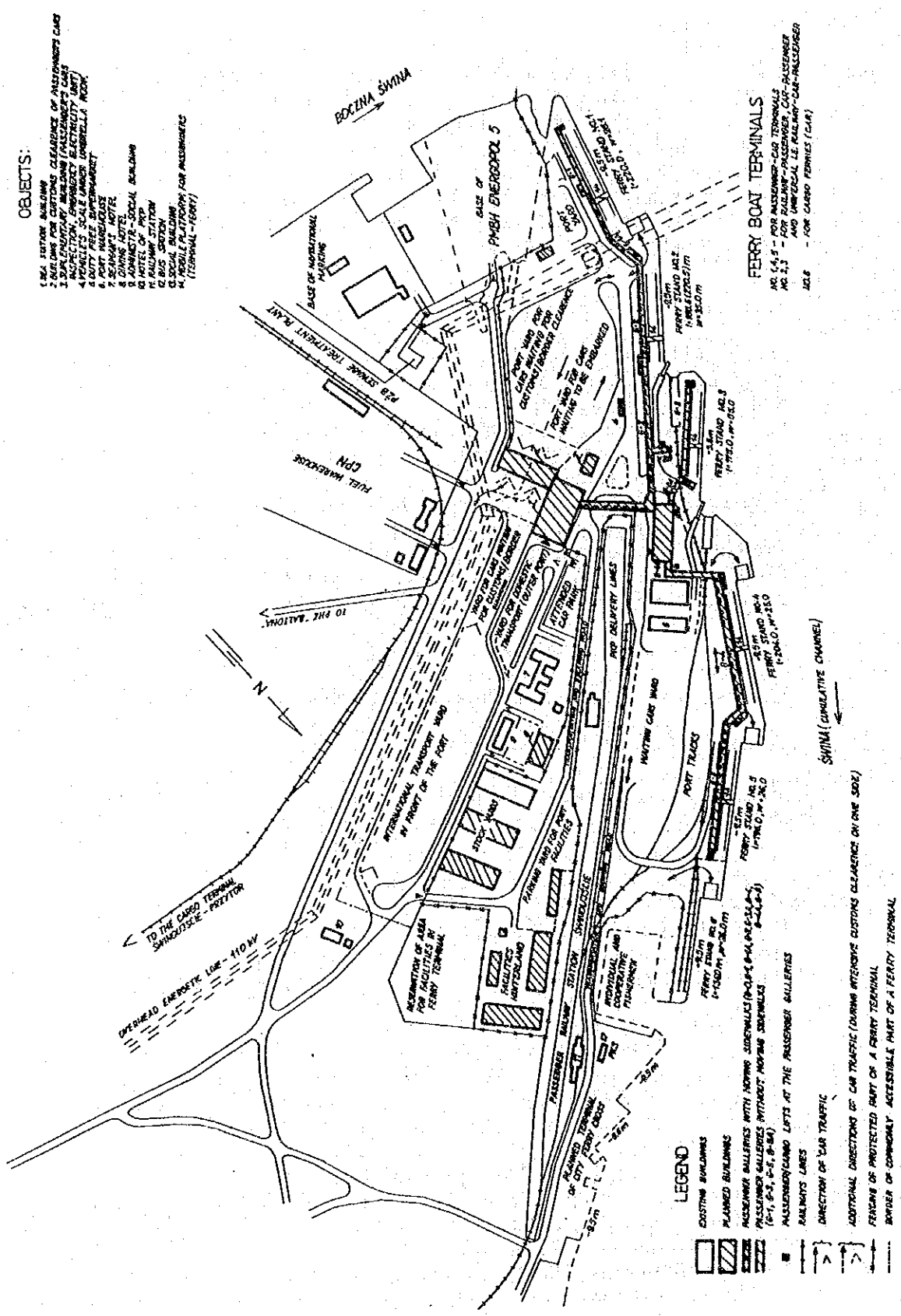


Fig. 6.3.1 Development Scheme of Swinoujscie Ferry Terminal (Phase II, Final Development Period)

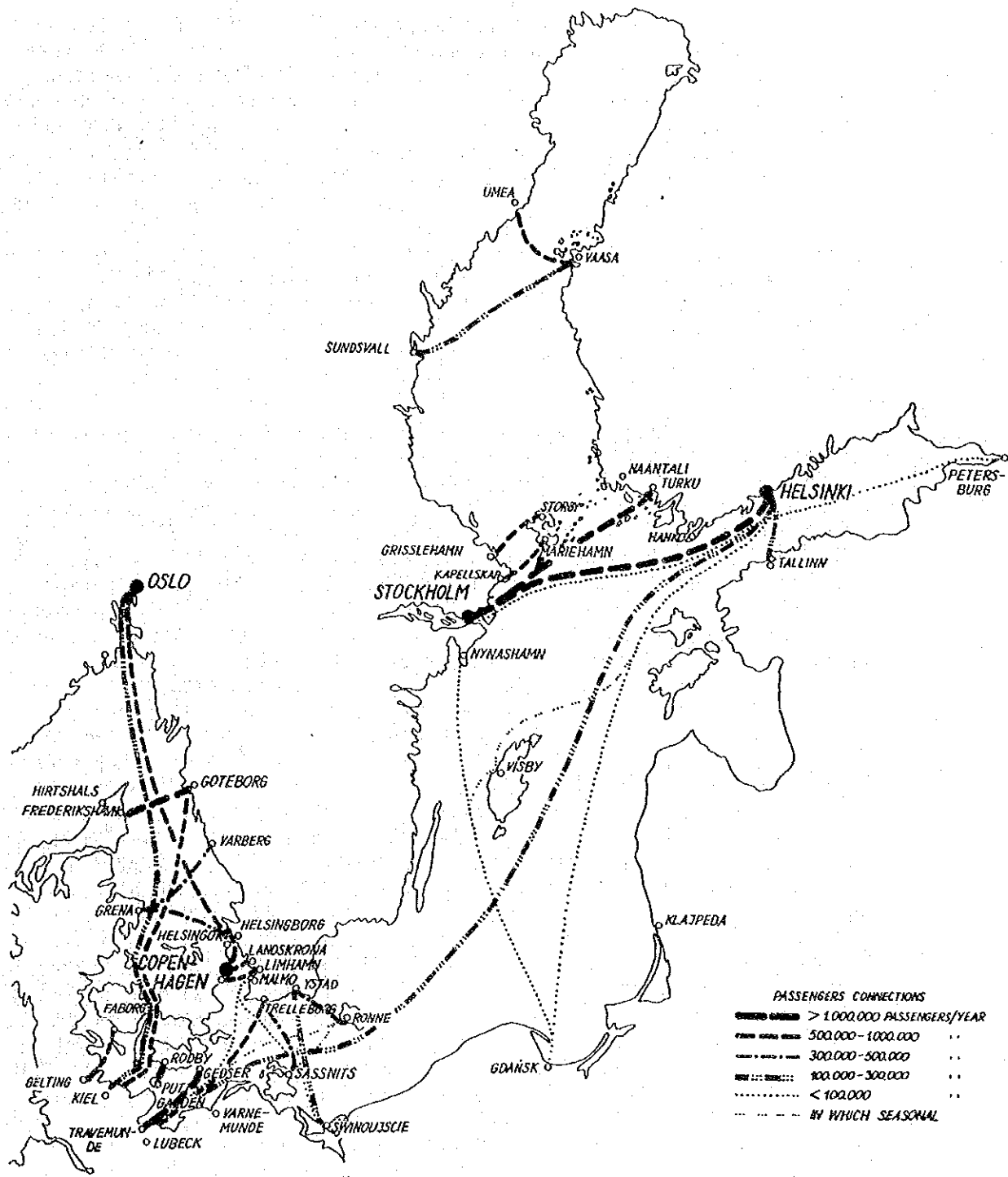


Fig. 6.3.2 Ferry Connections among the Baltic Sea Ports

- b) To maintain internationally competitive prices

It is likely that Polish shipping companies will be able to increase their cross trade turnover based on lower prices. Polish wages are low in comparison with Western shipping companies and the exchange rate of foreign currency is favorable for Polish shipping companies. However, there is no guarantee that they can keep enjoying these advantages for the future. Polish shipping companies should promote the modernization of their fleet, cost-effective practices of management so as to maintain an internationally competitive price. It is necessary to reduce the transport cost by replacing aged ships which are extremely uneconomical in both fuel cost and loading efficiency. Also with the introduction of modernized vessels, there needs to be an agreement between the union and management to reduce the crew size.

### 6.3.2 Fleet Modernization

#### 1) Purpose of Modernization

Aged ships are extremely uneconomical in fuel cost and loading efficiency, so their replacement is necessary to raise the efficiency of transport, improve the quality of service, reduce costs and strengthen international competitive power. In general, ships built before what is called "the first oil shock" are uneconomical in fuel consumption. For example, a Japanese container vessel built in 1968, 14,600 DWT with 28,000 hp and 870 TEU of loading capacity consumes 90 tons of fuel per day while a container vessel built in 1986, 40,300 DWT with 31,800 hp and 3,030 TEU of loading capacity consumes only 88 tons of fuel. Concurrently, older ships require larger fuel tanks which reduces available cargo loading space. In terms of labor, older conventional merchant vessels generally need more than 30 crew members, while only 22 crew members are required on modern Japanese ships, and only 14 on those most recently built. Replacement of aged fleet of vessels is critical in improving international competitiveness.

#### 2) Replacement plan of each Polish shipping company

The oldest fleet belongs to PBSC followed by POL, and then PSC. But, PBSC, as mentioned previously, intends to replace two ferry vessels by 1993. According to information from POL, conventional liner vessels are in particular outdated. POL intends to abandon or sell 40 to 45 ships by 1995. In addition, POL plans to build 6 new vessels by 1993 or 1994. First, one full-container vessel with 1,600 TEU of loading capacity will be built and be assigned to the Far-East route. Next, two multi-purpose vessels will be built (currently under construction in a German shipyard). Then, three other vessels will follow. According to this plan, though the number of vessels would decrease, the loading capacity would be maintained. POL will deal with any shortage of vessels by chartering in the short term; in November 1991, POL chartered three container vessels. POL had, as of November 1991, a total number of POL employees of about 6,400 including 5,200 crew. The average number of crew per vessel amounted to 28 persons, a relatively high number.

PSC has the newest fleet among Polish shipping companies, and has been reducing its number of older and unprofitable ships. For example, PSC reduced the number of tankers from 13 in 1980 to 6 in November 1991 because the tanker market had been stagnant. However PSC has kept one large size crude oil tanker of 145,680 DWT, built in a Japanese shipyard in 1975. Other tankers are small size chemical tankers. PSC has reduced the number of its ships from 126 in 1990 to 117 in November 1991. The number of employees at PSC is about 6,700 of which crew members comprise

about 5,500. The average crew size per ship is 22 to 24 for a large size vessel, thus reflecting the impact of a more modern fleet. Polish shipping companies should also review estimates of future demand by commodity type to determine if alternate ship types are required in the future. For example, container cargo and crude oil shipments are expected to increase at Polish ports. The number of tankers have been reduced and there is currently no plan to build new tankers.

