2.5.5 Environmental Protection and it's Countermeasures

Repair and investment plans at ZE PAK SA have always taken, and will still have to take, into account the issues of widely understood environmental protection. One of the effects is a considerable reduction of dust emission from power stations from about 160 thousand tons in 1990 to about 20 thousand tons in 1996. That is the result of major repairs and replacements with electro-filter in the power stations.

Considerable attention is also paid to the reduction of SO_2 emission. A flue gas desulfurization installation using a wet method for two boilers in the Konin Power Station was constructed in June 1997. Further implementation of hybrid quasi-fluidized combustion technology was finished for two EKM boilers (and in plans two more) in the Konin Power Station. The technology, apart from SO_2 emission, provides also for NOx emission reduction. For a recent two years, installations reducing NOx emission have been implemented in the Patnow and Adamow Power Stations.

Prospective modernization and repair activities take into account changes of regulations concerning environmental protection which are to take place after 1998. Therefore, construction of fluidized bed combustors, which provide simultaneous reduction of SO_2 and NOx emission, is planned in thorough modernization of the Patnow Power Station.

Based on economic calculations, as well as on perspectives of coal supply to the power stations, the company made a decision on modernization or withdrawal of facilities from abuses. Apart from modernization and repair activities, the company is also trying to improve operation guidelines, and this is also reflected in reduction of the negative impact of power station on the environment. One example may be the reduction of power in the Patnow and Konin Power Stations, which use open cooling systems, in the period of high air temperatures. In this aspect, the company rigorously stick to legal decisions, as well as guidelines from specialists who have been examining Konin lakes for almost 40 years on the initiative of ZE PAK. The research has also shown a changed biological balance, caused by increased water temperature in the lakes and adjustment of fauna and flora in the lakes to the new conditions. It has been assumed that at present, functioning of the cooling system, which causes water flows in the lakes, protects them from biological deterioration. Based on the

results of conducted research, new solutions are projected which optimize water spread and prevent high temperatures in various parts of the lakes.

2.5.6 Present Situation of Privatization, Diversification and Management Improvement

(1) Progress of privatization

Having been commercialized in 1994, ZE PAK S.A. is now in the process of privatization. Although its privatization was previously discussed, it did not materialize at that time. On July 15, 1997 the Council of Ministers decided that the State Treasury would sell 10 to 20% of ZE PAK's shares to a strategic investor who would pledge to realize the investment tasks. The cost of investment tasks is estimated at 1 billion USD. In addition, according to the Council of Ministers' decision a new block of shares is going to be issued in the amount of 30% of primary emission, which may be comprised with the investment commitments of the investor. After the present investment program is finished, the strategic investor may become a dominant owner of ZE PAK S.A., because further issuance of shares is planned.

In September all entities interested in ZE PAK S.A. share purchasing were invited to negotiations.

(2) Restructuring

Organizational restructuring will begin in 1998. The items will be as follows:

- adjusting organizational structure to the tasks resulting from the New Energy Law and the assumption of an electrical energy market for both the systematic and local markets.
- adjusting organizational structure to the new tasks resulting from the company's privatization.
- ensuring efficient realization of ZE PAK S.A.'s technical reconstruction program up to 2007.
- efficiency of the company's management improvement and assuring managerial work responsible for specific activities.

- reducing prime costs, through bringing to life limited a liability partnership, which would not only operate for ZE PAK S.A. but also use the potentials outside the company.
- organizational structure simplification (horizontal and matrix structures)
- liquidation of unnecessary parts
- managerial staff verification, introducing contract employment
- increasing manager independence
- employment-rate rationalization
- indirect workers' reduction

ZE PAK S.A.'s board thinks that the most effective long-term form of prime cost reduction could be "bringing to a life limited liability partnership", separated from the organization structure of ZEPAK S.A., but financially related to the parent company. ZE PAK S.A. expects that isolating such service activities (repairs or transportation), which are necessary for the company, could be negatively viewed by the staff, so they propose a gradual solution. During the first stage, organizational units - in the form of department or enterprises - would be isolated and economic accountability would be isolated. Isolating partnerships would take place during the second stage.

Personal prime cost reduction should not take the form of mass dismissal. Employment rate reduction should take the form of natural dismissal or other legally accepted forms.

(3) Projected employment tendencies

The number of employees entitled to retirement rates from 30 to 140. In the following years, ZE PAK S.A. plans to hire employees at a number of not more than 30% of people leaving the company.
In addition, as a result of organizational restructuring the company projects reduced employment up to 50%, because the workers will be employed by dependent partnerships.

(4) Possibility of diversification

1) Development of heat supply in the province
In ZE PAK SA, heat is produced by cogeneration in the Konin and Adamow Power Stations. Those heat sources were prepared to generate

heat in volumes determined by the provincial authorities in "prospective plans of provincial development". Demand has been partly decreased by impeded development of towns. Work aimed at energy-saving has also been carried out. ZE PAK performed a number of necessary investments aiming at full coverage of heat demand. The boiling area of power station has been modernized and installation of wet desulfuring has been completed, covering some boilers in the Konin Power Station. Other boilers are functioning with fluidized bed HUS. The company has built modern and technically efficient heating turbines. Heat, supplied to users, is competitive in terms of prices, and ecologically pure. The company has sources of 583 MW heat energy, out of which only 55% is used. Generation of heat is about 3,200,000 GJ per year and entirely satisfies the needs of both towns and numerous individual users. The company also entirely covers the demand for heat as steam. The company expects that consumption of heat will increase, and towns, while developing, will also use this electricity.

2) Full utilization of accumulated know-how and technology
ZE PAK SA, in 1997, established the partnership "Training and Relaxation Center Energetyk". In 1998, it plans to establish the "Protection Company" and 5 units with their own budgets which would eventually be transformed into companies: Repair and Investment, Transport, Automatic Control Engineering and Security Services, Catering and Order Maintenance. Those companies are to expand their services on ZE PAK SA's internal market, rationalize their costs and also provide services outside. The Repair and Investment Company will have great possibilities of a services' range increase. The company should undertake the majority of repair work carried out by ZE PAK SA. It is also assumed that it will be used in planned technical restructuring of ZE PAK SA, namely in investment activities. The company should also be competitive in the external market for energy supply. Talks concerning potential cooperation with the German company, Siemens, are being conducted.

3) Possibilities of industrial use of ash from brown coal burning
Ashes from brown coal combustion from KWB Konin are calcium-rich ashes with fixing properties, resulting from a big amount of free CaO. Studies on ash showed that it may be used for improvement of land

stabilization, fulfilling the role of an independent binder, or as an element of improvement for incoherent land grain. These properties/characteristics allowed use for both building/construction and for producing silicate-ash composites applied for stockyard sealing.

Studies on naturally radioactive elements' concentration confirmed that fly ashes from ZE PAK may be used for construction materials production assigned for housing construction (f1 and f2 factors are much lower than admissible). Attempt confirmed the possibility to use these ashes for binding materials' production. There were also studies on whether the ash may be used for synthetic aggregate production. Despite the fact that some technologies for synthetic aggregate production allow use of high-calcium ash for this purpose, the investment and production cost would be too high (for aggregate production silicate ash from hard coal combustion is used). High content of CaO in the ash allow use of the ZE PAK's ash in agriculture for soil deacidification.

The possibilities mentioned above concern fly ashes. ZE PAK uses the hydraulic transport of ash and storage in pit excavations. The existing installations of dry ash removal allows the company to obtain only small amounts of fly ash, and that is why the economic possibilities of using ash are limited at present.
After the subsequent modernization of the Patnow Power Station, the ash - before being transported to the stockyard,- will go to the storage reservoirs, which will allow the company to obtain fly ashes in bigger amounts. The company will have a new stockyard, although still in the projected phase, where wet storage technology is not planned. Storage will take place, without return water, with application of new technologies for furnace wastes storage in the form of suspension or stabilizers. These technologies will allow use of the ashes for reclamation of degraded - by mining activity - land.

One of the most important limitation of ZE PAK's ash usage is the lack of homogeneity. These changing properties result from different- being exploited at the same time- open pits. Application of some technologies using ashes would require introduction of measurements and ash-blending installations.

4) Gypsum from the installation for sulfur removal from combustion gas through a wet method for boilers No.7 and 8 in the Konin Power Station
Depending on the sulfur content in the fuel and the degree of using boilers in the installation for sulfur removal from combustion gas, about 30 to 70 thousand tons per year of Ca SO_4 x $2H_2O$ will be produced. Energoblok Konin takes the total amount of gypsum from ZE PAK on the basis of a long term contract. Energoblok is going to process the gypsum into construction gypsum.

2.6 Aluminum Industry in Konin Province

2.6.1 Introduction

Huta Aluminum Konin S.A. is the only aluminum smelting company in Poland. The plant was constructed in 1966 adjacent to the ZE PAK Power Plants, minimizing transmission loss. Main products were primary aluminum and casting alloy. A rolling mill division was added in 1972. In 1991, the Company was commercialized and Huta Aluminum Konin S.A. was started in January 1, 1992. Refer to Table 2.1-1.

2.6.2 Raw Material, Production Facilities and its' Modernization

(1) Raw material

Raw Material for smelting is imported alumina (aluminum oxide) .

(2) Production facilities

The company has a smelting section and a rolling section.

1) Smelting section
Primary aluminum production capacity : 52,000 tons/year
No. of electrolysis cells : 192
The type of anode adopted has been the Soederberg type. The company started modernization of smelting technology modifying anodes with an improved type of anode with dry anode paste. By the end of 1996, the company completed the anode modification.

2) Melting and casting section
The section is estimated to have around 75,000 t/y capacity.
10% of input is recovered aluminum.

3) Rolling section
Capacity : 45,000 tons/year of aluminum and its alloys
Gauge Range: 0.07 to 25 mm

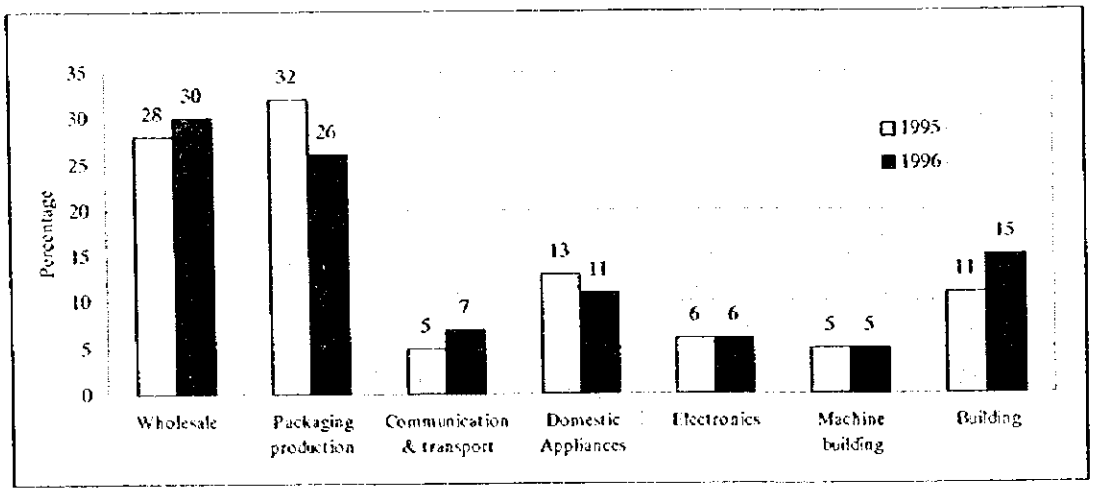
2.6.3 Production and Sales of Products

(1) Annual production and sales

Sales of Huta Aluminum are increasing and the quantity of products sold in 1996 was 52,074 tons, out of which rolled products accounted for 39,293 tons and primary aluminum products 12,780 tons. Huta Aluminum sells not only in the domestic market but also abroad. Exports accounted for 31% of the total sales, 393.5 million PLN. The major destinations for exports are: Germany, Czech Republic, the countries of Benelux, Austria, Switzerland, Great Britain, Scandinavia, Russia, Lithuania, Ukraine, Slovenia, Taiwan, USA and Portugal.

The major customers of the rolled products are the following industries: packaging production, building, communication and transport, electronics, machine building and domestic appliances. Sales to the building industry and communication and transport industry increased their shares within the entire sales of the company. Refer to Figure 2.6-1. Huta Aluminum also sells its rolled products to designated trading companies. Together with sales to the company's sales representatives, wholesale in 1996 reached 30.3% of the domestic sales in the rolled products.