### 6.3.3 Management Improvement of Shipping Companies

#### 1) Management and Cost-Saving Measures

It is expected that maintenance and wage costs will increase for the future. In order to maintain internationally competitive prices and still improve their transport service, management of Polish shipping companies should further pursue rationalization to reduce costs. It is also necessary to improve office work efficiency. One way to accomplish this is to introduce computerization. POL now uses computers to facilitate its office work. There is an urgent need to computerize transport service work, such as bookings, building, and tracking containers.

#### 2) Possible Diversification

Polish shipping companies also need to study the possible strategy to diversify their services. Presently, each Polish shipping company engages in a segregated shipping service. For example, POL provides only liner shipping service and PSC only tramping service. This lack of diversity is a legacy of the centrally planned economy, where each Polish shipping company was allocated a single function by the government. But now that the Polish government no longer intervenes in the shipping industry, each shipping company can determine its own scope of business activities.

To enter a different business field is a risky venture, therefore, careful examination is required. However, if it is expected to be profitable, Polish shipping companies should consider adding new services to their existing ones. In the world shipping market, the liner market has hit hard times recently, while the tramping shipping service market is comparatively brisk. A Japanese shipping company currently recovers its losses from liner shipping service by the revenue it generates from the tramping division. To do business in multiple markets tends to produce merits like this or in some cases management risks could be dispersed. POL and PSC are currently operating land transport service. In addition, POL intends to establish a joint venture forwarding company with C-Hartwick and Port Authority Gdynia. PSC, though this might be a special case, has become a partner in a hotel business with Austrian banks and an American company; the hotel is now being constructed in Szczecin. Business diversification should be pursued firstly in the fields in close connection with the main line business, and if the new business is successful, then further diversification should be sought.

#### 3) Funds for Modernizing Fleet and Infrastructure

In order to modernize the fleet and terminals, Polish shipping companies must secure investment funds. They should attempt to increase profits by improving transport services, save expenses by rationalizing management and make an effort to obtain favorable loans. In the case of the ferry terminal in Swinoujscie, the required investment is expected to be large, so PBSC must find partners, including foreign investors, and promote the construction work.

#### 4) Privatization

Recently, the POL's branch office of Szczecin, which manages European routes, African routes and ferry services, has become an independent company. Since the world liner shipping market is very competitive, POL decided that separate organizations would be better able to provide smooth management. POL intends that its other divisions of North America, South America, Asia and Mediterranean will also be separated, with the ownership distribution of 20% to employees, 45% to POL and 35% to private companies. However, POL will retain control over their fleets. PSC and PBSC currently have no concrete plans for privatization, but believe they must be privatized sooner or later. They are only awaiting a good timing to realize this.

#### 5) Roles of the Government

Polish government no longer intervenes in the shipping industries nor does it intend to do so in the future. However, there should be minimum regulations such as environment protection, and maintenance of navigational safety. And, in order to provide a stable sea transport cargo base, especially energy resources, government should assist shipping companies which carry cargo deemed important or critical from the national interest perspective.

##### (1) Environment Protection and Safety of Navigation

The maintenance of navigational safety is vital to maritime transport. Currently, branch offices of the Ministry of Transport and Maritime Economy regulate marine activities in the Polish sea territory. These offices also should monitor discharged substances from ships for sea environment protection purposes.

##### (2) Fleet Modernization

It is important that Polish shipping companies have international competitive power and that they carry Polish cargo at competitive prices. The government should be involved in modernization of the Polish fleet of vessels. From the view point of future prospect, an emphasis should be given to the replacement and introduction of oil tankers and container vessels.

In Japan, because almost all foreign trade cargo is transported by sea, an internationally competitive fleet was needed. So Japanese shipping companies could obtain 50% of the funds required to build foreign trade ships from the Japan Development Bank. In the case of a modernized ship, which can reduce the number of crew members, the lending rate reached 60%. The government involvement would be indispensable for supporting the modernization of shipping companies, for example, providing credit guarantees and institutional financing scheme until such time when they can become financially self-independent largely based on the Polish ports.

##### (3) Nautical Training

The Ministry of Transport and Maritime Economy owns and operates two maritime schools for nautical training. It is necessary to improve the educational and training system so as to maintain the quality of Polish crews as well as to accustom them to new shipping technologies. The welfare system of Polish crews also needs to be improved. On the other hand, if there is a problem concerning a regulation on the minimum number of crew members required for modernized ships, Polish government should draft new regulations.



## 6.4 Inland Water Transport

### 6.4.1 Issues of the Inland Water Transport

Polish inland water transport is facing, like other transport sectors, fundamental structural transformations. The factors which have influence on the Polish inland water transport can be enumerated as follows:

#### (1) Deterioration of Inland Waterways

After complete devastation during the Second World War, the government of Poland has made great effort to repair and construct channels and other navigation facilities. From the second half of 1970s, however, with the growth of consciousness and requirements regarding water conservation, the priority of transport in the waterway has declined and the amount of investment for transport purposes has decreased almost to zero. Due to the lack of investment, the waterway conditions are much worse than the ones stipulated by the Government Ordinance of August 5, 1977 No.2 Dz.U. No.26, posu.118.

#### (2) Natural Conditions

The natural conditions under which Polish inland waterway is situated are not suitable for the usage of transport purpose. The water level varies seasonally by 1 - 2 meters and Polish rivers also have problems of icing during the winter months. Icing lasts a minimum of two to three weeks and a maximum of two to three months although the period of icing has been relatively short in recent years. The shortage of rainfalls in recent years makes the situation worse (Table 6.4.1).

Table 6.4.1 Water Balance in Poland

	1980	1985	1990
Average Rainfall(mm)	764.1	610.5	541.1
Total Amount(bil.qm)	268.4	214.4	190.0

#### (3) Financial Difficulties

Further development of the waterways for transport purposes such as the construction of locks and deepening of channels requires huge investment. However, because of the lack of financial resources which prevail in the overall Polish economy, improvement work is not currently taking place. It is clearly understood that capital spending for transport purposes alone will not be feasible.

#### (4) Institutional Issues

While various usages and activities are taking place in Polish waterway including transport, upkeep and expansion of waterways fall under the jurisdiction of the Ministry of Environment, Natural Resources and Forestry. The Ministry is also responsible for the creation, realization and financing of investment projects. Only transport falls under the jurisdiction of the Ministry of Transport and Maritime Economy.

Poland is facing a problem in both water quantity and quality; therefore, the usage of waterways should be planned primarily from the water conservation point of view. The usage of the waterways for transport purpose is ranked fifth to sixth position after the various water usages such as agricultural use, flood control and recreation. Therefore, the development of the Polish inland waterways should cover a broad scope and the infrastructure and facilities should be multi-purpose. From this point of view, inland water transport is required to be developed as a part of the comprehensive river basin management.

(5) Changes of Transport Demand

The major impacts on the inland water transport sector would be, in terms of cargoes, a decrease in coal transport. Possible increase of general cargo, containers and other unitized cargoes, might as well influence the Polish inland water transport sector. For the Oder River, the possible increase of traffic to Berlin is foreseen, especially for bulky cargo such as gravel and sand.

(6) Review of Roles of Inland Water Transport in Europe

The congestion in road transport sector urges the review of the role of inland water transport sector in western Europe. Moreover, an environment conscious and energy conservation atmosphere is pushing the movement further. The European Conference of Ministers of Transport has initiated talks on this matter. They are examining the scope offered in the near future by the opening of the Rhine-Main Danube link on the East-West axis and the outlook for the roster system on the North-South axis. The movement might, though in the distant future, cover the Polish inland waterway network.

#### 6.4.2 Directions of Development of Polish Inland Water Transport

In the long term perspective, the increased demand for the transport means which puts less burden on environment would highlight the inland water transport sector. However, in the medium and short term perspective, substantive improvement and development are not foreseen on inland water transport in Poland. At the same time, more importance would be placed on the comprehensive river management instead of inland waterway development. Due to these reasons, possible directions of inland water development can be mentioned as follows:

(1) Development of Inland Waterway

The Ministry of Transport and Maritime Economy should make efforts to reflect the voice of inland water transport sector, if there is any important project, to the comprehensive river management plans which are prepared by the leadership of the Ministry of Environment, Natural Resources and Forestry.

(2) Inland Water Transport Industry

Until the time when the inland waterway is developed and improved, the industry could make their business not only in the cargo transport field but also in the passenger field, mainly for tourism purposes. The industry might find their field of activities in foreign channels as well. Polish inland water transport companies, already having begun to enter into the international market, should strengthen their efforts through the various possible means including improvement of their efficiency, strengthening of their competitiveness and adaptation to the EC standards.

As for the future competition of Poland's inland water transport sector, it should be pointed out, first, that the Poland's inland water transport sector is operated on a large scale, compared with other West European countries; this could act as a scale merit for the Poland's inland water fleet. Second, under the condition of same fare level, Poland's inland water transport sector would have the advantage of comparatively low wage level of crews and other personnel cost. Third, taking into account the size of ships, the field where Polish inland water transport can compete with foreign fleets, is not in wide and deep artery waterways, but rather in narrow and shallow waterways.

### 6.4.3 Development Policy of Inland Water Transport

#### (1) Infrastructure Development

As for the infrastructure, maintenance of the waterway between the ports of Szczecin and Berlin should be ranked as a high priority. Because there is a considerable movement of bulky cargo, mainly building materials. For the transportation means to Berlin from the sea, the inland water transport provides the most economical mode. The other priority projects, although in a long term perspective, would be the modernization work of the canalized parts of the rivers and artificial canals. In a longer term perspective, it would be necessary to take into account of the connection of the Oder River with the Rhine-Mein-Danube system.

#### (2) Institutional Development

The establishment of a new organization for the comprehensive development of a certain river would be a useful approach. There are some examples of such kind in the U.S. and Great Britain. The major objective of the establishment of such an organization is to make comprehensive development plans of the waterway which covers all the usage of waterway and to execute the plan.

The first task of the organization, as far as the inland water transport is concerned, would be to make a comparative study on costs and benefits of both inland water and land transport. The first step for the establishment of the organization would be the personnel exchange program between the Ministry of Transport and Maritime Economy and the Ministry of Environment, Natural Resources and Forestry. Through the program, each Ministry could thoroughly understand the situations of its counterpart and ease the difficulties for the establishment of such an organization.

#### (3) Adaptation to New Demand

Expected new demand could be found in the transport of oil and oil products, building materials (domestic and international), container transport and tourists. Vessels need to be replaced by taking account of the competition with other land transport means. As for tourism, demand for river cruising would be expected to increase. Water front areas provide good potential for the development of tourism industry. Scenery from on board could give a panoramic view of cities. Wisla river for Warsaw, Oder river for Szczecin and lower Oder for Malbolk are some examples in this regard. The overall reshuffling of the industrial centers is expected in the long term perspective which requires construction and material supply.



## **CHAPTER 7 AIR TRANSPORT PLAN**



## CHAPTER 7 AIR TRANSPORT PLAN

### 7.1 Overview

Air transport market in the European countries used to be rigidly regulated by the government until the middle of 1980s. However, since the complete deregulation of air transport market in the United States, air transport policies of these countries have steadily been directing to deregulation of air transport market. The air transport policy of the European Community toward deregulation has been accelerating these policy changes of these countries.

The approximate number of airline companies in Europe reportedly amounts to 130 companies including global flag carriers, regional carriers and chartered flight carriers. Through the step-wise deregulation, competition in the air transport market will be intensified in the coming years. Mergers and business alliances will likely increase in the future although government efforts to support flag carriers will continue.

Under the circumstance, the Polish transport sector needs preparation for the coming integration with the EC with a focus on strengthening the competitiveness of Polish airlines, coupled with steady improvement of air transport infrastructure including airports and airspace control.

Air transport in Poland flourished during the 1970's under the centralized economic system, however, by the early 1980's, suffered from sizable traffic losses mainly due to national political and economic upheavals. International air traffic during the 1980's reached its lowest point in 1982, thereafter increasing to some 2.6 million annual 1989 passengers at Warsaw airport (a seven year average annual growth rate of 20.8%). Although domestic air passenger traffic basically followed a declining trend in the 1980s, the high growth rate experienced by international traffic gave the impression of overall growth in the Polish air transport system. It was thought at that time that the government's efforts to decentralize Poland's political and economic system was, relative to the air sector, proving successful.

In 1990, however, LOT suffered significant losses in both domestic and international traffic; East European airlines frequenting Warsaw airport experienced similar downturns, patterns in direct contrast to West European air carriers whose patronage increased. These trends continued to 1991, resulting in 99 thousand embarked domestic air passengers (only 12% of 0.8 million in 1979) and 1.98 million embarked/disembarked international air passengers (some 116% of that of 1979 but nearly 30% decrease as compared to 2.72 million in 1989).

The recent dramatic traffic losses by LOT may be partially explained by: (1) introduction of convertible currency on January 1, 1990, thereby increasing domestic air fare by 10 times and also opening the Polish market to foreign airlines; (2) abandonment of the Uniform Air Passenger Tariff (EAPT) among the former CMEA nations; and (3) recent stagnation of the Polish economy.

Thus, unlike the other nations facing airport capacity shortage problems, airport infrastructure in Poland do not seem to encounter immediate capacity problems. Taking into consideration the newly completed Warsaw International Airport which has annual capacity of 5 to 6 million passengers, it is deemed that only modest investments are required for the remaining international airports to handle 5 million international air passengers for the whole nation projected for 2005.

Because of the drastically decreasing domestic air traffic, it is not considered necessary to invest for the capacity increase to handle domestic demand, although other capital investments will be required for maintaining or upgrading the existing facilities or to complete ongoing construction projects.

With regard to the development of the ATC system, new investments are further required in addition to the current modernization projects. The existing ATC system consists of a mixture of various types of equipment and most of them are outdated. Although the growth of landing/take-off operations at airports has slowed down in recent years, number of overflights has ever been increasing and will further increase along with the activated East-West interactions.

In order to cope with the future demand as well as to comply with the requirements of European Civil Aviation Conference (ECAC), it is a vital need for Poland to modernize its ATC system. Poland became a member of ECAC in early 1990 and now is obliged to provide integrated and harmonized ATC system with other ECAC states. The ATC modernization projects require considerable amount of capital investments. Polish Air Traffic Agency (PATA) under PPL is well aware of its obligations and is seeking foreign loans for its modernization plan of the ATC system. European Investment Bank (EIB) is reportedly ready to give financial assistance to PATA if ICAO's study on PATA's 1,050 billion zloty modernization plan proves feasible (due early August 1992).

Poland is still under a transformation process toward a free market economy. Along with this reform, the Polish Civil Aviation Authority experienced decentralization to have GICA and PPL in 1987. Recent moves of airport privatization and creation of PATA under PPL seems to be in line with the belief that decentralization and privatization would promote efficiency and productivity.

However, decentralization of the Authority seems to have created a chaotic situation, lack of policy and strategy for the national civil aviation development. There seems to be no active leadership of the MTME and little coordination among MTME, GICA and PPL. It is feared that the Polish civil aviation system could fall into pieces and only the financially strong parties would survive.

The government should perform its essential role to administrate civil aviation system to protect public interest. This is particularly important and vital when large investments are required for modernization under extremely tight financial conditions. The government should have strong leadership in planning, development, maintenance and traffic safety. It is strongly recommended to consolidate GICA and PPL to create a single civil aviation authority named "Polish Civil Aviation Bureau (PCAB)". The Air Law must be revised to reinstate the authority of PCAB in planning and developing of civil airports and ATS systems. The personnel should be competent and well trained for the assignments in the new PCAB. Adoption of the National Airport System (refer to 7.4) is also recommended.

## **7.2 Institutional and Organizational Considerations**

### **7.2.1 Air Law and Other Legal Matters**

The basic legal act on civil aviation in Poland is the "Air Navigation Law" of May 31, 1962 ("Prawo Lotnicze" referred as "Air Law" hereafter) promulgated in the Journal of Laws No. 32, Item 153. The Air Law has functioned reasonably well under the centralized system.



## (1) Airspace: Civil/Military Joint-Use Issues

The airspace over the Polish territory is basically under control of the military, as of July 1992. The air traffic control service provided by PATA is limited to the controlled airspace on established airways and in the Terminal Control Areas or Control Zones around the eleven airports. Thus, the military, if required for its exercise, may block airspace along the designated airways for specified durations. Even if these restrictions are of a temporary nature, they are obstacles to stable civil aviation services in an international context.

Coordination of airspace use and requirements of both sides is essential for the best use of the nation's airspace. Most of free world nations provide a single common airspace system under the concept of civil/military joint use. Credits should be given to the task force formed by the representatives from GICA, PPL, LOT and Military for accomplishing several tasks toward normalization of airspace usage including: (a) changes of airspace structure to conform with ICAO airspace classification; (b) modernization of airways/enroute with RNAV; and (c) reduction in the number of dangerous and prohibited flying zones.

At present, however, both sides have their own independent ATC system with little interface. It is obviously more economical to provide aeronautical facilities and ground services jointly or on a common integrated basis. In this respect, it should also be credited that the task force is working to establish civil/military integrated ATC system as an ultimate goal. It is recommended to entrust civil aviation authority with the legal power to administrate and operate Polish airspace efficiently and safely.

Coordination with the ATS authorities of neighboring countries is also essential for sound airspace planning and utilization. With a view to maximizing coordination with western European states, PATA is obliged to modernize its ATC system to conform with the ECAC requirements.

However, there is poor coordination with the Baltic states, Byelorussia and Uklaina of which airspace is still under the military control of Moscow. Because of this, flights to and from these nations are restricted and newly created two airways between Siedlce in Poland and Byelorussia and Uklaina are not yet used as of July 1992. It is recommended that Poland take actions to solve this problem through coordination with the ICAO Regional Office in Paris. Simplified procedures to obtain flight permission and to use these airways would certainly encourage regional ties with these nations as well as CISS.

## (2) Property Ownership

Under the former regime, Ministry of Treasury (MOT) was the land owner of airports and military air bases. Under the new regime, however, the land ownership has not been defined as yet. It is uncertain whether the land ownership belongs to MOT, pre-war private owners or others. With regard to the facilities within the airports and air bases, it is said that ownership belongs to those who constructed the facilities. Nevertheless, it is still uncertain how the ownership should be shared by PPL and GICA which used to be a single entity.

While ownership of land and facilities at airports and air bases remain uncertain and the proposed Law on Ownership Change of PPL has not been approved by the Parliament as of July 1992, some local PPL and voivodships have formed airport companies and prepared their own development plan, for example, Katowice and

Wroclaw. A local military unit has set up a joint venture company with foreign capital to use the available facilities, e.g. "The East-West Trading and Manufacturing Center Co., Ltd." with Austria and Soviet investors at Biala Podlaska Air Base. A military unit at Bydgoszcz is also willing to cooperate with the company, Bydgoszcz Air Corporation set up by voivodships to best use its air base. However, GICA is not well aware of these private/military initiatives taking place at local levels.

First, the government of Poland must settle the basic issues of land/property ownership on the former property of MOT as soon as possible. Second, MTME, in cooperation with the Ministry of Defense and other Ministries concerned, should form a task force to decide as to how and which ex-military air bases should be converted to civilian use to best utilize the existing facilities and avoid unnecessary investments. Third, the civil aviation authority should introduce a new regulation to have all private companies in the civil aviation sector obliged to report more frequently and precisely on their activities in order to be more aware of all developments to provide guidance as required.

### (3) New Air Law

Due to a provision of the Transport Law, the MTME seems to have diminished its control over PPL and LOT. For example, although the MTME still reserves the right to indicate obligatory tasks for PPL on the development of airport and airspace infrastructure on the condition that those development projects be financed by the state budget. In reality, however, those development projects are not necessarily financed by the state budget because of the extreme shortage of MTME's budget. As a result, PPL intends to concentrate only on financially prospective businesses, i.e. Warsaw International Airport and Air Traffic Control, and to move away from unprofitable businesses of all other airports under the policy guidance of decentralization and privatization.

The newly proposed Air Law awaiting approval by the Parliament is reported to contain an article to define eligibility for managing Polish airports/airfields. All these proposals appear to be in line with the policy of decentralization and privatization. The proposed Act concerning the ownership transformation of PPL is in the process of inter Ministerial consultations.

However, it is recommended to re-examine the proposed articles because of the following reasons:

- (a) Most of the airports are in financial straits due to a sharp decrease of traffic;
- (b) Many airports are facing difficulties in finding private sector investments, except for the few airports of Katowice, Wroclaw and Zielona Gora under financially strong voivodships; and
- (c) Thus, it is obvious that many airports would be obliged to close down, resulting in disruption of the national air transport system.

The important role of the government is planning, developing and maintaining the nationwide air transport system from the long term perspective to assure equal opportunity for regions. Balanced and harmonized air transport system constitute an essential element in this respect. Under the prevailing stagnant economic environment, MTME's strong leadership is essential in properly guiding the air transport sector toward a long term national interest. Ongoing privatization and decentralization policies in the air transport sector should be reviewed from the above point of view.

In order to restructure the existing unclear system of air transport administration as well as to strengthen the leadership of the government during the transition period, it is recommended to create a new civil aviation authority ("Polish Civil Aviation Bureau (PCAB)"), or else by restructuring the existing GICA and PPL. The present Air Law should also be revised to support the new civil aviation bureau (PCAB), at least to include the following principles:

- (a) PCAB shall be a legal entity to administrate and operate Polish airspace;
- (b) PCAB shall be reinstated the authority to plan, develop and maintain civilian airports and the national ATS systems; and
- (c) PCAB shall be authorized to charge for the services currently performed by GICA for examining, licensing and issuing documents.

#### 7.2.2 Organizational Matters

A few articles of the Air Law have been amended since 1984 in order to comply with the changing situation of the country. The most significant amendment may be the 1987 separation of the former Polish Air Traffic and Airports Administration (ZRLILK) from GICA to form an economically independent and self-financing state enterprise, i.e. Polish Airports State Enterprise (Przedsiębiorstwo Państwowe Porty Lotnicze, PPL). The intent of this separation is to transfer state enterprises to autonomous status and, hopefully, promote efficiency and productivity.

While PPL is responsible for the operation and maintenance of civilian airports, it also continues -under ministerial directive- to perform civil air traffic services. Thus, in a sense, PPL gained power not only to plan and develop Polish airport facilities, but also the air navigation systems. In reality, however, PPL is not in a position to fulfill the responsibilities due to financial difficulties including debt repayments for the new passenger terminal at Warsaw, reduced revenue through decreased traffic volume and increased operating costs inclusive of high taxes. While some ongoing terminal construction works at Krakow and Poznan (real necessity and urgency are questionable in the first place) are suspended due to the lack of funds within PPL and voivodship, the terminal at Wroclaw is almost completed with the financial support from the voivodship.