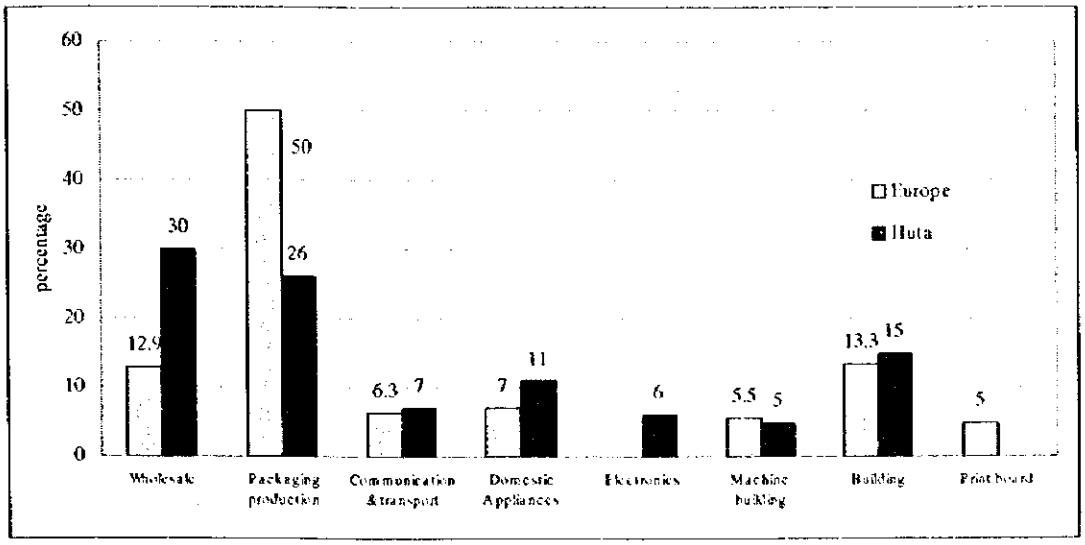
Figure 2.6-1 SALES STRUCTURE OF HUTA ALUMINUM KONIN



(Source: Huta Aluminum Konin)

Comparing the demand structure of rolled plates and sheets in Western Europe, Huta Aluminum Konin's sales for packaging will increase. Refer to Figure 2.6-2.

Figure 2.6-2 COMPARISON WITH DEMAND STRUCTURE OF PLATE & SHEETS IN EUROPE



Source: Huta Aluminum, EAA

2.6.4 Development Strategy

The accepted development strategy of Soederberg electrolysis assumes its functioning up to the year 2010 and that the sale of rolled products will be doubled to about 80 thousand tons per year. The technologies and production facilities are being modernized. As a result of modernization works the company is going to decrease electricity consumption. The company plans to build a new electrolysis line in the years 2003 to 2005. Regulations concerning long-term electrical energy and alumina supplies as well as issues concerning environmental protection are the basic factors determining the realization of this investment.

2.6.5 Analysis of Operation Data and Competitiveness

(1) Analysis of operation records

The electricity is supplied by ZE PAK S.A. Huta Aluminum and ZE PAK S.A. concluded a long term supply contract in 1996 as the first direct power

supply contract from the power plant. Huta Aluminum will obtain electricity on a long-term basis at a favorable price.

According to the company's opinion, operational cost of electrolytic aluminum production, including electricity cost, puts the company in the second half of primary aluminum producers' rankings in the world. However, the company must undertake certain activities in order to improve its position on the ranking list through reduction of electrical energy cost and labor force cost. Present and projected cost structure are shown in Table 2.6-1.

Ratios of total cost versus sales income of the company, 76.3% in 1995 and 90.9% in 1996, showed very high profitability in 1995. Sales income increased 6% in 1996, but the costs increased 27% over the previous year.

As for cost structure, material and energy cost account for a very high percentage, 65.8% in 1995 and 60.4% in 1996, due to the consumption of electricity and raw material as well as imported alumina. Salaries and related benefits accounted for 16.0% in 1995 and 16.5% in 1996, due to the high average salary rate of the company.

Due to lack of detailed operational data, the study team made an assumption from various data described in Huta's annual report, the ZE PAK annual report and reports made by the Voivodship Inspection of Environmental Protection. Results are shown in Table 2.6-2.

Table 2.6-1 COST STRUCTURE OF HUTA ALUMINUM KONIN

	Items	Unit	1995	1996	Dynamics
A	Sales income	kPLN	369,845	393,474	106
B	Sold goods & material	kPLN	9,546	15,935	167
C	Material & energy consumption	kPLN	185,520	215,975	116
D	Outside services	kPLN	25,658	43,909	171
E	Taxes	kPLN	3,505	4,720	135
F	Salaries	kPLN	28,480	34,542	121
G	Social benefits for employees	kPLN	16,548	20,831	126
H	Depreciation	kPLN	10,425	18,144	174
I	Others	kPLN	2,460	3,588	146
J	Total cost	kPLN	282,142	357,644	127
K	fixed Cost	%	30	35	35
L	Total cost/ Sales income	%	76.3	90.9	
M	Sold goods & material	%	3.4	4.5	
N	Material & energy consumption	%	65.8	60.4	
O	Outside services	%	9.1	12.3	
P	Taxes	%	1.2	1.3	
Q	Salaries	%	10.1	9.7	
R	Social benefits for employees	%	5.9	5.8	
S	Depreciation	%	3.7	5.1	
T	Others	%	0.9	1.0	
U	Total	%	100	100	

Source : Huta Aluminum Konin

Table 2.6-2 ESTIMATED PERFORMANCE

	Items	Calculation	Data Source	Unit	Figures in1996
A	Total product produced		estimation	t	57,072
B	Primary Aluminum produced		estimation	t	52,000
C	Product melted and casted		estimation	t	57,072
D	Rolled Product produced		estimation	t	39,293
E	Total product sold		Annual report	t	57,072
F	Primary Aluminum sold		Annual report	t	17,779
G	Rolled Product sold		Annual report	t	39,293
H	Sales Income		Annual report	USD	136,836,871
I	Unit Price of Primary aluminum		estimation	USD/t	1,500
J	Sales of primary aluminum	F*I	estimation	USD	26,668,500
K	Sales of rolled aluminum	H-J	estimation	USD	110,168,371
L	Unit Price of rolled aluminum	K/G	estimation	USD/t	2,804
M	Total electricity consumed		ZE PAK annual report	MWh	954,916
N	Melting & casting specif. electricity		estimation	MWh/t	0.600
O	Melting & casting electricity consumption	C*N	estimation	MWh	34,243
P	Rolling specific electricity consumption		estimation	MWh/t	0.300
Q	Rolling electricity consumption	D*P	estimation	MWh	11,788
R	Smelting specific electricity consumption	(M-O-Q)/B	estimation	MWh/t	17.479
S	Unit Price of Alumina		estimation	USD/t	259
T	Specific consumption of alumina		estimation	t/t	2.020
U	Alumina consumed	T*B	estimation	t	105,051
V	Cost of alumina	S*U	estimation	USD	27,229,091
W	Other material	V*0.65	estimation	USD	17,698,909
X	Total Material and energy cost		Annual report	USD	75,108,731
Y	Cost of electricity	X-V-W	estimation	USD	30,180,731
Z	Unit price of Electricity	Y/M	estimation	USD/MWh	31.6

Source: Estimation from the data of Huta Aluminum, etc.

(2) Competitiveness of Huta Aluminum Konin

1) Electricity cost in aluminum smelting

The percentage of electricity cost in aluminum smelting is estimated to be 25 - 35% of total operation cost according to Table 2.6.3. Due to lack of information it is difficult to get exact data, but Huta Aluminum consumed 955 MWh of electricity received from the Konin Power Station in 1996. Electricity purchase price is estimated to be around 30 USD/MWh. Per the Energy Information Center, electricity price for medium voltage consumers is 120 PLN/MWh (41.7USD/MWh). Therefore, Huta's purchase price is assumed to be cheaper than that for ordinary consumers. However, even though ZE PAK's price is advantageous in Poland, it is said that average electricity purchase prices for primary aluminum production are 16-24 USD/MWh around the world. That is because major sources of electricity for aluminum smelting works are hydroelectric and very large-scale power plants firing cheap coal, and furthermore, the scale of purchasing is far bigger than that of Huta Aluminum.

2) Anticipated increase in smelting cost

Huta Aluminum has smelting and rolling mill sections, of which the smelting section consumes most of the electricity. Due to the above-mentioned cost increase of electricity generated by ZE PAK, Huta Aluminum may not obtain a favorable price for electricity. Cost estimates are made in Table 2.6-3, supposing Huta Aluminum purchases 50USD/MWh of electricity. The specific consumption figures and alumina purchasing price, etc. are all estimated from very scarce data sources such as the Huta Aluminum annual report in 1996, etc.

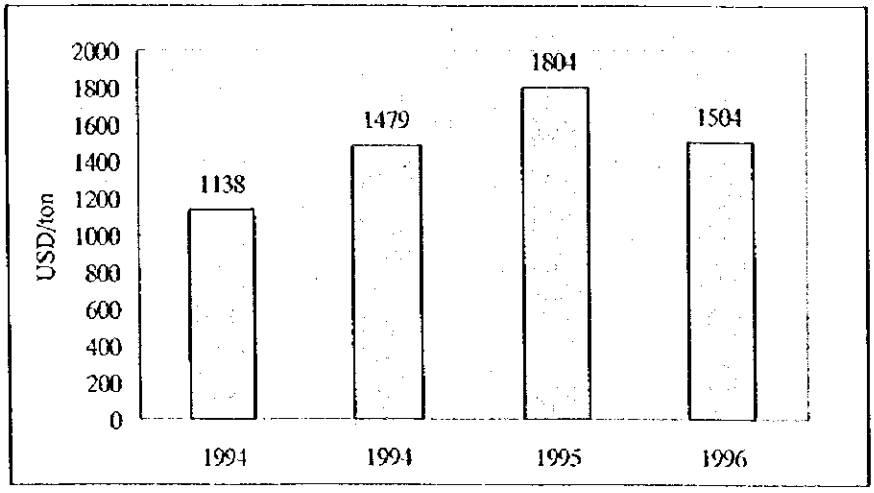
Table 2.6-3 COMPARISON OF PRIMARY ALUMINUM PRODUCTION COST IN 1996

Item	Unit Price assumed		Specific Consumption		Material and Electricity cost		Salaries	Others	Total Operation Cost
	Alumina USD/ton	Electricity USD/MWh	Alumina ton/ton	Electricity MWh/ton	Alumina USD/ton	Electricity USD/ton	USD/ton	USD/ton	USD/ton
Europe	216	21.2	1.93	15.52	416	329	251	345	1,341
East Europe	207.9	23.5	1.92	15.87	400	373	77	337	1,187
Asia	187.3	19.3	1.93	15.65	361	302	88	320	1,071
Huta Al: present	259	31.6	2.02	17.48	523	552	134	335	1,545
Huta:elec. cost-up	259	50	2.02	17.48	523	874	134	335	1,866
Huta: Improvement	220	50	1.93	15.73	425	787	94	335	1,640

Source: JAA and Estimation by Study Team

It is estimated that the cost increase is critical, because the market price in 1996 was 1,504 USD/t-aluminum. Figure 2.6-3 shows the trend in the primary aluminum price.