The Polish Air Traffic Agency (PATA) was created in April 1992 within PPL by converting the former Air Traffic Department of PPL. PATA is the major profit producer within the PPL and has a master plan to modernize its facilities to conform with the ECAC requirements. However, PATA can not use its earnings for that purpose since its earnings has to be pooled in one source for the whole PPL operation.

Regarding the national air transport planning, there seems to be no active discussions and coordination among MTME, GICA, PPL and local governments as can be seen below:

- (1) PPL, a designated authority in developing and operating airports and ATS systems of the nation, has virtually no master plan except for the Warsaw International Airport and ATS system;
- (2) GICA, a designated authority of Polish civil aviation, has authority over PPL and LOT only in matters of air safety, security, air worthiness and international bilateral agreements without any involvement in airport development planning which require investments. Nevertheless, GICA is the agent to deal with the studies on civil aviation plan by the USA and Japan;

- (3) MTME has no control power over PPL's investment plan unless MTME finances the plan;
- (4) Prior to the settlements of the legal arrangements on the ownership of the national property and privatization of PPL, some actions have already taken place to manage airports by voivodships (e.g. Katowice and Wroclaw) or air bases by military and voivodship (e.g. Bydgoszcz and Biala Podlaska); and
- (5) Papers and/or reports on the national transportation plan such as "The perspectives of transport system development in the Baltic Sea Region", are prepared by MTME without consultation with the GICA nor PPL.

From the above discussion, it is apparent that there is a strong need to establish a line of coordination between the MTME and the other authorities concerned including the military and voivodships.

As a matter of urgency, however, there is a stronger need to solve internal organization problems caused by the rapid decentralization. Under the prevailing chaotic situation during the transition period, a unified strong leadership is required for the orderly and healthy development of the national civil aviation. It is judged harmful to create various subdivisions which have only a limited scope of responsibility. To achieve this, it is recommended to consolidate the present GICA and PPL into a new single organization, "Polish Civil Aviation Bureau (PCAB)". An example of proposed organization chart of PCAB is shown in Fig. 7.2.1.

The Director of the PCAB should have an extensive background in civil aviation and should be appointed by the Prime Minister. The status of the Director should be similar to those of the existing Vice Ministers to report directly to the Minister of MTME. All positions of the PCAB must be filled by competent personnel with appropriate qualifications, experience and initiatives, instead of hiring retired military personnel with little experience of civil aviation.

All revenues earned by the airport operations and ATS tariffs, airport concessionaires, service charges (e.g. inspection, licensing) and aviation fuel tax should be pooled and earmarked for the air transport sector as a PCAB facility development fund. Usage of the fund must be decided through the committee chaired by the PCAB Director. Salary levels of PCAB personnel must be set as high as possible in order to retain qualified competent personnel.

### 7.2.3 EC Integration

Poland is an associate member of the EC and expected to be a full member in ten years. The EC "Package II", which contains guidelines on air transport deregulation, aircraft capacities and tariffs, will be replaced by "Package III" deregulation in 1992. This subsection discusses required modifications of Polish air transport policies and practices for the Polish integration with the EC.

#### (1) Market Access

Although a 10-year transition period is allowed to comply with the EC regulations, Poland will be required to adopt EC regulations where no Polish regulations exist. MTME, together with other related agencies, will need to take the following actions in order to protect Polish air transport industries:

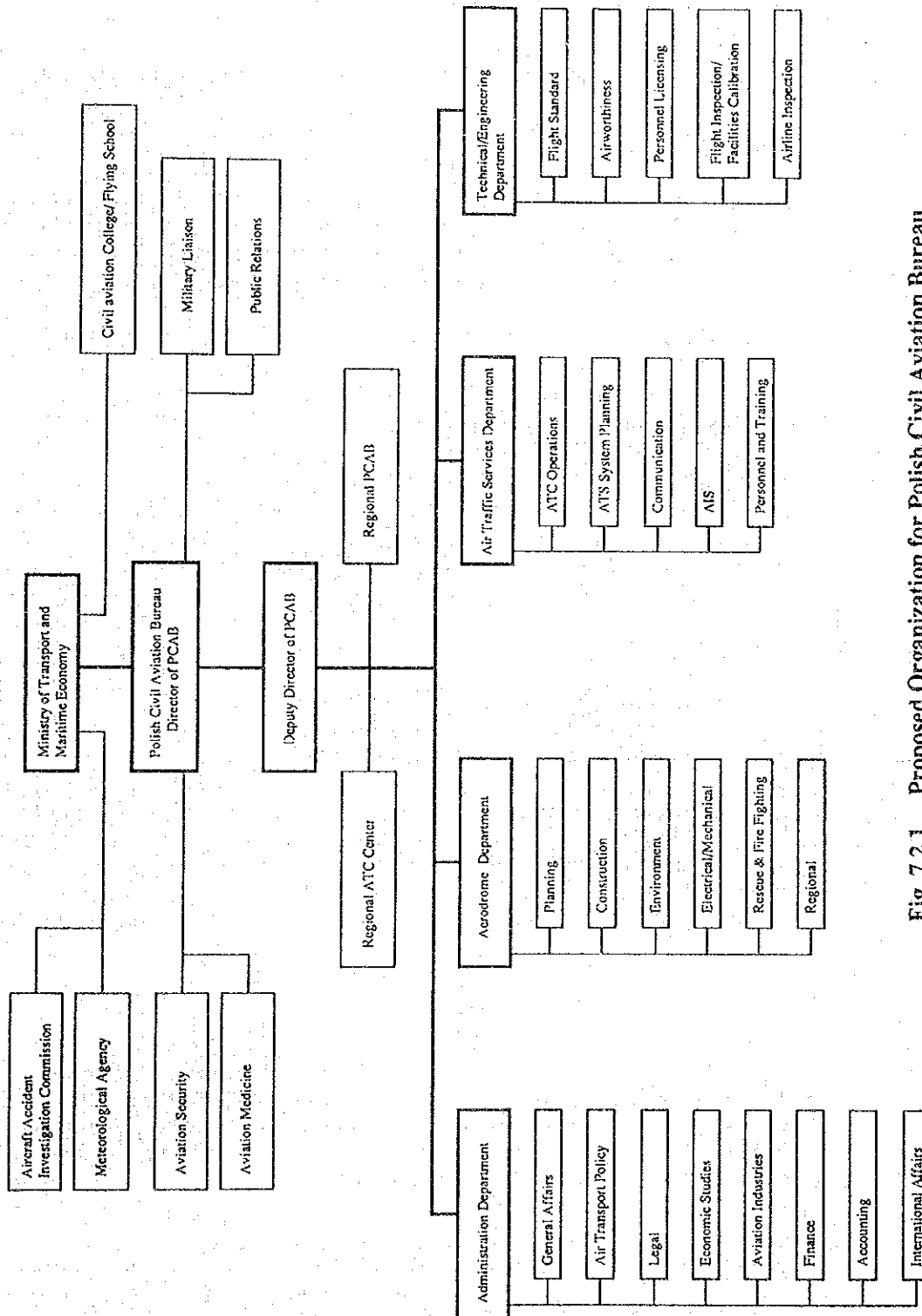


Fig. 7.2.1 Proposed Organization for Polish Civil Aviation Bureau

- (a) Enact new regulations regarding air market access where the existing legislation does not specifically address;
- (b) Negotiate gradual adjustments of existing bilateral or multilateral agreements; and
- (c) Strengthen LOT Polish Airlines to commercially compete with EC airlines.

(2) Pricing Policies

With an exception of the Polish-US bilateral agreement under which substantial freedom of pricing exists, almost all international air tariffs are fixed in accordance with the bilateral air transport agreements as contained in the Bermuda or ECAC-type rules. Air fares have been kept as low as possible for the sake of the Polish public which previously contributed nearly 75% of international passenger revenues. Thus, EC liberalization of air tariffs does not appear to create any significantly adverse effects.

(3) Safety Measures

ICAO international standards and recommended practices contained in Annexes to the Convention on International Civil Aviation regarding the Aviation Safety are recognized by all European countries including Poland. While most annexes issued before 1962 are incorporated appropriately into the Polish regulations, a few Annexes issued relatively recently such as Annex 17 "Security" and Annex 18 "The Safe Transport of Dangerous Good by Air" have not been included. Reworking of the Air Law of 1962 needs to be done in this regard.

Poland historically depended on the former CMEA countries, particularly the USSR, for aircraft and related equipment. Accordingly, relevant standards and norms are identical to those of the former USSR which are not identical to those of the EC or the United States. On the other hand, Joint Aviation Requirements (JAR) are being developed through the newly established Joint Aviation Authority (JAA) of the EC to address not only air worthiness but also such other aspects as maintenance, operation, licensing, safety and security issues. Adaptation of relevant JAA, ICAO and US standards and norms is an immediate necessity if Western aviation equipment (e.g., aircraft and radar) is to be introduced, and the market position of Polish aviation industries is to be enhanced.

(4) Airports/Airspace System

While air-side facilities mostly meet ICAO minimum requirements, the general quality of Polish passenger terminals and air traffic control facilities do not comply with West European standards. A new international passenger terminal at Warsaw International Airport, which was completed and opened to the public in July 1992, has improved the quality and capacity of Poland's national gateway to European standards.

Joint civilian/military use of airspace and airways is not yet fully resolved. However, efforts are now underway for cooperative ATS operation in Poland. Adequate capacity for accommodating current and future Polish air activity will become available via the installation of long-range radars at Poznan and Pultusk and the new automated Westinghouse ATC data processing system. In Western Europe, where capacity constraints of airspace frequently cause air traffic delays,

the European Civil Aviation Conference (ECAC) has established the European Air Traffic Control Harmonization and Integration Program (EATCHIP) to introduce more advanced air traffic management systems in the future. The system aims at "harmonization" which will attain compatible ATC system performances throughout Europe via compatible standards, specifications and procedures. Poland is required to adopt a phased ATS development plan by year 2005.

#### (5) Licenses and Qualification

ICAO Annex 1 sets forth minimum standards for licensing aviation personnel such as crew members, aircraft maintenance staff, air traffic controllers, flight operation officers and aeronautical station operators. Polish regulations appear to be equivalent to or indeed exceed those set forth in Annex 1. Since Annex 1 standards are recognized among ICAO members, the integration of Polish Licenses into EC guidelines should present no difficulties except in cases where the JAA has more stringent requirements.

#### 7.2.4 ICAO Requirements

Poland is a member of ICAO and its AIP states that rules and procedures relevant to Annexes to the ICAO Convention on International Civil Aviation are observed. It is understood, however, that some Annexes issued after 1962 such as "Annex 17 Security" are not incorporated into the present Air Law. This matter should be resolved by GICA to ensure that the Air Law conforms with ICAO rules.

#### 7.2.5 Cooperation Among Ministries

Due to Ministry of Interior rules which prevent mixing of domestic and international passengers on one aircraft, LOT must fly with almost empty pay-loads on domestic sectors of some international flights such as Warsaw-Krakow-Paris, Warsaw-Gdansk-London, and Warsaw-Szczecin-London routes. It is not only a waste for LOT but also inconvenient for potential passengers who wish to fly between these domestic points.