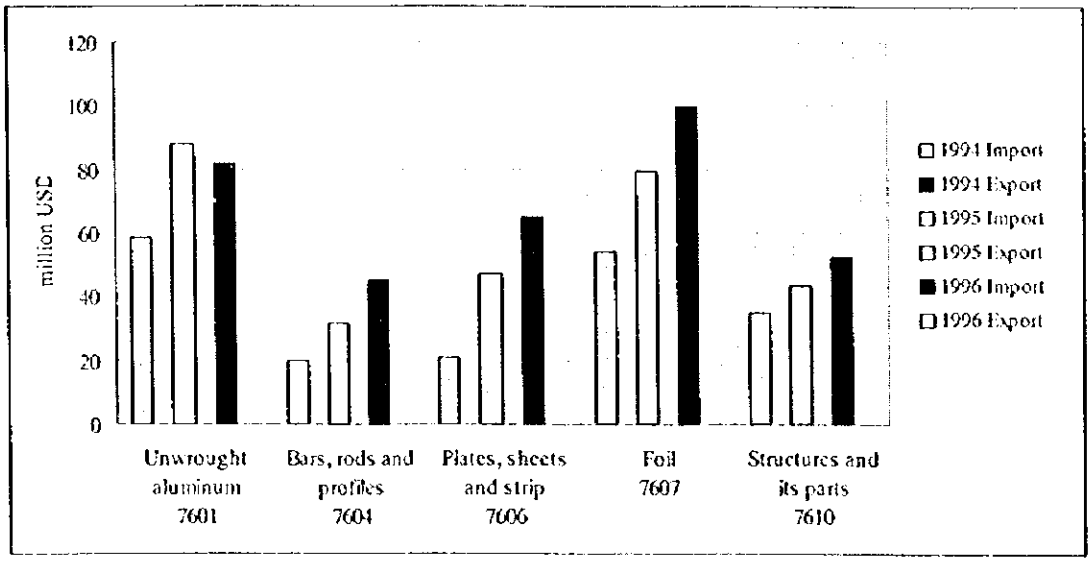
Figure 2.6-3 LME HIGH GRADE PRICE



3) Competitiveness of Huta Aluminum's rolled products

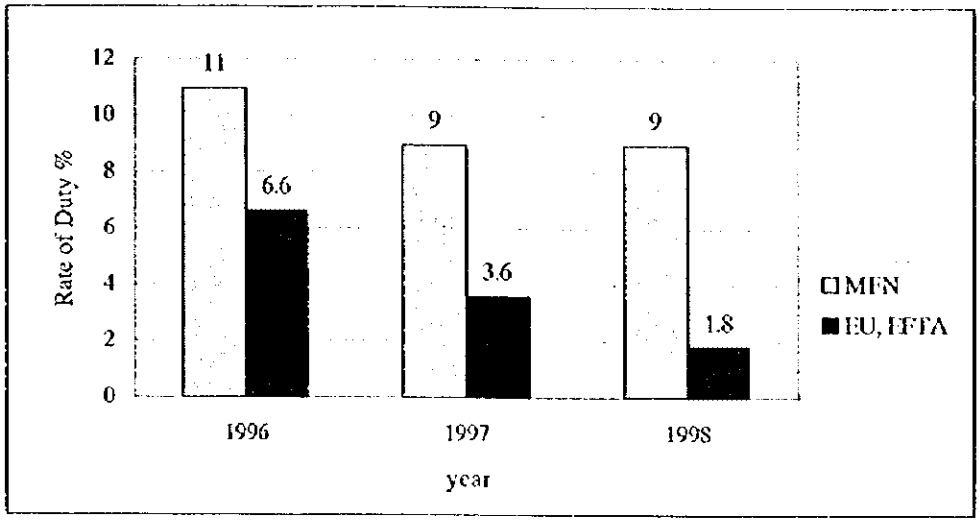
Figure 2.6-4 shows the recent trend of import of aluminum products. Rapid increase in import of aluminum products is noticeable in recent years. This may be due mainly to rapid growth of demand for aluminum products in Poland and due partly to a decrease in import duties on aluminum products, as shown in Figure 2.6-5.

Figure 2.6-4 IMPORTS OF ALUMINUM PRODUCTS



Source: Rocznik Statystyczny Handlu Zagranicznego

Figure 2.6-5 IMPORT DUTIES ON ALUMINUM PRODUCTS



Source: Worldtariff

According to Huta Aluminum's profit and loss statements, Huta Aluminum has continued good economic results since 1995 as follows:

- Sales in 1995: 369.8 million PLN
  Gross profit: 63.4 million PLN
  Ratio of gross profit to sales: 17.1%
- Sales in 1996: 393.5 million PLN
  Gross profit: 38.4 million PLN
  Ratio of gross profit to sales: 9.81%

Decrease in profit in 1996 is probably due to the market conditions as shown in Figure 2.6-3.

Since Huta's profit appears to mainly come from the sales of rolled products, it may be said that Huta should have a fairly strong competitive position for its rolled products. Import duties in the EU will be abolished, when Poland is integrated into the EU. It is expected that Huta Aluminum will be able to compete with the products from other EU countries if further rationalization and modernization are done.

3) Huta Aluminum's countermeasures

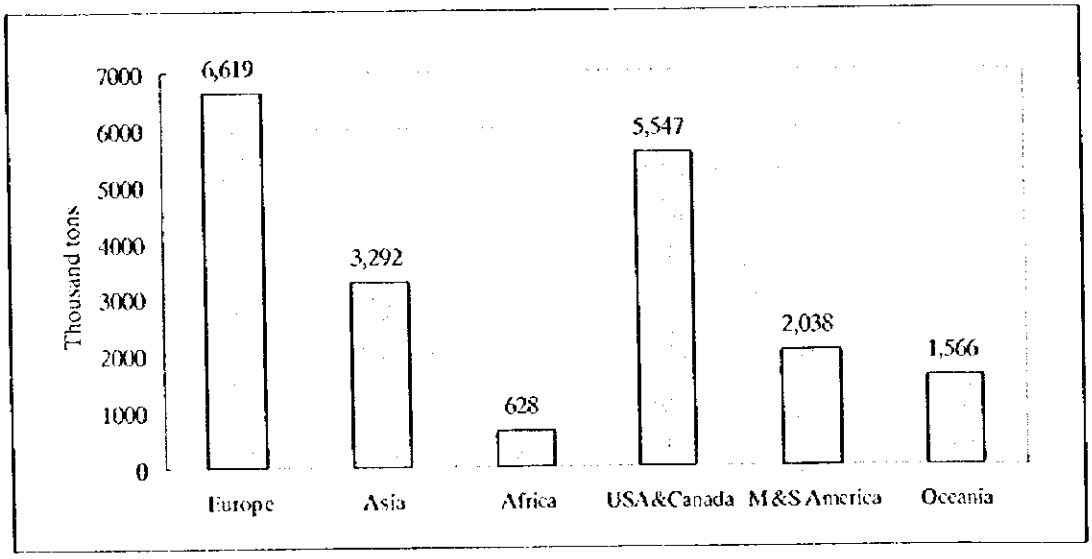
Huta is endeavoring to modernize its facilities and improve electricity-specific consumption, etc. However, Huta has a plan to close the smelting

section and to operate only the rolling section when costs especially electricity-cost increase and the profitability worsens. Presently, Huta is focusing on doubling the capacity of the rolling mill up to 80 thousand tons per year, importing cheap primary aluminum. Huta Aluminum Konin's strength is having a rolling section, and 80% of total production is rolled products.

(3) Huta Aluminum position in the world market

World production of primary aluminum is shown in Figure 2.6-6. There are big competitive producers in the USA, Canada, Brazil, Australia, etc.

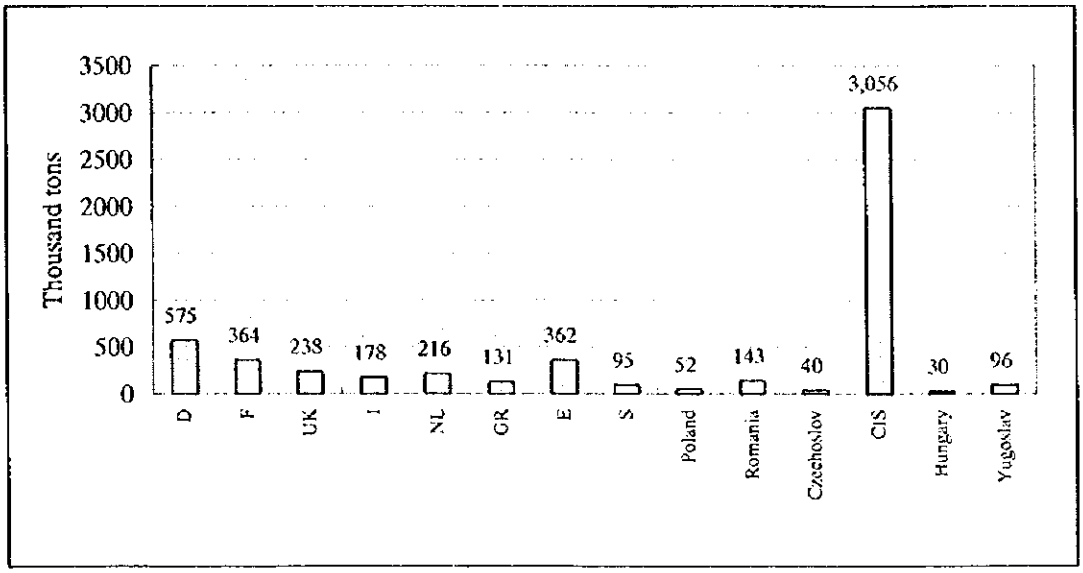
Figure 2.6-6 PRIMARY ALUMINUM PRODUCTION IN THE WORLD, 1995



Source: Metal Statistics

Figure 2.6-7 shows the production in European countries.

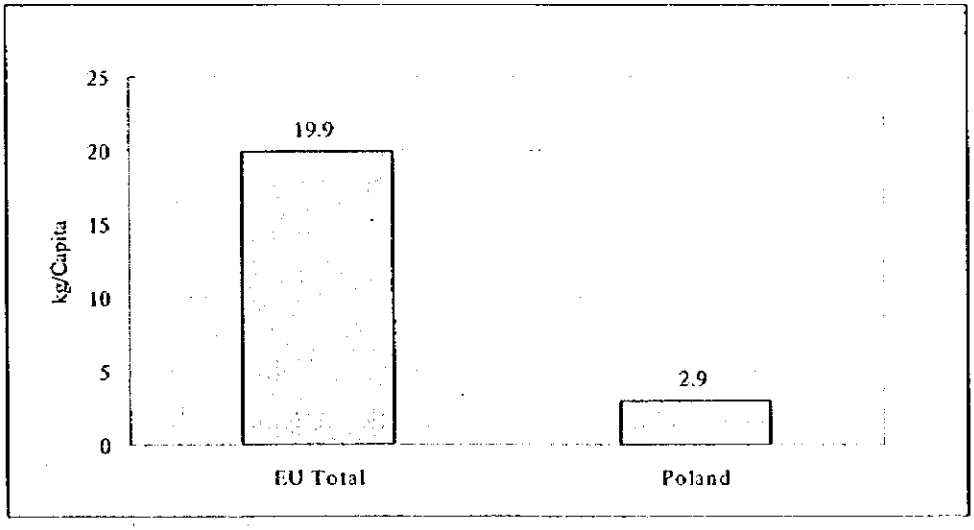
Figure 2.6-7 PRIMARY ALUMINUM PRODUCTION IN EUROPE



Source: Metal Statistics

Figure 2.6-8 shows aluminum consumption per capita. Consumption in Poland is still low compared with the EU countries but is expected to develop.

Figure 2.6-8 ALUMINUM CONSUMPTION PER CAPITA, 1995



source: estimation from Metal Statistics and Huta Al. Konin

2.6.6 Environmental Protection

Environmental problems concerning Huta Aluminum Konin have been followed up and reported by the Voivodship Inspection of Environmental Protection and National Inspection of Environmental Protection. The following is a summary of the reports.

- Huta Aluminum Konin has been a source of pollution emission in the environment, causing significant pollution of air, soil, plants and water.
- In previous years, excessive emission of pollution in the air, improper storage of waste, and sewage throws have caused pollution of individual environmental elements over quite a wide area, separated as a protective zone.
- Modernization activity in Huta caused a gradual reduction of pollution emission into the air, and regulated waste and sewage management.
- Limitation of pollution introduced into the air, soil and water, as a result of modernization, caused a gradual reduction of pollution concentration in individual elements of the environment.
- Modernization undertaken in 1993, aimed at changing anode mass "wet" to "dry", has caused a further decrease of toxic substances emission, mainly fluorine, dust and hydrocarbonates, including benzo α pyrene.
- All research on environmental conditions in the zone confirms a significant decrease in pollution and a diminishing area with over-norm values.
- On the basis of measurements, research and analyses, one may assume that the area of harmful influence is within the 1st subzone.
- research conducted in the nearest on dumping place vicinity shows the possibility of a significant influence on dumping places on adjacent areas. The range of the influence needs a continuation of research.
- Taking into consideration the ecological aspects, including the present level of environmental pollution and range of over-norm values, as well as considering further modernization activity, one may assume the need to make a decision on the reducing protective zone to the 1st subzone.
- Research on environmental pollution by fluorine, dust, energetic gases (SO_2, NOx, CO) and hydrocarbonates (mainly benzo α pyrene) should

still be carried out, primarily in the 2nd subzone, at specified control points.

As an effect of implementation of a new technology in the 192 electrolysers, the following technological operations, important because of the emission of pollutants, have been eliminated or greatly limited:

- breaking the electrolyser's crust and dosing the aluminum oxide from technological cranes
- loading the aluminum oxide to containers on technological cranes
- frequent "hoeing" electrolysers and liquidating mishaps of the anode foot
- replacement of bolts with frequent leaks of anode mass to the electrolyte
- ramping the bottom mass with a "hot" method in the electrolysers' cathode

The fluorine emission decreased from 70 tons/year to 40 tons/year, and emission of aromatic hydrocarbons from 67 tons/year to 27 tons/year. These numbers are smaller than the permissible emission, which is 52 tons/year for fluorine and 32 tons/year for hydrocarbons.

At present, implementing dry matter technology for the process of aluminum electrolysis brought the aluminum plant to obey all binding environmental protection norms. One of the effects of such activities is reducing the protective zone from 7 thousand ha to 240 ha.

The most important task for 1998-1999 :
modernization and development of dangerous wastes stockyards and building waste utilization plant with the Voivod Fund for Environmental Protection and Water Management (VFEP & WE). The new created partnership, the aluminum plant and WFEP & WE, after the investment has been completed, will conduct utilization of dangerous waste for Konin Province and for the aluminum plant as well. The projected cost of the stockyard is 6 million PLN and building the utilization plant 8.5 million PLN.

2.6.7 Rationalization and Diversification

(1) Result of privatization

Huta Aluminum was privatized on December 29th in 1995. It took 4 years to be privatized after its commercialization. Now, Impexmetal SA has 79% of the company's shares. (Impexmetal is a Polish trading company, which trades copper and silver internationally and supplies Huta Aluminum with Alumina.) The rest of the shares are owned by the State Treasury, 10%, and Bank PeKaO SA, 11%. At the time of the company's privatization, a set of provisions called a "social packet," was included in the privatization agreement between the State Treasury and Impexmetal SA. The social packet is a provision for the treatment of employees after privatization. According to the agreement, for example, the company has to maintain the employment of those who were working at the time of privatization until 1999. There are some other provisions which promise to maintain the employees' welfare in the social packet.

The restructuring of the company had been done before the privatization. A number of units were separated from the company so that the company could attract investors and be competitive in the market. Therefore, the company is currently concentrating on production. The diversification strategy assumes expanding the produced assortment of sheets and hot and cold rolled strip of various processing degrees, hardening states and surface quality.

(2) Modernization of production process

The modernization of the production processes of aluminum has been conducted. In 1996, the investment expenditures amounted to approximately 56 million PLN, doubled from the investment in the previous year, 26 million PLN.

(3) Marketing activities

Huta Aluminum puts its stress on marketing activities in order to promote its products. The company considers that creating its positive image as a reliable manufacturer of quality products is important. It conducts

advertising activities through the media in addition to promotional activities.

One of the strengths of Huta Aluminum is its sales network. There are 26 warehouses cooperating with Huta Aluminum. The sales network covers the entire country.

(4) Quality control system

Huta has obtained the ISO9001 certificate from the Polish Center for Testing and Certification and TUV Zertifizierungsgemeinschaft e. V., TUV CERT - Berlin Brandenburg.

(5) Production lines

Although Huta Aluminum has been conducting intensive improvement activities, it is likely that the company cannot absorb surplus employees by creating additional business sections other than its aluminum production. The production lines are currently overstaffed. However, because of the existence of the social packet, it is more likely that Huta Aluminum has to cope with the problem of excess employees without laying them off.

(6) Cost reduction activities

- Company restructuring through creating partnerships without any direct connection to the plant's production.
- Machinery parts modernization- quantity and quality increase of production - decrease of products' unit cost
- Rational reserve management
- Implementing a computer-operated management system.

(7) Personnel management

- Average wage rate for 9 months in 1997 is 2,421 PLN, and average age of workers is 45 years.
- Direct workers : 938 people, Management staff : 40 people (state for :21. Oct. 1997)

- Projected trend of future employment: Employees who are to be retired are 21 to 39 peoples every year up to 2010. Employees who are to be hired each year up to 2010 are on average 10 peoples per year.

Appointments for : extramural and post-graduate studies, scholarships for intramural (daily) students, seminars, conducting training for workers.
Performance appraisal system : on the basis of the monthly evaluation book of each worker and then on the basis of the annual evaluation register of each worker which is made by the managers of particular department or sections, and for managerial staff by the department directors.

(8) Possibility of diversification

Since 1994, a restructuring process has been conducted in the company. This is based on organizational and legal separation of part of the company's properties into autonomous partnerships. The restructuring process first included the technical infrastructure and then the social base. For the time being, the company has the following partnerships:

1) Design implementing office ALPRO Ltd. offers:
   - designing and making new machines and equipment which are not in the market
   - designing and modernization works on existing machines and equipment
   - building design

   ALPRO has experiences in metallurgical machines and equipment designing, crane equipment, vehicles and pneumatic transport equipment designing.

2) Automation and measurement enterprise ALTECH Ltd. offers:
   Automation and measurement equipment repair, service and maintenance, in particular:
   - automatic regulation and control unit for technical equipment
   - computer-operated automatic systems and equipment
   - control and measurement equipment
   - telephone communication equipment

- office electronic equipment
- measurements of technological parameters and electrical measurements of electrical power engineering equipment
- supervision over measurement equipment and function of metrological administration.

3) DREWAL Ltd. provides services for:
   - production and repair of wooden packages
   - construction joinery production, houses, garden summer houses, fence and gate elements, garden and park benches
   - finishing work on wood work in flats
   - wood drying

4) HUTNIK Ltd. provides services for:
   - trade and sale mediation in industrial and food branches
   - commission trade
   - tourism and leisure, domestic and abroad excursion organization
   - hotel trade
   - renting dwellings and other premises and artistic agency services.

5) ODMECH Ltd. provide services for:
   - production of castings in sand molds (hand and machine moulded) from gray cast iron, spheroidal iron, alloy chromium cast iron and alloy chromium-nickel cast iron, from BA-1044 of a mass ; 1 to 500 kg.
   - production and regeneration of spare parts through machining
   - tool making, turnery, welding, electromechanics

6) REMAL Ltd. provides services for:
   - machines and equipment repair
   - regeneration of machines and equipment subassemblies
   - maintenance and rewinding of electrical motors
   - making installations and electrical switching stations
   - industrial furnace repair
   - installation, toolmaking, welding
   - making steel constructions
   - car/vehicle mechanics

- transport and renting special equipment (car lifts, self propelled diggers etc.)

7) SMAK Ltd. provides services for:
   - preparing and selling meals and food products
   - food branch production
   - processing and production of gastronomic goods

   These companies were established by the ex-employees of HUTA Aluminum Konin, and HUTA has had a certain percent of shares. At the very beginning, the share of HUTA's work in their job volumes was almost 100 percent, but it is decreasing year by year and is now about an average of 80 percent. Total employees in these companies has reached 500 in all. A recent development is a joint company with Voivodship for treatment, damping and recycling waste materials generated in Konin Province.

(9) Down-stream industries development

There has been an increasing growth of aluminum consumption in Poland and abroad in recent years. Particularly in the domestic market the company projects further demand for sheets and coils in such fields as packaging, construction and transport. In order to meet demands, the company is planning to double the production of rolled products up to the year 2000. The planned products' increase will require new sales markets. Aluminum products with a higher processing level are the market's expectations. As far as sales territory is concerned, the market is highly diversified. There is a low consumption in Konin province. Restructuring of the province should mainly concern aluminum processing development. It concerns such fields as packaging, transport and communication, automotive industries and construction.

2.7 Conclusion and Key Issues

2.7.1 New Energy Law and Three Key Industries

According to the new Energy Law, brown coal price will be subject to regulatory control because of its non-market character. However, the price will be determined on the basis of international market price of hard coal. The controlled price of electricity will be deregulated, and electricity consumers will be able to negotiate with the suppliers including power companies and distributors to determine the conditions based on the free market mechanism. In such circumstances, the brown coal mines in Konin Province have the close-at-hand problems of exhaustion of the working deposits. Here, the future trends of the three key industries in Konin Province are examined, taking the above mentioned-issues into consideration.

In addition, certain resistance against the enforcement of the new Energy Law can be foreseen from coal mines, the power companies and distributors where several thousand workers are employed. The issue may become a serious political issue. Therefore, simple irresponsible prediction should be avoided. It is reported that the brown coal mines in Konin Province have new confirmed deposits enough to meet demand for some decades. It should be noted that the issues will result in the feasibility of development of the new deposits and not simply in the physical depletion of the mines. There will be several counter plans to cope with them.

Consideration hereunder is merely presenting one of the various possibilities in the above-mentioned situations.

2.7.2 Mutual Relations and Socioeconomic Status of 3 Key Industries

(1) Interdependence structure

The Study takes up the following companies as the three key industries in Konin Province:

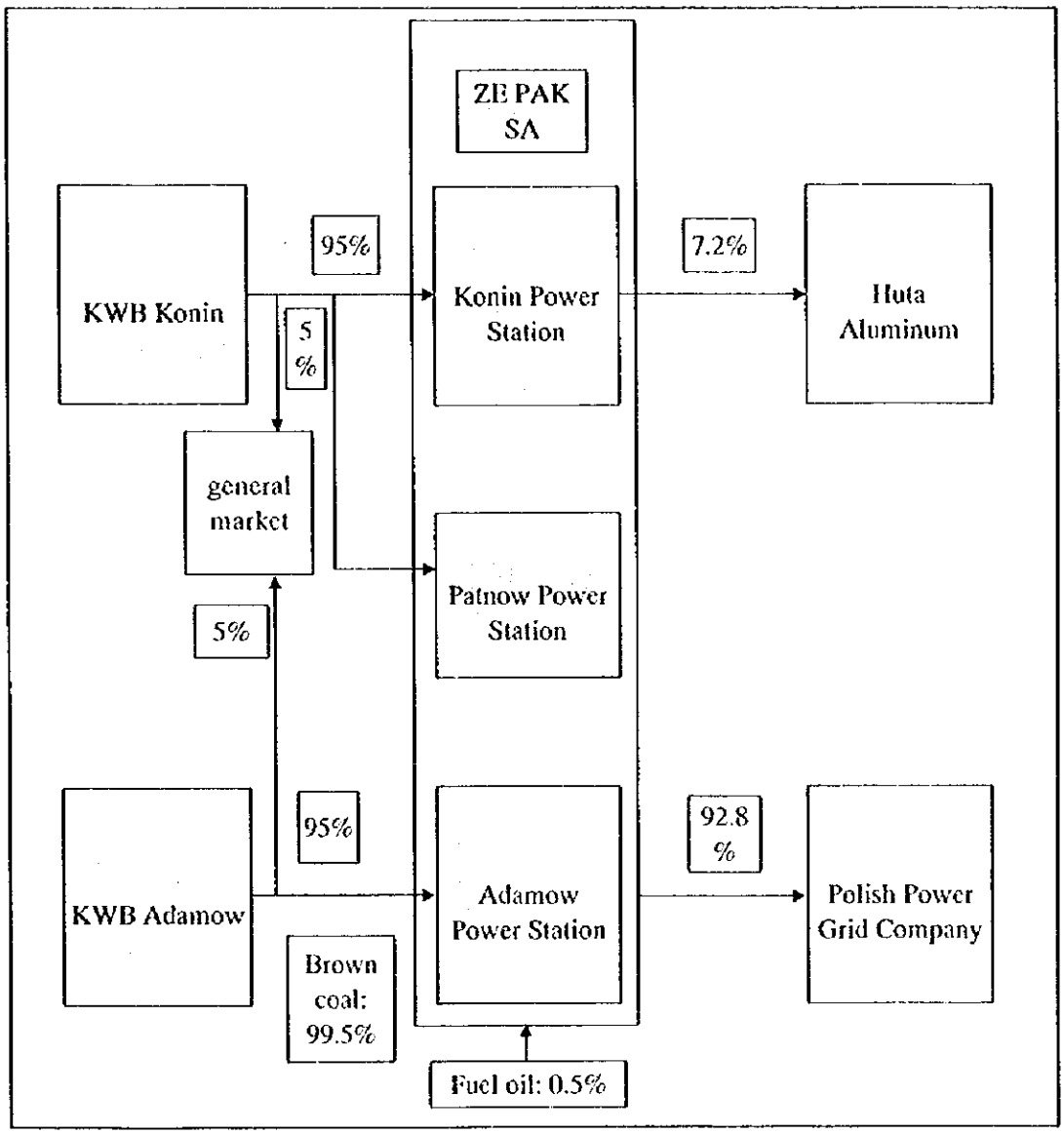
- The brown coal mines consist of two companies: KWB Konin and KWB Adamow
- The power stations: ZE PAK S.A. (Patnow, Adamow and Konin Power Stations Group)

- The aluminum industry: Huta Aluminum Konin

Fuel-energy industries started in 1945, when KWB Konin started mining. Then, in 1958, the Konin Power Station started firing brown coal. Following those plants, the KWB Adamow, Patnow and Adamow Power Stations were constructed one after another, and Huta Aluminum Konin, which smelts aluminum consuming electricity from ZE PAK, was constructed in 1966 in line with Polish governmental policies.