Cooperation between ministries and agencies on CIQ (Customs, Inspection and Quarantine) processes, especially at border airports such as Gdansk, Krakow and Szczecin, must improve the present situation. Simplified and speedy processing formalities would increase passenger terminal capacity and promote international tourism and general good-will.

### 7.3 National Air Transport Plan

Air transport fulfills a vital national development function in today's swiftly-changing and socio-economically integrated world. The air transport system, however, is only one component of the national transport system and thus must be planned in close coordination with other modes of transport. In general, after defining exact needs of the air transport sector, a phased implementation program should be prepared recognizing optimum allocation of limited budgets within the overall framework of a national air transport master plan.

#### 7.3.1 Demand Forecasts

As previously mentioned, air transport flourished during the 1970's when 11 domestic airports accommodated up to almost 1.6 million passengers. Forecast made at that time projected 6.5 million annual domestic air passengers by the year 1990. The actual number of passengers, however, did not grow at that estimate, 851 thousand, 444 thousand and 198 thousand were counted for years 1989, 1990 and 1991, respectively. The 1991 total is less than one-eighth of the 1979 total.

International air passengers at five international airports (Gdansk, Krakow, Poznan, Szczecin and Warsaw) declined to some 589 thousand in 1982 from about 1.7 million in 1979, then recovered to exceed 2.7 million by 1989. In 1990, however, international traffic dropped to less than 2.4 million and further declined to slightly less than 2.0 million in 1991. Over 95% of total international passengers historically use Warsaw International Airport. International air activity at the remaining four airports fluctuated annually depending on flight scheduling. Maximum traffic levels recorded from 1979 through 1990 were 52 thousand (Gdansk, 1989), 57 thousand (Krakow, 1989) 14 thousand (Poznan, 1988) and 14 thousand (Szczecin, 1986).

Air activity is, within the framework of the current study, expected to experience modest domestic and international growth (Table 7.3.1).

**Table 7.3.1 Estimation of Air Passengers  
(Total of Embarking and Disembarking)**

unit: million passengers

Year	Domestic	International
1979	1.60*	1.69*
1990	0.44*	2.36*
1995	0.50	2.60
2000	0.70	3.60
2005	0.90	5.00

Note: "\*" actual figures

Source: JICA Study Team estimates

The number of estimated domestic air passengers in 2005 amounts to less than 1 million, or about 60% of 1979 traffic levels. Thus, contrary to the shortages of airspace and airport capacity faced by other countries, no immediate capacity shortfalls are expected at domestic airports in Poland. Investments for up-grading and modernization of existing facilities are needed more than investments for capacity expansion of airport facilities.

International air activity is estimated to reach 5 million passengers by 2005. Demand at Warsaw International Airport should reach 4.75 million annual passengers, or about 95% of the international total. Preliminary review suggests that new terminal facilities at Warsaw International Airport can accommodate some 6.0 million international passengers a year. Therefore, no significant capacity problem is foreseen vis-a-vis the projected year 2005 demand.

### 7.3.2 Recommended Actions

Capacity shortfalls are not likely to be immediate problems for Polish civil aviation except for some minor renovation works required to accommodate international passengers at some airports. Instead, problems of an institutional nature exist. Administrative structures and responsibilities have not been adjusted to the economic transformation from the centrally controlled to a free market system, including rapid decentralization in recent years. Consequently, the following actions are recommended:

- (1) Consolidate GICA and most part of PPL to create Polish Civil Aviation Authority (PCAB) and reinstate PCAB authority in planning and developing civilian airports and ATS systems.



- (2) Adopt the national airport system proposed in Section 7.4.
- (3) Amend the Air Law accordingly and also to secure freedom of airspace/airway usage, prepare the Polish aviation industries for EC integration, accept the most up-to-date ICAO requirements, and improve CIQ procedures. PCAB should be the legal authority to administrate and operate the airspace.
- (4) Negotiate with the Ministry of Defense to convert current joint civilian-military airfields to civilian use, and to acquire rights to additional military airfields for future civilian use.

## 7.4 Development of Airports

### 7.4.1 Current Status

Compared with other modes of transport in Poland, air transport has a minimal share in terms of annual traffic volume of passengers and freight. Nevertheless, it is obvious that air transport has been playing an important role in the national economy particularly with international relations. Air transport enables faster and more frequent exchange of communications even with inconvenient distant places. Development of air transport is indispensable to the Polish internationalization.

In connection with the possible growth of international air transport demand, it is expected that the existing hub and spoke system (Warsaw as a hub) will need to be decentralized. Major cities in Poland will need to have direct flights to foreign cities in the future with a view to stimulating their regional economies as well as encouraging cultural exchanges between them as can be seen in many cities in Europe.

There are over 100 airfields within Poland, the seventh largest nation in Europe. Most of these airfields, however, are owned by the military thus reflecting Poland's geopolitical strategic location and Cold War legacy. There are seven (7) commercial airports served by scheduled flights as of July 1992, but four of them are owned by the military and jointly used with civil air traffic. In addition, there are some 40 airfields owned by Polish Aero Clubs.

The 1990 ICAO Regional Air Navigation Plan for Europe confirms regularly scheduled international air traffic at three airports in Poland (Gdansk/Rebiechowo, Krakow/Balice and Warsaw/Okecie) and two alternate international services at two airports (Poznan/Lawica and Rzeszów/Jasionka). In addition to the above five airports, PPL classifies Szczecin/Goleniow and Katowice/Pyrozowice as international airports as well; all other air facilities serve only domestic purposes. Three airports, namely, Gdansk/Rebiechowo, Poznan/Lawica and Warsaw/Okecie, are owned and operated by PPL; the remaining eight are jointly used by PPL and the military.

### 7.4.2 Airport Management

It is logical to conclude that there is no pressing need for major airport construction other than some minor renovation works to handle international traffic at some airports. However, various regional airport development projects are being pursued by PPL and local government. For example, prior to Parliament's approval of PPL privatization, local PPL and voivodships had commenced airport development projects even without notifying GICA. Another example is that the Warsaw Regional Development Foundation plans to establish a free trade zone and build an industrial park and cargo airport at the former Modlin military airfield, some 40 km northwest of Warsaw. These examples illustrate problems of excessive progress of decentralization, which means a lack of leadership at the national level and overly ambitious local plans.

Justification of Modlin cargo airport seems dubious because a new cargo terminal of yearly 50 thousand ton capacity is currently being built at Warsaw International Airport. Even assuming that Poland is capable of arranging such a large investment by foreign credit, adequacy of the project including its location needs further study for its justification.

These un-coordinated airport developments by various groups would result in over investments and later closing down of uncompetitive airports. In order to forestall such problems in the future, it is recommended that MTME adapt the National Airport System to be controlled by PCAB as a far-sighted commitment.

### 7.4.3 National Airport System

Airport availability in selected European countries is presented in Table 7.4.1. The density of airports in Poland, which averages some 0.04 per 100,000 population in 1984, is low when compared with West and East European nations. Poland's current relative standing is further reduced since scheduled flight services were suspended to three of twelve civil airports in 1991.

**Table 7.4.1 European Airport Availability in 1984**

Indicator	Number of Commercial Airports	Land area (000 sq.km)	Population (000)	Airports per 1,000 sq.km land area	Airports 100,000 persons	Average airport coverage (sq.km)
Poland	12*	312.7	36,914	0.038	0.033	26,060
France	44	547.0	54,940	0.08	0.080	12,430
W. Germany	39	248.1	59,330	0.16	0.066	6,360
UK	37	244.0	56,420	0.15	0.066	6,600
Austria	6	83.9	7,550	0.07	0.079	13,980
CSFR	16	127.9	15,459	0.11	0.091	9,140
Bulgaria	13	110.9	8,961	0.12	0.145	8,530
Yugoslavia	17	255.8	23,020	0.86	0.074	15,050

\* Number of operating airports reduced to 11 in 1990 and 9 in 1992.

Examples of European non-capital cities with populations of 0.4 - 1.6 million suggest that the annual number of passenger at respective airports aggregate to approximately twice the city population at the minimum (Zagreb) but can easily reach a ratio of four to nine (Marseille, Malaga). Duesseldorf and Manchester airports accommodate some 18 times and 23 times, respectively, as many air passengers as their city populations (Table 7.4.2). These examples suggest that Polish cities of over 0.5 million population would have the potential to have their own airports.

In Poland, there exists so-called nine macro-region division proposed by A. Piskozub as shown in Table 7.4.3, instead of 49 divisions by voivodship. Since the boundaries of these divisions do not agree with the present voivodship boundary, it is difficult to estimate the number of population in each macro-region. In the table, populations and areas of voivodships are provided. Bearing in mind the importance of a long term planning of civil aviation, the National Airport System is proposed as shown in Table 7.4.4 to cover the major cities of the nine macro-region. Locations of the existing and proposed airports are illustrated in Fig. 7.4.1.

Table 7.4.2 Annual Number of Air Passengers at Selected European Cities

City	City Population		International Air Passengers (in thousands)		Domestic Air Passengers (in thousands)	
	(in thousand)	(Year)	1988	1989	1988	1989
Duesseldorf	567	('88)	7,527	n.a	2,495	n.a
Lyon	409	('82)	1,515	1,748	1,616	1,882
Malaga	605	('89)	4,079	n.a	1,279	n.a
Manchester	446	('88)	7,708	8,139	1,796	1,920
Marseille	867	('82)	1,531	1,621	2,766	2,988
Milano (Linate & Malpensa)	1,549	('81)	6,296	n.a	3,850	n.a
Muenchen	1,206	('88)	5,873	n.a	3,636	n.a
Zagreb	605	('81)	599	571	753	529

Source : ICAO

Table 7.4.3 Nine Macro-Regions Proposed by A. Piskozab

Note: Population in 1990

Macro-Region	Area (sq.km)	Characteristics of Major Cities & Voivodships				Number of Towns	Average Tower Area (sq.km)
		City (*capital)	Urban Population ('000)	Voivodship Population ('000)	Voivodship Area (sq.km)		
1. Central	27,172	Lodz*	1,072.2	1,147.6		61	445
2. Northern	36,600	Gdansk* Bydgoszcz Slupsk	1,094.5 721.9 228.3	1,429.4 1,111.3 412.1	7,453	85	431
3. North-Western	19,868	Szczecin* Koszalin	740.0 319.8	971.4 506.3	9,981 8,470	53	375
4. Western	38,289	Poznan*	950.3	1,333.5		124	309
5. South-Western	33,692	Wroclaw* Zielona Gora	840.4 407.3	1,131.1 660.2	8,868	134	251
6. Southern	38,705	Krakow* Katowice	854.9 3,502.4	1,233.0 3,985.2		137	282
7. South-Eastern	43,936	Lublin* Rzeszow	595.3 296.9	1,017.7 720.5		81	542
8. Eastern	34,455	Warszawa*	2,165.5	2,429.4	1,378	74	465
9. North-Eastern	39,965	Bialystok* Olsztyn	425.8 449.6	693.2 751.7	10,855 12,327	66	605
10. Poland	312,683					815	383