Presently total brown coal production at the mines amounts to 18 million tons (28.6% of Polish brown coal production), 95% of which is supplied to ZE PAK. ZE PAK generated a net 13,200 GWh of electricity firing brown coal (99.5% of its fuel consumption). Huta Aluminum produced 52 thousand tons of aluminum in 1996, consuming 955GWh of electricity from ZE PAK, which corresponds to 7.2% of total net electricity generated by ZE PAK. The schematic relation is shown in Figure 2.7-1.

Figure 2.7-1 SCHEME OF THREE KEY INDUSTRIES RELATION



(2) Socioeconomic status

The socioeconomic status of the three key industries in Konin Province is as follows:

- Direct employment: 7.8%
- Sales: 45.7%

The GDP of Konin Province in 1996 was estimated from the figure for 1995, multiplied by 1.06 of real growth rate and 1.198 of inflation rate. Including the affiliate companies and supporting companies, it is roughly seen that the three

key industries dominate the economy in Konin Province by around 50% or more.

On the other hand, it is reported that most of the reserves in working open pits will be exhausted within about 15 years. These issues are crucial for the future of Konin Province. The future of three key industries is discussed in the following Section.

2.7.3 Exploitation Plan and the Countermeasures for Exhaustion

(1) Exploitation plan and estimated exhaustion

According to the production plans made by the KWB Konin and Adamow, transition of the reserves in the two mines is shown in Table 2.7-1. The plans mention that production will be kept at the same level as the present production (Konin:13 million tons/year, Adamow: 5 million tons/year) by 2020 and then gradually decrease after 2020. In order to match the plans, KWB Konin must develop four new deposits by 2012 (one deposit is now under development) and more three deposits by 2040. KWB Adamow does not have a decisive plan to exploit any new deposit.

Table 2.7-1 REMAINING RESERVES INCLUDING NEW DEVELOPMENT OF DEPOSITS

(Unit: million tons)

Items	1997	2000	2005	2010	2015	2020	2040
KWB Konin	140.6	101.6	134.8	183.7	164.9	126.0	70.6
- working	140.6	101.6	36.6				
- new development			98.2	183.7	164.9	126.0	70.6
KWB Adamow	104.5	89.5	64.5	39.5	14.5	0	0
- working	104.5	89.5	64.5	39.5	14.5	0	0
- new development	none	none	none	none	none	none	none
Total reserves	245.1	191.1	199.3	223.2	179.4	126.0	70.6
Accumulated production		54.0	144.0	234.0	324.0	403.5	603.5

Source: KWB Konin and Adamow

The plan in Table 2.7-1 is based on the case that funds for the development of new deposits are successfully financed and no serious obstacles would crop up.

There is another scenario to keep production at the level of 8 to 9 million tons/year and to develop new open pits with the possibility to finance them. In this case, development of four deposits will suffice until 2040.

(2) Cost competitiveness

1) Present price and cost

The price and production costs of the brown coal extracted in KWB Konin and Adamow are estimated on USD basis and for the comparison, the ones for hard coal are referred as follows:

- Brown coal:
  Estimated price for ZE PAK; 1.18 USD/GJ in 1995
  Estimated production costs of KWB Konin and Adamow; 1.13 USD/GJ in 1995
- Hard coal:
  Estimated market price of coal for power plants; 1.31 USD/GJ (32 USD/t) in 1995.
  Estimated production cost of Polish coal mines; 1.52 USD/GJ(37.3 USD/t) in 1995 (Hard Coal Mining Policy of the State and Sector for 1996-2000).

The price of brown coal per GJ for power plant use is fairly lower than international market price of hard coal for power plants. The Polish hard coal mines have been selling coals at lower prices than their costs.

2) Cost estimation of brown coal from new deposits

Working open pits will be exhausted within 15 years and new open pits shall be developed as mentioned earlier. It requires a large sum of investment amounting to PLN 2088 million or USD 586 million that is preliminarily estimated by KWB Konin at 1997 prices.

The investment cost was estimated for development of new three deposits or 212 million tons of reserves for production. Since annual production volume was deemed to be 13 million tons, the mining last about 16.3 years.

The following are assumptions for production cost estimation of new deposit:

- Capital related cost: 20% of the total investment cost per year including depreciation, interest payment and some profit.

  (Note) Interest rates of commercial banks are now higher than 30% p.a.. The investment for new deposits might not be feasible if such rates should be applied.

- Man power and other costs: It is assumed that 30% of the current costs would be reduced by restructuring and modernization.

Estimated production cost is as follows in 1997 prices:

Capital costs = USD1.01/GJ
Other costs = USD0.76/GJ
USD1.77/GJ

(Refer to Sector Report in details)

3) Average production cost estimation in future

Average production costs of brown coal in 2005 and 2010 produced in Konin Province is estimated on present value basis as follows:

Table 2.7-2 AVERAGE PRODUCTION COST IN FUTURE OF BROWN COAL

(at 1997 prices)

Year	2005		2010	
Items	Production	Unit cost	Production	Unit cost
Unit	mil. tons/year	USD/GJ	mil. tons/year	USD/GJ
Production in existing mines	11.5	1.13	5	1.13
Production in new deposits	6.5	1.77	13	1.77
Average cost		1.36		1.59

As mentioned in Section 2.7.2 (2), present production cost for Polish hard coal is estimated to be more than 1.52 USD/GJ and cost escalation for future will be almost same as the one of brown coal. Therefore, brown coal produced in Konin will keep competitiveness against Polish hard coal for fairly long period., taking additional transportation and storage costs for hard coal handling, etc. into consideration.

Table 2.7-3 PRICE ESCALATION OF THE PRIMARY ENERGY CARRIERS

(at 1995 prices*)

Items	Source	1995	2000	2010
		USD/GJ	USD/GJ	USD/GJ
Crude oil, imports from Russia	IPPT PAN	3.07	3.64	4.53
	IEA	3.04	4.11	5.00
Natural gas, import from Russia	IPPT PAN	3.07	3.59	4.23
	IEA	2.82	3.79	4.58
Hard coal, export to Europe	IPPT PAN	1.56	1.63	1.83
	IEA	1.93	2.05	2.18

* 1995 prices are calculated bared on 1993 prices multiplied by 1.037

Source: Energy Information Center

Tabel 2.7-4 COST COMPARISON IN 2010 (at 1995 prices)

(Unit: USD/GJ)

KWB Konin brown coal*	:	1.59 ~ 1.77
Crude oil imported from Russia	:	4.53 ~ 5.00
Natural gas import from Russia	:	4.23 ~ 4.58
Hard coal, import to Europe	:	1.88 ~ 2.18

(Note) * at 1997 prices

The prices of the primary energy carriers on the world market anticipated by IPPT PAN and IEA are shown in Table 2.7-3. According to the estimation, prices of carriers other than hard coal will increase rapidly, and coal and brown coal will be competitive as far as price is concerned.

2.7.4 Reliance of the Power Stations on Brown Coal Fuel

(1) ZE PAK S.A.'s course for modernization

From the beginning of 1980s', ZE PAK has been modernizing its facilities. Major targets were introducing advanced technologies and improving environmental protection. Furthermore, the company is presently proceeding to modernize the Patnow and Konin Power Stations, investing 1 billion USD on a brown coal-firing basis, and will complete this by 2007. In line with the plans, ZE PAK concluded a long term supply-purchase contract with KWB Konin in 1996 so that both companies can acquire a great integrity from their investment programs.

On the other hand, the brown coal mines will be obliged to develop new deposits in order to meet the power stations' needs. The price of the brown coal from the new open pits must be hiked significantly. Under such circumstances, it is meaningful to verify whether or not the power stations can be operated profitably on a brown coal-firing basis.

(2) Possibility of conversion to other fuels

In the 1970s two oil-fired boilers was constructed, but they have been stopped due to the oil price hike and will be replaced by fluidized bed boilers in the modernization program. The action shows ZE PAK's judgment on the subject. As described in Table 2,7-3 of Section 2.7.2, much larger price hikes are anticipated in oil and natural gas, and therefore brown coal will be more competitive on a GJ price basis in future. Conversion of fuels from brown coal to gas or oil in the existing facilities will not have any advantage as far as operating cost is concerned. It is likely that ZE PAK may adopt a gas turbine cogeneration system only in case of a new revamp of the facilities

However, concerning the issues of environmental protection, the situations are more fluid. ZE PAK is modernizing boiler systems and applying fluidized bed boilers and desulfurization facilities. The fraction of CO2 emission will be alleviated by the heat efficiency increase. If the emission is restricted in future, it may be necessary to investigate the conversion, but the facilities will be completely rebuilt on the site or at another new site.

In consideration of the above mentioned, it will be evident that the power stations all row in the same boat with the brown coal mines in Konin Province.

(3) Cost competitiveness of the power stations

1) Present selling price and costs

The price and the costs of electricity generated by ZE PAK are estimated on USD basis as follows:

- Estimated average selling price; 22.0 USD/MWh in 1996
- Estimated total cost of electricity generation; 20.9 USD/MWh in 1996

2) Cost estimation for future

a) Cost increase due to modernization investment

As mentioned the above, ZE PAK has been modernizing the facilities and major investment will be completed by 2007. Supposing the modernization investment occurs and completed in 1996, calculation of trial balance is made. The capital costs are calculated on the assumption as follows:

- 30% of total investment; own resources—no interest
- Loan from National and Provincial Environmental Protection and Water Economy Fund; 8.4% of total investment—at 16% interest
- Other credits and loans; 61.6% of total investment—at about 30% interest
- Total investment; 1 billion USD
- Refund; 15 years, straight line 21.3% of total investment per year
- Then, the capital cost is 16.85 USD/MWh

b) Cost increase due to price hike of brown coal

Furthermore, in the case a price increase of brown coal is taken into account, the total electricity generation cost will increase by 11 USD/MWh.

c) Total cost estimation

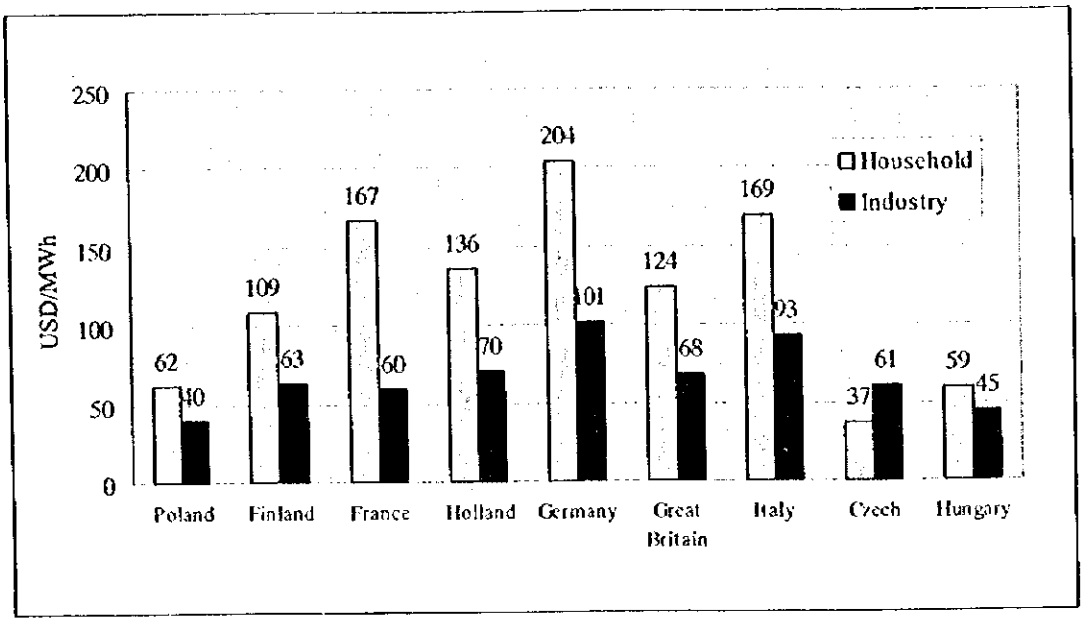
ZE PAK is now proceeding with restructuring as well as modernization of facilities. Total cost is estimated on such assumptions as follows:

- 30 % reduction of manpower related costs
- Improvement in generation efficiency from 30 % to 35 %
- Other cost reduction by 30 %
- Then, total cost will be 41 USD/MWh

Even if 30 % reduction of manpower related costs and improvement in generation efficiency, etc. are taken into account, the total cost will be doubled from the present cost.

Figure 2.7-2 shows the electric prices in European countries. According to the new Energy Law, the price of electricity will be liberalized and will reach the level of European countries. Therefore, ZE PAK will still retain competitiveness among the power stations in Europe.

Figure 2.7-2 ELECTRICITY PRICE COMPARISON IN 1995



Source: Polish Energy Information Center

2.7.5 Aluminum Smelting and Electricity

(1) Electricity cost in aluminum smelting

The percentage of electricity cost in aluminum smelting is estimated to be 25 - 35% of total operation cost according to J.A.A. Since the electricity cost is a decisive factor for the aluminum smelting industry, Huta Aluminum Konin concluded a direct supply-purchase contract with ZE PAK in 1996. According to the new Energy Law, electricity prices will be increasingly affected by the competitive market. All generating companies will compete on the wholesale contract market for present and future deliveries. The competition in these markets will become the main price determining force. Considering such situations, Huta Aluminum has a free hand to determine the supplier and purchase price.

Due to lack of information it is difficult to get exact data, but Huta Aluminum consumed 955 MWh of electricity received from the Konin Power Station in 1996. Electricity purchase price is estimated to be around 30 USD/MWh. Per the Energy Information Center, electricity price for medium voltage consumers was 120 PLN/MWh (41.7USD/MWh). Therefore, Huta's purchase price is

assumed to be cheaper than that for ordinary consumers. However, even though ZE PAK's price is advantageous in Poland, it is said that average electricity purchase prices for primary aluminum production are 16-24 USD/MWh around the world. That is because major sources of electricity for aluminum smelting works are hydroelectric and very large-scale power plants firing cheap coal and furthermore the scale of purchasing amount is far bigger than that of Huta Aluminum.

(2) Anticipated increase of smelting cost

Huta Aluminum has smelting and rolling mill sections, of which the smelting section consumes most of the electricity.

1) Present market price of primary aluminum and smelting cost in HUTA Aluminum

Cost estimates are made on 1996 basis and on the assumption as follows:

- Electricity purchase price and specific consumption: 31.6 USD/MWh, 17.5MWh/t-Al
- Alumina purchase price and specific consumption: 259 USD/, 2.02t/t-Al
- Then, total operating cost for primary aluminum will be 1,545 USD/t
- Market price of primary aluminum: 1,504 USD/t

2) Cost increase due to price hike of electricity and cost reduction by rationalization

Due to the above-mentioned cost increase of electricity generated by ZE PAK, Huta Aluminum may not be able to obtain a favorable price for electricity. Cost estimates are made on 1996 basis and on the assumption as follows:

- Electricity purchase price and specific consumption: 50 USD/MWh, 15.7 MWh/t-Al (level of international average)
- Alumina purchase price and specific consumption: 220 USD/, 1.93t/t-Al (level of international average)
- 30% reduction of manpower related costs
- Then, total operating cost for primary aluminum will be 1,640 USD/t

It is estimated that the cost increase is critical, because the market price in 1996 was 1,504 USD/t-aluminum.

(3) Huta Aluminum's countermeasures

Huta is endeavoring to modernize its facilities and improve electricity-specific consumption, etc. However, Huta has a plan to expand the smelting section at present but it has an option to close smelting section and operate only the rolling section when costs, especially of electricity, increase and profitability worsens. Presently, Huta is focusing on doubling the capacity of the rolling mill up to 80 thousand tons per year, importing cheap primary aluminum. It is estimated that Huta is getting a profit by the rolled products and that the smelting section is not so profitable even now.

2.7.6 Overall View of Three Key Industries

KWB Adamow is scheduled to close mining operation in the year of 2020 together with the Adamow Power Station which is using brown coal from KWB Adamow. Brown coal produced by KWB Konin will face difficulties in competing with imported hard coals in selling price due to increase in production cost caused by big investment necessary for development of new deposits. However, cost competitiveness will be maintained at least until 2010 if the combined average selling price for brown coals from the remaining reserves and from new deposits of KWB Konin and Adamow is compared with imported or domestic hard coal prices.

Power generation company, ZE PAK will also be able to maintain cost competitiveness using brown coal of KWB Konin. It seems to be less feasible to convert its fuel from brown coal to fuel oil or natural gas because the plants are being modernized by big investment on the basis that the power stations will continue to use brown coal as fuel. In addition, Konin Province is not necessarily good location to utilize such new fuels as fuel oil or natural gas. Therefore, it may be reasonable that the power company and the mines in Konin Province will be in the same boat as will be in Adamow.

Huta Aluminum has a plan to expand the smelting section as well as the rolling section. However, the company will carefully watch the purchasing price tendency of electricity developed under the New Energy Law for a certain period of time. When electricity purchasing price from not only ZE PAK but also Polish power companies loses competitiveness, Huta has an option to close the smelting section and operate only the rolling section.

2.8 Direction of Development of the Three Key Industries

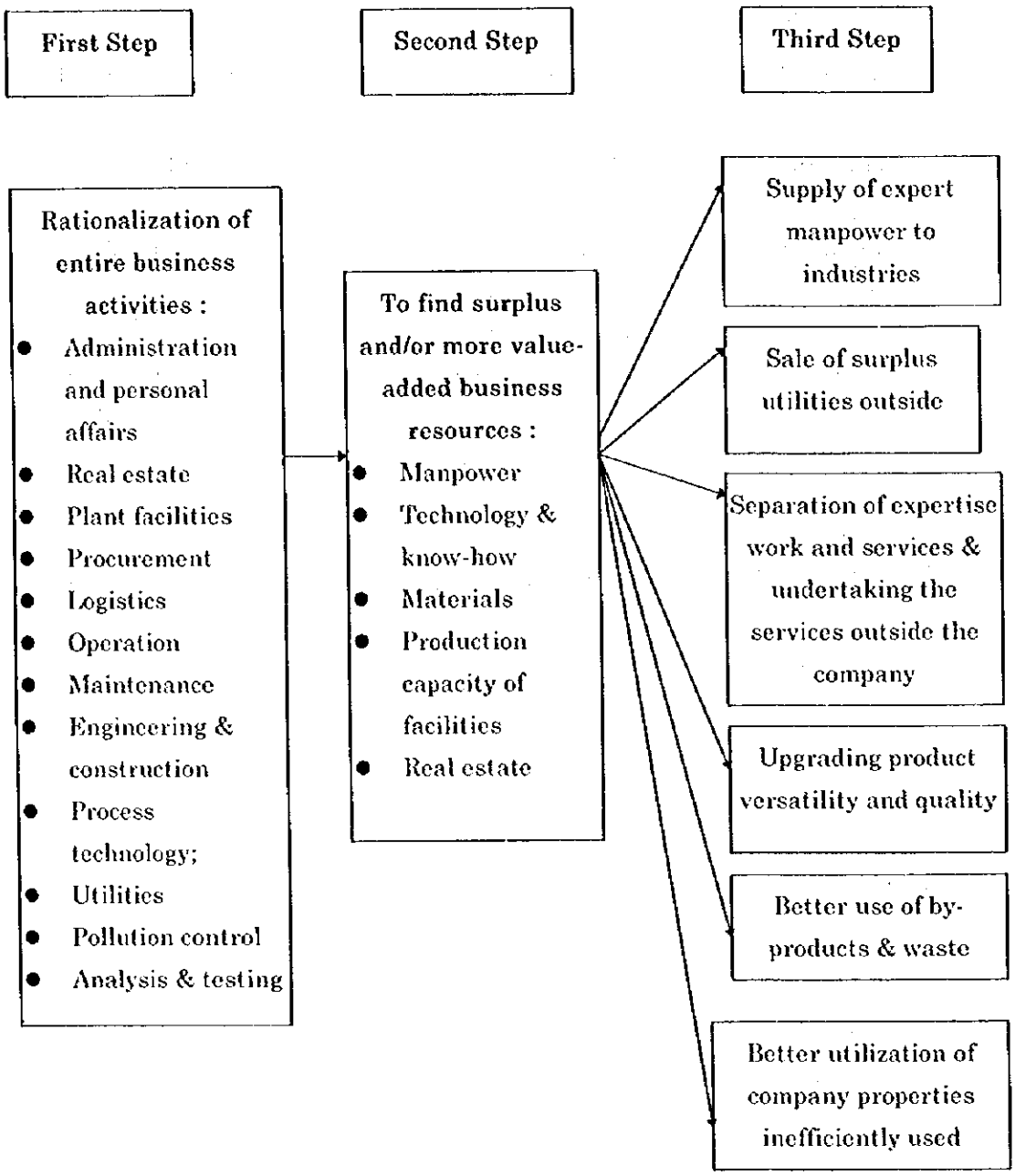
Rationalization and diversification inside the three key industries have proceeded as reported and shall be developed further by themselves. In order to successfully implement a restructuring of their businesses, one practical way may be to refer to the Japanese methods which were adopted by most Japanese industries for rationalization and diversification when they encountered the oil crises.

An example is shown in Figure 2.8-1. As the first step, the companies reviewed all activities and investigated the possibilities of rationalization. In most cases such investigations are performed on a mutual agreement basis between management and labor union. As a result, the investigations clarified a considerable amount of surplus in assets, manpower, capacity allowance in production facilities, salable know-how and technologies, etc.

As the next step, each company struggled to utilize such outcomes as much as possible, diversifying it's business scope within the company or establishing a new company outside. In those cases, the workers could get new jobs in a new business section or in a new company without dismissal. There were mutual understanding and strong resolutions among managements and labor unions for success in restructuring and diversification of the companies.

Any such restructuring shall be made by the company itself under its own responsibilities. Therefore, this study aims to promote the companies' rationalization and diversification, utilizing the outcomes from restructuring.

Figure 2.8-1 AN APPROACH FOR BUSINESS DIVERSIFICATION OF EXISTING COMPANIES



2.8.1 Development Potentials and Constraints

(1) Development potentials

1) Surplus and stock of resources in the companies:

Thorough review of functions and precise work analysis in every business division will extract a considerable amount of surplus manpower and show how the companies' facilities and assets are inefficiently utilized. The companies have accumulated know-how and technologies that can be useful outside the companies. There are a thousand hectares of the refilled land after exhaustion of the deposits in the mines. The new industries will be able to utilize such resources.

2) Many resources in the outputs of the companies:

The companies, as fuel-energy-related, have plenty of energy they can supply outside. Downstream industries, utilizing the products, the by-products, and even waste materials, are not well developed now. The new industries will benefit from such supply under attractive conditions.

3) High creditability:

The companies' creditability among the people, societies, financial institutions and industrial circles will be advantageous to enter into new businesses and also to supply outside their human resources, goods and materials.

(2) Development constraints

1) Restricted freedom for management :

Managements, especially in the national enterprises, has not been able to decide on their own companies' new policies, strategies, etc., without consents of labor unions. Drastic rationalization and diversification are largely restricted due to the present situations.

2) Insufficient management experiences in creating new businesses:

Old management traditions during the age of national enterprises still remain in such a manner that the companies principally concentrate on

production and operation of the existing companies. New management methods based on a market economy are essential to start new businesses.

3) Conservative way of thought of employees :

Employees are not willing to move from big companies to new businesses because of their fears of risks and lower labor conditions. This will be a constraint for development.

4) Lack of Funds for investing in new business:

Due to long-lasting depressed profits, funds are hardly available or insufficient for investment in new businesses.

2.8.2 Development Concept, Strategies and Projects

(1) Development concept

"New business development with maximum utilization of the existing resources that the companies own"

The Study Team has set up the above-mentioned Development Concept in view of maximizing the utilization of the Development Potentials. Surrounding the three key industries, are many issues which were carried over from the former regime. Although such issues are deemed to be difficulties at this moment, they will turn into Development Potentials from which various profits can be created, once the problems are cleared away.