Table 7.4.4 Recommended National Airport System

Airport Category			Class I	Class II	Class III		Class IV	Others
					Existing	Proposed		
1.	Airport Name		Gdansk	Katowice	Koszalin	Bialystock	General Aviation	Private
			Krakow	Poznan		Bydgoszcz		
			Warsaw	Rzeszow	Slupsk	Lodz		
				Szczecin	Zielona Gora	Lublin		
			Wroclaw		Olstzyn			
2.	Airport Owner		MTME/MOD	MTME/MOD	MTME/MOD;	MTME/Local Gov't	PAC/Local Gov't	Private
	Airport Administrator		MTME/PCAB	MTME/PCAB	PCAB/Local Gov't		PAC/Local Gov't	Private
3.	Air Traffic	Commercial						
		Int'l	○	—	—	—	—	
		Regional Int'l	○	○	△	—	—	
		Domestic	○	○	○	—	—	
		General Aviation	○	○	○	○		
4.	Airside	Landing Strip	MTME/MOD	MTME/MOD	PCAB/Local Gov't		PAC/Local Gov't	
		RWY	MTME/MOD	MTME/MOD	PCAB/Local Gov't		PAC/Local Gov't	
		TWY	MTME/MOD	MTME/MOD	PCAB/Local Gov't		PAC/Local Gov't	
		Apron	MTME	MTME/MOD	PCAB/Local Gov't		PAC/Local Gov't	
	Nav aids	Communication	MTME	MTME	MTME		PAC/Local Gov't	
		Lighting	MTME	MTME	MTME		PAC/Local Gov't	
		Met	MTME	MTME	MTME		PAC/Local Gov't	
		ATC	MTME	MTME	MTME		PAC/Local Gov't	
	Other	Passenger Terminal	PCAB	PCAB/Local Gov't	PCAB/Local Gov't		PAC/Local Gov't	
		Cargo Terminal	Private	Private	Private		-	
		Access Roads and Car Park	MTME	MTME	Local Gov't		PAC/Local Gov't	
	Service	Terminal Maintenance	Private	Private	Private		Private	
		Fueling Facility	Private	Private	Private		Private	

MTME: Ministry of Transport and Maritime Economy  
 MOD: Ministry of Defense  
 PCAB: Polish Civil Aviation Bureau  
 PAC: Polish Aero Club

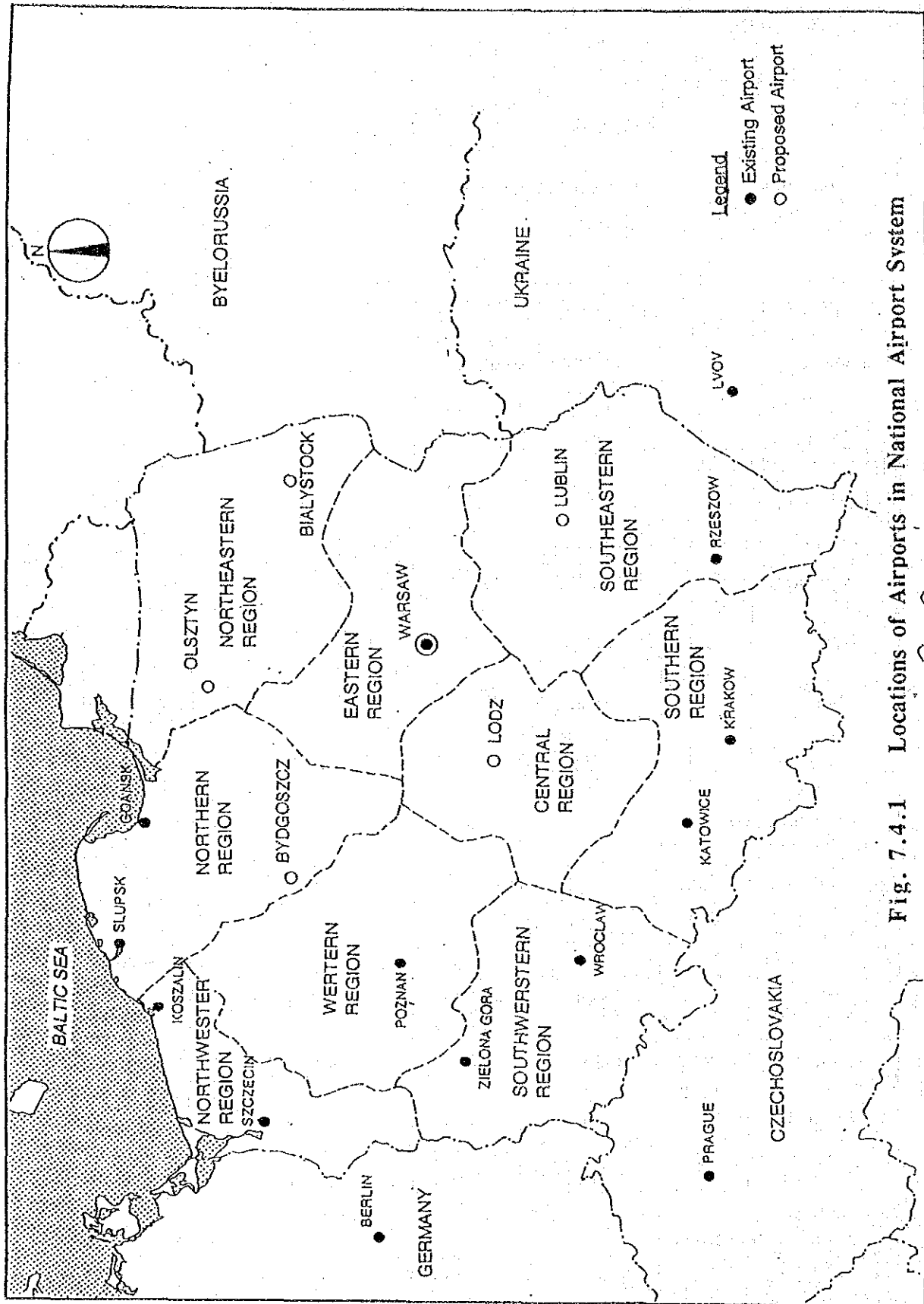


Fig. 7.4.1 Locations of Airports in National Airport System

Major components of the National Airport System, which should remain in force at least until Poland achieves full EC membership, are:

- (1) Class I airports should be able to accommodate not only domestic and regional flights but also long-haul international traffic. Rather than only serving domestic flights as in the past, Class II airports are expected to gradually absorb regional international flights in line with Poland's progression toward full EC membership. Concurrently, Class I and II airports would evolve as hubs for private airlines providing domestic linkages with Class III airports.
- (2) Class I and Class II airports should be administrated by MTME/PCAB. Construction and maintenance costs of air side facilities and nav aids should be financed as much as possible from airport development funds consisting of airport and ATS user fees, and other revenues from concessions, aviation fuel tax, and inspection/licensing charges. Government subsidies should only be considered as needed to secure a minimum level of air transport services.
- (3) PCAB would become responsible for planning and developing all ATS facilities for Class I through III airports, and would receive all ATS tariffs.
- (4) The National Airport System should offer reasonably equal accessibility to all citizens. Five additional Class III airports are therefore proposed at Bialystock, Bydgoszcz, Lodz, Lublin and Olstzyn. These candidate sites have either airfields owned by Polish Aero Clubs or military airfield (Bydgoszcz). It is worthwhile to note that all local authorities except Lublin have intentions to develop their own airfields to commercial ones.
- (5) Class III airports should be jointly administrated by PCAB and local governments. This arrangement would still enable PCAB to exercise its authority in planning/developing commercial airports, yet permit local government participation which, in a fiscal sense, could determine the timing with which new Class III airport could be opened to the public.
- (6) Class IV general aviation airports would be owned and administered by either Polish Aero Club or local governments, while "other" airports would be privately owned.

The national airport system will, therefore, provide the basis for enhanced management and structured evolution of Poland's airport facilities.

#### 7.4.4 Airport Master Plan

Air side facilities, dimensions of runways and aprons of major airports are of good standards (Table 7.4.5). Air demand patterns indicate that:

- (1) International air passengers of both embarked and disembarked increased to 2.72 million persons in 1989 but decreased to 1.98 million in 1991. Estimated number of international air passengers amounts to 2.6 million, 3.6 million and 5 million in years 1995, 2000 and 2005, respectively.
- (2) Total domestic air passengers of embarked and disembarked have declined from 1.6 million in 1979 to 0.44 million in 1990 and 0.2 million in 1991. Estimated domestic air passenger movements are 0.5 million, 0.7 million and 0.9 million in 1995, 2000, and 2005, respectively.

Domestic traffic will not cause facility shortfalls at any airport by year 2005. International air passengers at Warsaw International Airport (nearly 4.8 million annual passengers in 2005) can be accommodated by the new international passenger terminal completed in 1992. Former international terminals can be renovated for domestic use. Bearing in mind the importance of a balanced and orderly development of national civil aviation system, airport development plans for Class I and Class II airports are proposed as shown in Tables 7.4.6 to 7.4.13. Development plans for Class III airports need to be developed by carefully monitoring the trend of future traffic demands. Several points should be noted in this regard:

- (1) In tables solid lines represent timing and duration of works and "O" marks represent possibilities of works.
- (2) Airport development plans should be reviewed every five years, therefore, the recommended plans depict proposed works during the initial two periods (1990 - 1995, 1996 - 2000) and potential works during the latter period (2001 - 2005).
- (3) The potential 2001 - 2005 works are subject to verification via reviews on intermediate development plan (during 1995 and 2000).
- (4) A "National Civil Aviation Master Plan" has been developed by the technical assistance of the USAID. Thus, each proposed airport development plan contains an immediate "review/update" study. The purpose of these tasks is to integrate proposals of this study with recommendations by the "National Civil Aviation Master Plan", as well as development plans prepared by local authorities of each voivodship.