The first issue is the inefficiency of each company possessing various welfare facilities as well as huge production facilities and that the company cares for employees their entire lives as if the company were a sovereign. The second issue is that very few related industries have been developed surrounding the three key industries. The Development Concept implies the concept that actions shall be taken to activate the industries, especially the three key industries, in such ways as restructuring, diversification, separation, and nourishment of the related industries, etc.

(2) Development Strategy

In order to establish the Development Strategy to achieve the Development Potentials, the resources which the three key industries possess were enumerated as follows:

- The fixed assets: land, buildings, production facilities, auxiliary facilities, welfare facilities, etc.
- The human resources: the companies possess not only manpower resources but also such technologies and know-how as production technologies, control and management technologies, design and engineering technologies, repair and maintenance technologies, construction and erection technologies, civil and architectural technologies, etc.
- Products:
  KWB Konin and Adamow: brown coal
  ZE PAK: Electricity, heat (hot water and steam)
  Huta Aluminum: Primary aluminum, rolled products
- By-products and wastes:
  KWB Konin and Adamow: underground water and surface water
  ZE PAK: brown coal ash, gypsum from desulfurization

As a result of the problems analysis and objectives analysis done by the Study Team, the following theme was confirmed. That is:
In view of the Development Concept, "maximizing the utilization of the resources of the three key industries", it is evident that the companies are holding too many functions and facilities. Therefore, it is pointed out that the companies should become slimmer by separating the indirect divisions, as much as possible except the production line itself, and that the separated new companies (SMEs) should develop new markets.

With such recognition of the theme, the following strategy has been developed:
(Strategy-1) Utilization of surplus human resources and materials

Secondly, on the recognition that the three key industries have not effectively utilized their vacant fixed assets and that there must be effective

usage for them, the following strategy has been developed:
(Strategy-2) Utilization of less-utilized assets

Thirdly, the question was raised by the Study Team about what would be the most unused or ineffectively used resources of the three key industries. Then, it was commonly recognized that those would be the underground and surface water from the mines, surplus supply capacity of heat from the power stations, and very poor downstream industries which process aluminum products from Huta Aluminum. On that recognition, the following two strategies were developed (the underground water and surface water from the mines is categorized in (Strategy-1):
(Strategy-3) Development of user industries of heat in the province
(Strategy-4) Development of aluminum downstream industries

The general description of each strategy and the projects to achieve the aims of the strategy are described hereunder. Details of each project are described in the Project Report.

(Strategy-1) Utilization of surplus human resources and materials

The aim is to utilize the surplus manpower and technologies derived from restructuring of the three key industries and to utilize by-produced materials which are now disposed of or inefficiently utilized. One of the ways and means to achieve the aims is to separate organizational functions. In each company there are several indirect divisions which are not efficient if they work only for the company; for example, repair and maintenance, erection and construction, design and engineering, civil work and architecture, etc. The Study Team proposes in the projects that these indirect divisions shall be separated from the company together with the employees, technologies, equipment and facilities. The separated companies will undertake not only work for the parent companies but also work from outside and improve production efficiency, increasing such outside undertakings. Here, the Study Team proposes the following three projects. The welfare facilities are now separated at a high pitch in every company and are therefore not taken into account.

Project KI-1 "Establishment of a construction company"
Project KI-2 "Establishment of an engineering company"
Project KI-3 "Establishment of a maintenance and erection company"

Concerning Project KI-1, it will be possible to develop new markets in the fields of highway A-2 construction, various load construction, construction of industrial parks, gardening, etc. It is said that KWB Konin is investigating a similar project, but it will take time to materialize the project due to the problems with the trade union as long as the company is state-owned.

Concerning Project KI-2, ZE PAK is now in the process of privatization and preparing to separate several companies in the form of partnership. Among them, one company, expectedly with a foreign partner, plans to undertake design and engineering services for all Polish thermal power plants. Huta Aluminum has already established such companies, which are undertaking engineering for environmental protection and so forth.

Concerning Project KI-3, Huta Aluminum has already separated such companies, and KWB Konin and Adamow and ZE PAK also have potentials. These companies have broad technology for maintenance and repair including machining. Demand can be expected from the parent company, similar existing factories in or outside the province, and new investment projects.

Presently, the three key industries are intending to separate the above-mentioned companies individually. It is worthwhile to investigate the possibilities of whether it is possible to establish a joint company in which each company's specialist are gathered and the scope of services is widened. However, present restructuring stages are different in the three key industries. In Huta privatization has been completed, in ZE PAK privatization is on-going, and the KWBs are still state-owned companies. Therefore, it will be a future subject to make a powerful joint company.

Secondly, the following three projects are proposed for the utilization of by-product and waste materials:

Project-KI-4 "Feasibility study for a brown-coal ash utilization company"
Project-KI-5 "Feasibility study for a gypsum board manufacturing factory"
Project-KI-6 "Master plan study for utilization of underground water from mines"

The above-mentioned projects are intended to utilize by-products and waste materials for which market development or research for use has not progressed as yet.
Concerning Project KI-4, brown coal ash may be used, and a small amount is actually used for construction materials such as mixing with cement and land stabilization material and mixing with clay for brick making. Ash may be used as a fertilizer and deacidification material. Around one million tons per year of ash are disposed of in a slurry state in exhausted open pits.
Concerning Project KI-5, gypsum by-produced in the power station in the amount of 70 thousand tons per year is now sold to a construction material company. In order to widen the application, it is necessary to conduct research and market development.
Concerning Project KI-6, around 380m3/minute of water from KWB Konin and Adamow is diverted to the rivers and streams without effective use. The water quality is good enough for agriculture and industrial uses and as drinking water. To establish a utilization plan is an urgent subject for Konin, where water is said to be lacking.

In addition, a project related to the strategy is proposed in the Manpower Development Sector.
Project-(MP-4)** "Establishment of a job intermediary center/company with data base"
The project is related to the intermediary center for job hunting and ordering, covering the Province. The project is categorized in this Strategy to make re-employment of surplus manpower from the three key industries smooth.

(Strategy-2) Utilization of Less-utilized Assets

The strategy aims to utilize a part of refilled land of brown coal mine for other profitable or attractive uses than farm fields, forest or water reservoir uses. Concerning other assets, the effective use is discussed in Strategy-1.

Refilled land is the only place to supply vast land for agriculture in the province, where most of the farming land is fractionized. The exhausted open pit areas are refilled and brought back into use according to the decision of local governments, which are concerned with future use: for agriculture, forestry or recreation. In the case of agricultural use, the land is used for farming purposes for 10 years after biological recultivation, and then the class of soil is classified and finally sold to farmers. In case of forest use, the land is cultivated and fertilized for 5 years. Since the beginning of operation, the mines have bought about 13,500 ha of land, of which about 6,000 ha have been reclaimed. The mines possess about 200 ha of land ready for handing over. As one project to utilize cheap and vast refilled land, the Study Team propose construction of a golf course.

Project-KI-7 "Construction of a golf course on the refilled land of mines"

There are few golf courses in Poland, only in Warsaw, Szczecin, etc. The golf course will attract tourists and businessmen and improve the image of Konin Province. A golf course of 18 holes requires about 70 ha.

Two projects for utilization of refilled land are proposed in other Sectors.

Project-LD-12** "Construction of centralized waste treatment and disposal facilities on refilled land"

Project-AG-10** "Experimental intensive farms on refilled land of mines"

Details are described in Sector Report and Project Report. There is enough land for the above three projects.

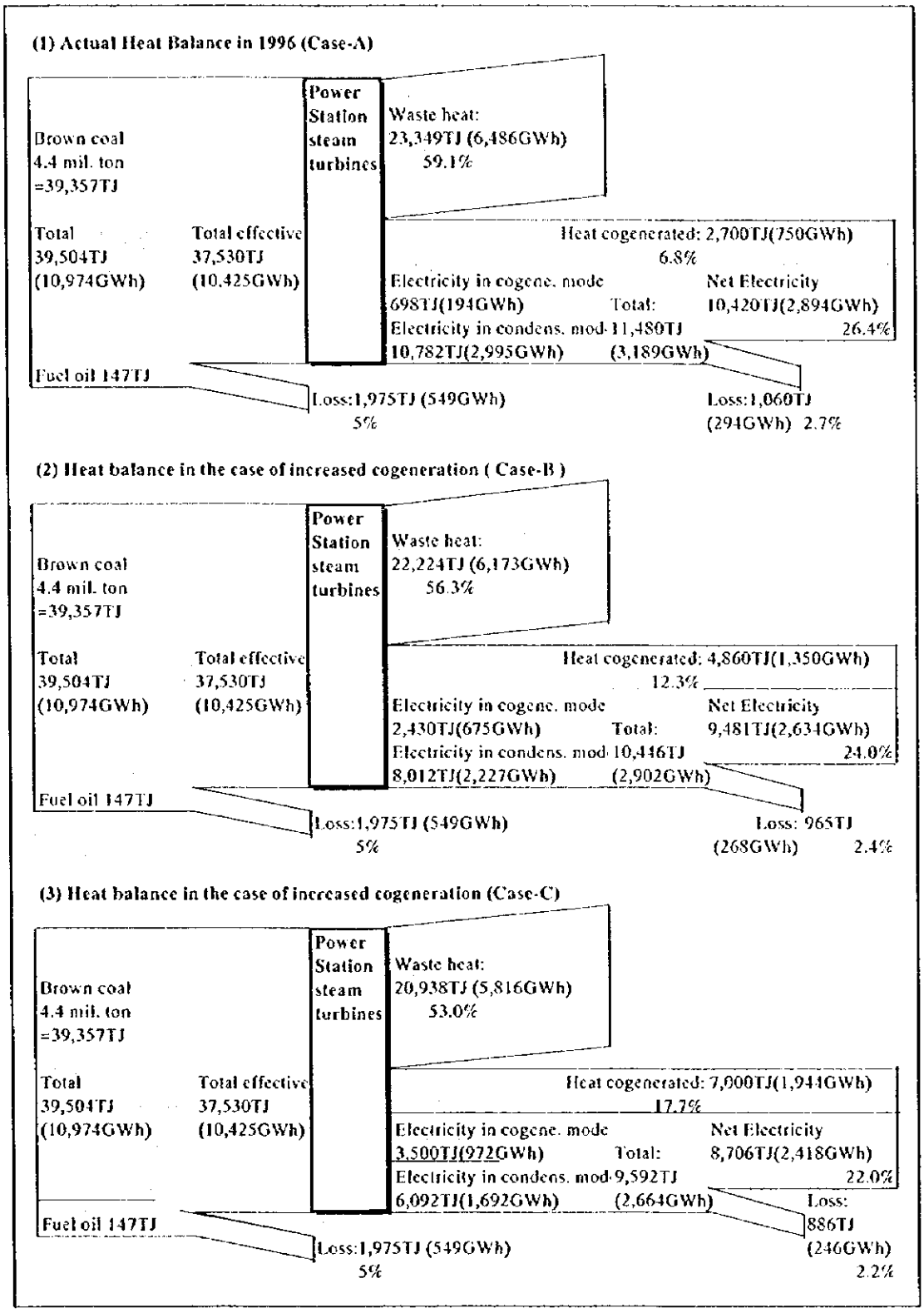
(Strategy-3) Development of user-industries of heat in the province

The strategy aims to utilize heat energy, cogenerated at the power stations, which is not fully utilized in all seasons, thereby improving heat utilization efficiency and emission of pollutants in the province.

The three key industries have abundant energy, presently wasted or insufficiently utilized. It will be profitable for both users and suppliers. There are a number of industries, e.g. greenhouses, food processing industries, etc., which require heat and also refrigeration, especially in the summer season. The power plants will be able to equalize seasonal load variations if such users increase. The aim of the strategy is to develop new users, especially of heat.