Table 7.4.5 Main Features of Eight Major Airports

City Airport Name IATA Airport Code	Warsaw Okęcie (WAW)	Gdansk Rebiechowo (GDN)	Katowice Pyzowice (KTW)	Krakow Balice (KRK)	Poznan Lawica (POZ)	Rzeszow Jasionka (RZE)	Szczecin Golnow (SZZ)	Wroclaw Strachowice (WRO)
City Population	2,149,000	1,086,000	3,475,000	849,000	943,000	295,000	734,000	834,000
Total Voivodship Population	2,419,000	1,423,000	3,968,000	1,229,000	1,328,000	717,000	967,000	1,126,000
General								
Airport Owner	PPL	PPL	PPL/Military	PPL/Military	PPL	PPL/Military	PPL/Military	PPL/Military
Airport Area (ha)	550	280	550	220	320	270	600	600
Distance from City (km)	10	12	34	11	5	9	45	10
Air Route Distance from WAW (km)	-	381	318	304	380	360	568	369
Flying Time from WAW (ACFT)	-	1H05M (AN-24)		40M (TU-134)	1H (AN-24)	1H (AN-24)	1H (TU-134)	1H (AN-24)
Air Traffic								
Passenger in 1990	2,268,100	45,650	3,000	44,830	1,340	-	-	180
	222,140	60,050		28,290	9,000	19,920	17,840	61,790
Cargo in 1990	15,901			(All domestic airports - 900)				
	850			(All domestic airports - 7)				
Aircraft Movements (1990)	40,710	4,674	472	4,157	1,306	844	978	1,968
	4,057	2,112	148	1,856	1,232	3,832	182	1,244
Airside Facility								
Runway(s) LxW (m)	3,690 x 60 2,800 x 50	2,800 x 45	2,380 x 60	2,400 x 60	2,500 x 50	2,502 x 80	2,500 x 60	2,500 x 60 2,000 x 23*
Runway Strength	PCN62/R/D/X/U PCN45/R/B/X/U	PCN36/R/A/X/D	PCN40/R/C/X/U	PCN22/F/B/X/T	PCN49/F/A/X/T	PCN29/R/B/X/T	PCN13/R/B/W/T	PCN31/F/C/X/T PCN35/F/C/X/T
ILS	CAT I (RWY33,11)	CAT I (RWY29)	Yes	-	CAT I (RWY29)	CAT I (RWY29)	-	(planned by '92)
Availability of Parallel Taxiway	Yes	No	Yes	Yes	No	No	Yes	Yes*
Civil Apron Area (m)	27 ACFT stands	90x350 40x150 (Apron 2) 50x180 (Apron 3)	80x230		100x240	80x130	70x190	*(RWY12LU30R) 56x100
Passenger Terminal	10,800	400 600	1,000	3,000** 700	(536)** 262	(1,000)**	1,200	700***
Car Parking Area (slots)	1,000 (for Terminal 1)		300	** under construction			*** 700 sq.m planned	

Source: AIP LOT Timetable

**Table 7.4.6 Master Plan for Gdansk/Rebiechowo Airport (Class I)**

	Work Item		Short-Range ( ~ 1995)					Intermediate-Range (1996 ~ 2000)			Long-Range (2001 ~ 2005)	
	Item/Facility	Description	'91	'92	'93	'94	'95					
Study	Airport Master Plan	Review/Up-date			■				■			■
Air Side	Runway Strip	Widening RWY 11 extended area						■				○
	Runway	Overlay Extension			■							○ (3,000m)
	Taxiway	Parallel Taxiway Rapid Exit Taxiway							■	■		○ ○
	Apron	Overlay Extension				■						
	Miscellaneous	Utilities			■							
Buildings	Passenger Terminal	New International Terminal						■				
		Renovation of domestic terminal						■				
	Cargo Terminal							■				
	Administration Bldg.											
	Control Tower											
	RFF											
AFL/ATS	Airfield Lighting											○
	ATS System including											○
	Air Navigation System	Up-grading						■				
Land Side	Curb side	Improvement										
	Car Park	Expansion										
	Access Road	Improvement			■							

**Table 7.4.7 Master Plan for Krakow/Balice Airport (Class I)**

	Work Item		Short-Range ( ~ 1995)					Intermediate-Range (1996 ~ 2000)			Long-Range (2001 ~ 2005)
	Item/Facility	Description	'91	'92	'93	'94	'95				
Study	Airport Master Plan	Review/Up-date			■				■		■
Air Side	Runway Strip						■				○
	Runway	Overlay Extension			■		■	(2,700 m)			○(3,000 m)
	Taxiway	Overlay Extension					■				○
	Apron	Overlay Extension					■				○
	Miscellaneous	Utilities									
Buildings	Passenger Terminal	New International Terminal	■								
		Renovation of domestic terminal			■						
	Cargo Terminal							■			
	Administration Bldg. Control Tower RFF										○
AFL/ATS	Airfield Lighting							■			○
	ATS System including Air Navigation System				■						○
											include Radio location control center
Land Side	Curb side	Realignment		■							
	Car Park	Expansion			■						
	Access Road	Improvement			■	■					

Table 7.4.8 Master Plan for Warsaw/Okecie Airport (Class I)

	Work Item		Short-Range ( ~ 1995)					Intermediate-Range (1996 ~ 2000)			Long-Range (2001 ~ 2005)
	Item/Facility	Description	'91	'92	'93	'94	'95				
Study	Airport Master Plan	Review/Up-date			■				■		■
Air Side	Runway Strip										
	Runway	Overlay				■					○
	Taxiway	Overlay							■		
	Apron	Repair/Expansion	■	■	■						○
	Miscellaneous	Utilities	■	■							
Buildings	Passenger Terminal	New International Terminal	■	■							
		Renovation of existing int'l terminal for domestic terminal			■						
	Cargo Terminal		■	■							○
	Administration Bldg.										
	Control Tower										
RFF											
AFL/ATS	Airfield Lighting										○
	ATS System including										
	Air Navigation System				■						○
Land Side	Curb side	New/Realignment	■	■		■					
	Car Park	New/Realignment	■	■							○
	Access Road	Improvement	■	■							○

**Table 7.4.9 Master Plan for Katowice/Pyrzowice Airport (Class II)**

	Work Item		Short-Range ( ~ 1995)					Intermediate-Range (1996 ~ 2000)				Long-Range (2001 ~ 2005)
	Item/Facility	Description	'91	'92	'93	'94	'95					
Study	Airport Master Plan	Review/Up-date	-						-			-
Air Side	Runway Strip							-				○
	Runway	Overlay Extension		-				-	(2,700 m)			○ (3,500 m)
	Taxiway	Overlay Widening/Extension						-				○
	Apron							-				○
	Miscellaneous	Utilities			-							
Buildings	Passenger Terminal	New International Terminal			-							
		Domestic terminal					-					○
	Cargo Terminal				-							
	Administration Bldg.											
	Control Tower											○
	RFF											○
AFL/ATS	Airfield Lighting				-			-				○
	ATS System including											
	Air Navigation System				-							○
Land Side	Curb side	Realignment					-					
	Car Park	Expansion						-				
	Access Road	Improvement			-							○

**Table 7.4.10 Master Plan for Poznan/Lawica Airport (Class II)**

	Work Item		Short-Range ( ~ 1995)					Intermediate-Range (1996 ~ 2000)					Long-Range (2001 ~ 2005)				
	Item/Facility	Description	'91	'92	'93	'94	'95										
Study	Airport Master Plan	Review/Up-date	■														■
Air Side	Runway Strip																○
	Runway	Overlay Extension															○ (2,700 m)
	Taxiway	Overlay Parallel Taxiway															○
	Apron																
	Miscellaneous	Utilities			■												
Buildings	Passenger Terminal	New International Terminal	■														
		Renovation of domestic terminal				■											
	Cargo Terminal																○
	Administration Bldg.																○
	Control Tower																○
	RFF																
AFL/ATS	Airfield Lighting																○
	ATS System including																
	Air Navigation System				■												○
Land Side	Curb side	Realignment			■												
	Car Park	Expansion			■												
	Access Road																

**Table 7.4.11 Master Plan for Rzeszow/Jasionka Airport (Class II)**

	Work Item		Short-Range ( ~ 1995)					Intermediate-Range (1996 ~ 2000)	Long-Range (2001 ~ 2005)
	Item/Facility	Description	'91	'92	'93	'94	'95		
Study	Airport Master Plan	Review/Up-date	■					■	■
Air Side	Runway Strip							■	○
	Runway	Overlay Extension			■			■ (2,800 m)	○ (3,000 m)
	Taxiway	Overlay Parallel Taxiway							○
	Apron								○
	Miscellaneous	Utilities			■				
Buildings	Passenger Terminal	New International Terminal							○
		Domestic terminal							
	Cargo Terminal								○
	Administration Bldg.								
	Control Tower RFF								
AFL/ATS	Airfield Lighting							■	○
	ATS System including Air Navigation System			■					
Land Side	Curb side Car Park	New			■				
	Access Road	Improvement						■	

Table 7.4.12 Master Plan for Szczecin/Goleniow Airport (Class II)

	Work Item		Short-Range ( ~ 1995)					Intermediate-Range (1996 ~ 2000)			Long-Range (2001 ~ 2005)	
	Item/Facility	Description	'91	'92	'93	'94	'95					
Study	Airport Master Plan	Review/Up-date	■						■		■	
Air Side	Runway Strip										○	
	Runway	Overlay Extension			■						○ (2,700 m)	
	Taxiway	Overlay Extension of Parallel Taxiway									○	
	Apron	Expansion							■			
	Miscellaneous											
Buildings	Passenger Terminal	New International Terminal									○	
		Domestic terminal										
	Cargo Terminal										○	
	Administration Bldg.											
	Control Tower RFF											
AFL/ATS	Airfield Lighting										○	
	ATS System including Air Navigation System			■							○	
Land Side	Curb side Car Park Access Road	Improvement			■							



**Table 7.4.13 Master Plan for Wrocław/Strachowice Airport (Class II)**

	Work Item		Short-Range ( ~ 1995)					Intermediate-Range (1996 ~ 2000)	Long-Range (2001 ~ 2005)
	Item/Facility	Description	'91	'92	'93	'94	'95		
Study	Airport Master Plan	Review/Up-date	■					■	■
Air Side	Runway Strip							■	
	Runway	Overlay Extension						■ (2,700 m)	
	Taxiway	Overlay Extension of Parallel Taxiway						■	
	Apron	Expansion			■				○
	Miscellaneous	Utilities			■				
Buildings	Passenger Terminal	New International Terminal	■						○
		Domestic terminal							○
	Cargo Terminal				■				
	Administration Bldg.			■					
	Control Tower RFF								○
AFL/ATS	Airfield Lighting		■					■	
	ATS System including Air Navigation System		■						○
Land Side	Curb side	Realignment		■					
	Car Park	Expansion		■					
	Access Road	Improvement			■				

## 7.5 Air Traffic Services (ATS) System

### 7.5.1 Background

Poland's airspace had been controlled by the military during the centrally controlled socialist system. The Polish ATS system is composed largely by the Soviet system with extensive use of East European made equipment. Since the introduction of the economic transformation program, normalization of the airspace use, which means civilian controlled civil/military joint use of airspace, is in the process, as mentioned previously, by the civil/military task force. Due to the lack of capital investment and systematic planning in the past, problems caused by the Soviet made equipment existed in the ATS system as a whole. In order to prepare for the ever increasing overflight traffic, as well as to comply with the ECAC requirements, there is a pressing need for Poland to modernize its ATS systems.

### 7.5.2 ATS Development Plan by PATA

PATA is well aware of the problems of the existing ATS system and has prepared its own short term development plan as shown in Table 7.5.1. PATA estimated the total cost required for the projects during the six year period at some 1,050 billion zloty. ICAO has been undertaking the feasibility study on the PATA's projects. European Investment Bank (EIB) will be ready to provide financial assistance to PATA if the results of the study proves viable. These studies and financial assistance need to be organized for the earlier implementation of the development plan.

**Table 7.5.1 ATS Development Plan by PATA**

Project No.	Scope of Work	Project Years						Estimated Cost (billion zł.)
		'92	'93	'94	'95	'96	'97	
1.	ATC Center, Goal 0 - Operational level degradation avoidance	■						9.9
2.	ATC Center, Goal 1 - ATC, automated flight planning and procedural traffic control with radar monitoring - APP, automated flight planning and radar traffic control with redundant radar	■						64.6
3.	ATC Center, Goal 2 - ACC, radar air traffic control, partial automation of co-ordination with neighbouring FIR and military air services	■	■	■	■	■		95.7
4.	ATC Center, Goal 3 - Navaid network development to agree with ECAC strategy for 1990s	■	■					49.0
5.	ATC Center, Goal 4 - Construction of new ATC Center	■	■	■	■	■	■	456.0
6.	Construction of ATC Training Center	■	■	■	■			22.0
7.	Modernization of Aeronautical Information Service and remaining service of Air Traffic Dept.	■	■					1.51
8.	Establishment of Gdansk TMA			■	■			118.0
9.	Establishment of Krakow TMA			■	■			118.0
10.	Modernization of VFR Flight Information Services				■	■	■	111.0

Source: PATA

Total 1,045.71 billion zł.

## 7.6 Airlines and Civil Aviation Companies

### 7.6.1 Background

Air traffic services in Poland have historically been monopolized by state owned LOT Polish Airlines. In mid 1989, however, a new law was introduced which allows private companies to commence civil aviation activities. The scope of undertakings allowed to private companies includes scheduled/non-scheduled passenger and cargo air transport for both domestic and international, as well as such aviation related businesses as aircraft maintenance, manufacturing of aircraft parts, operate flying schools and other aircraft related services (e.g. agricultural spraying, aerial photography, medical and rescue flights, aerial advertising, and offshore construction).

Companies or individuals wishing to commence aviation activities must first obtain their license from MTME in the designated field of activity. The licensed business can commence actual services only after receipt of inspection and certificate by GICA in terms of organizational, technical and mechanical capabilities. Some 89 companies (80 Polish and nine Polish/foreign-joint-ventures) have been granted licenses and 42 thereof (40 Polish and two joint-ventures) have been certified as of November 1991. However, only two companies are certified to provide scheduled domestic and international air transport services. Additional 53 Polish and 6 joint venture companies have been granted licenses. Among them, 25 Polish companies and one joint-venture company were certified to provide non-scheduled air transport services. Actual performances by certified companies are not known to GICA since companies are obliged to report only once at the end of the year.

### 7.6.2 LOT Polish Airlines

As of July 1992, LOT is a privatized company in accordance with the Law of June 14, 1991. However, since 51 % of its stock is retained by the MTME, the Minister of MTME is the main owner of LOT. As discussed in Volume 4 of the Report, LOT faces various problems under the current economic transformation. At this crucial moment, MTME needs to take the following actions:

- (1) Make efforts to sustain LOT by providing financial assistance for LOT through government credits, especially for replacement of aircraft;
- (2) Provide possible legal means to protect LOT so as to make LOT competitive in the international air transport community until the time of Polish integration with EC;
- (3) Participate in planning and management of LOT positively to reform LOT toward a free market economy. It may be advisable to invite foreign advisors to LOT or explore strategic alliances of LOT with international airlines in the western market; and
- (4) Solve existing internal problems including prohibition of mixture of international/domestic passengers on LOT flights and troublesome CIQ formalities, and external problems including airspace use over the Baltic states, Byelorussia and Uklaina as soon as possible.

### 7.6.3 Private Civil Aviation Companies

While more than 50 Polish and joint venture companies are licensed for aviation related activities, only a few of them so far has grown to be an airline or a business entity with a noticeable scale. It is recommended that PCAB set up monitoring channels to obtain precise information on their activities more frequently so as to be able to provide guidance where necessary.

In addition, the issue of land/property ownership on the properties owned by the former social government must firstly be settled by the government for encouraging private companies. MTME should establish a task force to deal with the conversion of ex-military air bases to use their excellent air-side facilities in close cooperation with Ministry of Defense and other authorities concerned.



**CHAPTER 8 PLAN OF ACTION FOR  
THE TRANSPORT SECTOR**





## CHAPTER 8 PLAN OF ACTION FOR THE TRANSPORT SECTOR

### 8.1 Capital Investments under Financial Constraints

Large capital investment is currently required to revitalize the new Polish economy not only in the transport sector but also in the various economic sectors. At the same time, however, prudent fiscal policy has to be maintained to hold down the public deficit at a level that is consistent with other macro-economic objectives, viz controlling the inflation and maintaining external credit-worthiness. Under the circumstances, capital investment should be determined based on a deep understanding of how limited resources can be spent most efficiently and effectively in areas in which public spending will be used.

In the transport sector, huge capital requirements are amassing in view of the modernization of the outmoded infrastructure and facilities, capacity increase to cope with the increasing demand, and adjustment of the existing systems adaptable to the EC standards. Substantial amount of funds are also needed for restructuring the transport industries as well as improving environment protection and traffic safety. These capital requirements need to be satisfied in a step-wise manner toward the integration with the EC.

During the economic transformation process in Poland, however, fiscal outlays of the government tended to exceed its revenues every year, resulted in the declining budget allocation to the transport sector. If this situation continues for the coming years, transport infrastructure and facilities will be further degraded and modernization of transport industries will be retarded. In such a case, the transport sector will become one of the largest bottlenecks for the nation's overall economic activities and internationalization.

The government should establish special funds earmarked for the transport sector especially during the economic transformation period when a stable budget allocation to the transport sector cannot be assured from the general budget. At the same time, various measures should be sought in the transport sector for raising funds, including review and revision of present user charges, introduction of tolls and new kind of charges, and encouragement of private investments to the sector.

In addition to the above internal financing, there is a possibility to introduce loans from international and bilateral sources. However, attention needs to be paid to the following three aspects associated with borrowing: (1) external financing usually cover the external portion of project costs excluding local currency portion; (2) capital investments are followed later by recurrent costs which should be paid by the borrower; and, not to mention, (3) repayment of capital and interest in installment afterwards.

### 8.2 Policy for Developing Plan of Action

Judging from the current situation of Poland, it is recommended that, instead of promptly resorting to external financing, a prudent restructuring process needs be furthered, particularly in terms of cost reduction through efficiency improvement, revenue increase through proper pricing, raising additional funds through introduction of user pay principle, inviting direct foreign investments and careful screening of capital investments.

Development of the Polish transport sector, in brief, is dependent mainly on:

- (a) progress of legal institutional changes toward a market economy;

- (b) rationalization and modernization of transport industries adaptable to a market economy and compatible with the EC standards; and
- (c) the government initiative to encourage the growth of environment of fair market competition and the relevant financial scheme.

The following rules need to be focused on developing the "Plan of Action" for the Polish transport sector:

- (a) programs to encourage prevalence of market principles and efficiency improvement should precede capital investments;
- (b) maintenance, rehabilitation and small improvements of the existing assets should precede new capital investments; and
- (c) in terms of new capital investments, those for accelerating the Polish integration with the international community should precede those for other purposes.

The "Plan of Actions" for the Polish transport sector is prepared based on the above understanding and development policies.

### **8.3 Plan of Action for the Polish Transport Sector**

Plan of Action for the Polish transport sector is proposed as shown below for short term (1993 - 1996) and medium term actions (1997 - 2000).

It is very likely that many of the actions proposed will take several years from their initiation to completion. Those actions listed in short term will need follow-up actions to complete in the later stage while those listed in medium term will need preparatory studies for their implementation in the preceding stage. In this sense, there is no definite distinction between short and medium term actions. As a rule, however, those actions that need urgent initiation are listed in short term. This rule applies as well to the order of actions listed in each term.

8.3 Plan of Action for the Polish Transport Sector

Sectors	Short Term Actions (1993-1996)		Medium Term Actions (1997-2000)	
	Policy Measures	Actions	Policy Measures	Actions
Railway	SRL-1 Preparation of medium/long term policy for PKP restructuring through rationalization and modernization toward clarification of PKP autonomy and integration with the EC railway system	<ol style="list-style-type: none"> <li>(1) definition of roles and functions of railways in the future international and domestic transport market</li> <li>(2) identification of major responsibilities of the state and PKP including the future possibility of privatization</li> <li>(3) reassessment of resources available for restructuring of the railway system including capital, technologies and competent managers and engineers</li> <li>(4) establishment of medium/long term policy for PKP restructuring</li> </ol>	MRL-1 Review and revision of the medium/long term policy and short term action programs based on the evaluation of the performance by 1996	<ol style="list-style-type: none"> <li>(1) elaboration of market strategy in view of the competitiveness with road and air transport for passengers and with road and maritime transport for cargoes</li> <li>(2) elaboration of the decentralized management system to reflect advanced human resource development</li> <li>(3) further rationalization of employment to achieve higher productivity</li> </ol>
	SRL-2 Preparation of short term rationalization program in line with the medium/long term policy with a focus on streamlining the enlarged railway system and rationalization of employment	<ol style="list-style-type: none"> <li>(1) review of business performance of railways in the European countries hopefully by market segments</li> <li>(2) analyses of cost structure and productivity of PKP with a reference to international standards</li> <li>(3) identification of focal segments for particular rationalization in terms of significant cost burdens and low productivity</li> <li>(4) decision on the actions to be taken with due consideration to adopting necessary measures</li> <li>(5) implementation of the rationalization program</li> </ol>	MRL-2 Strengthening of international cooperation with railway systems of neighboring countries	<ol style="list-style-type: none"> <li>(1) intensification and diversification of business cooperation with neighboring railway systems</li> <li>(2) adjustment and coordination of railway systems with neighboring countries to facilitate mutual riding in</li> <li>(3) full compliance with the EC policy guidelines in developing costing and information system</li> </ol>

Sectors	Short Term Actions (1993-1996)		Medium Term Actions (1997-2000)	
	Policy Measures	Actions	Policy Measures	Actions
Railway	SRL-3 Preparation of short term modernization program in line with the medium/long term policy with a focus on improving competitiveness with road transport and introducing new prospective businesses	<ol style="list-style-type: none"> <li>(1) review of modernization programs and business activities undertaken by railways in various countries</li> <li>(2) enumeration of alternative modernization programs by category which might be applicable to PKP in view of intensifying competition with road transport and international integration</li> <li>(3) evaluation of alternatives based on a series of criteria of costs, benefits and available resources</li> <li>(4) development of time scheduled modernization programs and their implementation</li> </ol>	MRL-3 Acceleration of modernization program with a focus on high speed train, combined transport services and commuter trains in large urban agglomerations	<ol style="list-style-type: none"> <li>(1) introduction of high speed train operation on the highly potential railway lines including the CMK line</li> <li>(2) encouragement of international combined transport services through growing international forwarders, developing combined transport terminals, and providing efficient feeder transport services</li> <li>(3) improvement of commuter train services based on thorough examination of market demand and available railway facilities</li> </ol>
	SRL-4 Preparation of short term programs for improving legal institution surrounding PKP and management and operation of PKP	<ol style="list-style-type: none"> <li>(1) mitigation of economic regulatory schemes imposed on PKP particularly in terms of tariff setting and train operation including closure of unprofitable lines</li> <li>(2) early development of costing and management information systems</li> <li>(3) development of employment reduction schemes with an emphasis on curtailment recruitment</li> <li>(4) reorganization of PKP toward a decentralized decision making system based on market</li> <li>(5) training of PKP management to be adaptable to a market economy</li> <li>(6) establishment of general rules for development and maintenance of railway infrastructure and train operations</li> </ol>	MRL-4 Clear definition and demarcation of responsibilities between the state and railway company (or companies)	<ol style="list-style-type: none"> <li>(1) clear demarcation of responsibilities for development and maintenance of railway infrastructure and train operations</li> <li>(2) financial independence of railway company (or companies) from the state</li> </ol>