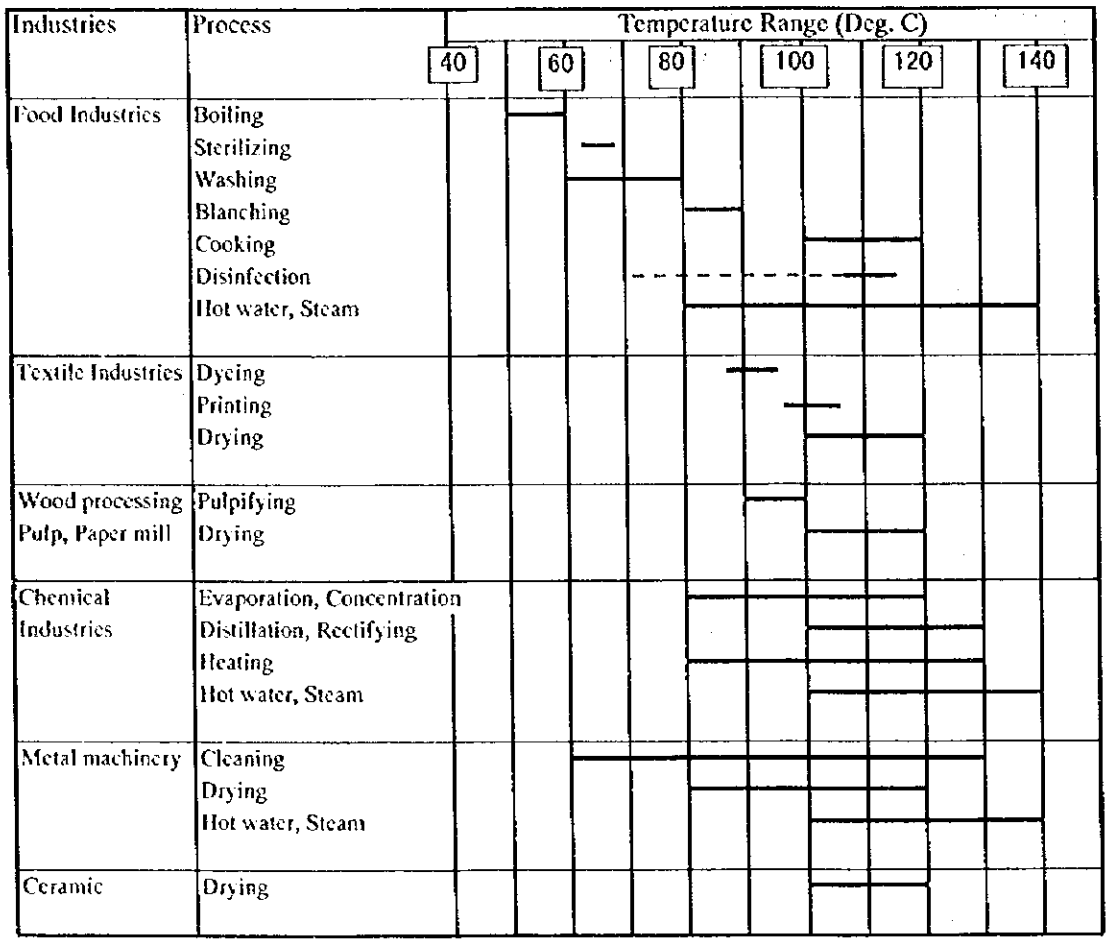
In Figure 2.8-2-1 to Figure 2.8-2-3, the present and increased cogeneration heat balances of the Konin Power Station are shown on the assumption that the same amount of brown coal is burned in each case. In case heat demand is increased for example by 2.6 times, the presently generated heat of 2700 TJ, estimated heat balance is shown in Figure 2.8-2-3. The waste heat disposed to lakes will decrease about 2,400TJ, which corresponds to about 270,000t/year of brown coal, compared with the present conditions.

Figure 2.8-2 KONIN POWER STATION HEAT BALANCE



In Figure 2.8-3, typical processing temperature ranges in various industries are shown. From these figures it is seen that heat ranges of most industries enumerated are within the range of heat which the power plant can supply.

Figure 2.8-3 TYPICAL PROCESSING TEMPERATURE IN VARIOUS INDUSTRIES



In order to realize a project for heat utilization with a higher certainty, it is inevitable to supply heat at a cheap price. It should be investigated by the power stations how to share with heat consumers the profits which can be obtained from the heat efficiency increase and effective use of facilities with a wide margin.

The following project is related to a cold warehouse for agricultural products.

Project-KI-8 "Construction of a cold warehouse(s) for agricultural products"

The project is to construct a cooled warehouse for the purpose of storage of agricultural products, installing an absorption type of refrigerator and utilizing hot water as a driving heat. The project aims at controlling delivery time by storing fruits and vegetables in the warehouse for a certain period and to contribute farmers' income stability.

The next project is to efficiently utilize heat, gathering the heat consuming factories in one place. A heat industrial park is a popular method to utilize cogenerated heat from a thermal power station.

Project-KI-9 "Construction of a "Heat Industrial Park""

The heat-consuming factories to be constructed in the park are, for example, such industries as shown in Figure 2.8.3. The factories in the park can save on investment and operation costs by receiving utilities including heat energy from an outside integrated supply source. The power stations can supply heat without increasing emission of pollutant into the district.

The Study Team has proposed another project related to agriculture.

Project-KI-10 "Construction of a greenhouse park"

In the 1980s a state-owned greenhouse complex of 7 ha was constructed near the power station (about 5 km apart) and 300 employees worked there. However, the company was put up for sale after the transition from the central planned economy to the market economy, and presently another company took it over, operating in the same area. The project aims at farming vegetables and flowers for domestic and export sale in a greenhouse park where greenhouses are concentrated, and adding more value to agriculture in Konin. Normally soil for a greenhouse is conditioned by peat or such. Therefore, a high harvest can be expected even in Konin's poor soil.

In addition, the projects proposed in the other sectors are related to the Strategy due to much heat consumption.

Project-(TR-5)** "Development of a tropical botany and butterfly garden"

Project-(ID-2)** "Development of a woodworking industrial park"

Project-(ID-3)** "Construction of a foodstuff processing factory"

(Strategy-4) Development of Aluminum Down-stream Industries

The strategy aims to develop aluminum processing industries in Konin Province to fabricate various value-added products, utilizing products of Huta Aluminum Konin.

Huta Aluminum Konin is the only aluminum smelting and rolling producer in Poland, but mostly the products are raw materials used for downstream processing and are totally processed outside Konin. There is a potential to establish a stronghold in Konin Province. Besides, the company may also possess capable engineers and workers for processing its products. There is also a firm base of metal-works industries such as Fugo S.A. Therefore, new applied products can be produced, utilizing the products and expert workers. That will help the companies to have captive users in their locals. The projects mentioned hereunder are proposed because of prospective domestic and export market demand. Per capita consumption of aluminum in Poland was estimated to be 3kg/capita in 1995 and far less than the 20 kg/capita in the EU. Refer to the Project Report for details of the projects.

Project-KI-11 "Construction of a radiator manufacturing factory"
Aluminum radiators have a higher heat transfer efficiency than steel ones. The demand for aluminum radiators is increasing. The project is to construct a factory to produce aluminum radiator elements.

Project-KI-12 "Construction of an aluminum foil lamination factory"
Requirements for aluminum surface treatment for food packaging is increasing and becoming sophisticated. The project is to construct a factory where various plastic films are laminated on aluminum foil and thin strips.

Project-KI-13 "Construction of an aluminum foil work factory"
The project is to construct a factory to produce aluminum semi-rigid containers for food packaging.

Project-KI-14 "Construction of an aluminum sheet work factory"
The project is to construct a factory to manufacture chemical equipment, storage silo, etc. made from aluminum sheet.

Project-KI-15 "Construction of an aluminum construction materials factory"

The project is to construct factories to manufacture aluminum materials used for households and office buildings. One is for a factory producing coated aluminum strips and sheets and the other is for aluminum extrusion products such as window sashes.

Chapter 3

INDUSTRY

Chapter 3 INDUSTRY

3.1 Industrial Development Policy of Poland

The industrial policy of Poland is a part of the social and economic development strategy of the country, concerned mainly with issues of industrial restructuring. Here in this section, the industrial development policy and the policy for small and medium-scale enterprises of the country are briefly reviewed.

3.1.1 Industrial Development Policy

The Current industrial policy in Poland has been formulated as based on *Industrial Policy Objectives* (issued in September 1993) and *Industrial Policy Program for 1995-1997*, sub-titled International Competitiveness of Polish Industry (issued in April 1995). Approved by the government of the Republic of Poland on September 14, 1993, the former policy paper, *Industrial Policy Objectives*, describes a comprehensive framework for the industrial policy in Poland, and some critical and more contemporary issues regarding industrial development have been focused in the latter *Industrial Policy Program for 1995-1997* which was adopted by the Council of Ministers on May 16, 1995.

(1) Industrial policy objectives (issued in September 1993)

According to *Industrial Policy Objectives*, the strategic goal of the industrial policy is to improve efficiency, competitiveness and innovativeness of industrial enterprises in the market economy through implementation of the following policies:

a. Overcoming the recession
b. Creating sound economic foundations to assure economic growth
c. Creating conditions ensuring greater competitiveness and effectiveness
d. Stopping degradation of the environment, and promoting clean technologies and products (ecodevelopment)
e. Increasing exports
f. Developing small and medium-scale private enterprises
g. Promoting Polish inventions and technological solutions
h. Securing natural and energy resources (economic security)

i. Activating regional and local governments
j. Creating labor markets
k. Acquiring foreign capital
l. Developing human resources

The objectives of the industrial policy refer to long-term issues spanning more than 10 years. However, (i) gradual changes in the structure of industry from heavy industries to processing industries, (ii) promotion of small-and-medium-scale enterprises and (iii) constant realization of ownership transformations require immediate actions.

1) Approaches to achieve targets

Approaches described in *Industrial Policy Objectives* can be categorized into two: problem and sector approaches. Problem approaches focus on providing optimum conditions for the growth and operation of industry by introducing solutions for ownership, organizational, financial and technological restructuring, whereas sector approaches establish the scope of the government's commitment to the economic protection of some sectors.

a) Problem approaches

Major activities for each of the problem approaches are listed in Table 3.1-1.

Table 3.1-1 MAJOR ACTIVITIES FOR PROBLEM APPROACHES — INDUSTRIAL POLICY OBJECTIVES, 1993 —

Ownership and organizational restructuring of industry • transformation of state-owned enterprises into commercial companies • restructuring of enterprises before privatization • elimination of inefficient entities through liquidation proceedings and proceedings in bankruptcy
Development of small-and-medium-scale enterprises • coordination of assistance for smal-and-medium-scale enterprises in regions • improvement of the legal conditions in which the private sector operates • implementation of projects financed by foreign aid resources • designing and establishing a corporate environment profitable for small-and-medium scale enterprises • technical and financial support which not only influences production quality but also affects production quantity
Use of instruments for economic and financial stimulation • improvement of current financial liquidity of enterprises • stimulation of growth in production • stimulation of export activities • stimulation of investment and restructuring processes by easier access to credit for enterprises, reducing taxes as well as interest rates on loans and other investment incentives for domestic as well as foreign investors
Facilitation of the market mechanism • reconstruction and creation of new distribution links among market participants • facilitation of new market infrastructure formation • creation of an effective consumer protection system • adaptation to free market systems combined with the promotional activities for Polish products in the European Economic Zone, the traditional eastern markets and the Asian and African countries • use of public procurement or purchase program
Practical implementation and dissemination of scientific research results • research based on modern technologies • practical implementations • education and training • information dissemination • support for research and development institutions performing tasks for industry through financing
Environmental protection • modernization and replacement of production technologies in industry, in accordance with the ecological policy of the country and international agreements on environmental protection • financial instruments for pro-ecological behaviors of industrial enterprises
Conservation of fuels and energy • changes in the use of basic energy, which is dominated by the inefficient solid fuels - hard and brown coal • restructuring of Polish industry by reducing the share of energy-intensive industries • rational consumption of fuels and energy • price controls of fuels and energy and elimination of subsidies

Creation of new job opportunities and countermeasures for unemployment
• preparation of professional training for workers • promotion and support for creation of small firms in the vicinity of enterprises facing the necessity of reducing employment • introduction of unemployment insurance • regulation on the social status of unemployed persons • public investment in infrastructure such as construction of highways, industrial pipeline system, telecommunication networks and railways
Introduction of regional scope and regional priority
• determination of regional priority for the prioritized activities of regional industrial policy • preparation of information regarding industrial activities of the regions

Source: Ministry of Economy.

b) Sector approaches

The main objective of the sector approaches is to facilitate structural adjustment of the economy for the requirements of the market economy by assisting the sectors selected, based on an analysis regarding the following criteria:

a. state security;

b. market conditions;

c. technology and production level; and

d. financial aspects.

In addition to that, sector approaches may be determined by social criteria, such as local labor market conditions and importance in the state budget, in some exceptional cases.

The restructuring of industrial enterprises in the sector concerned can be either a sector restructuring based on a sector contract or an individual approach for each enterprise.

The directions of industrial restructuring (of selected sectors) are listed in the summary of *Industrial Policy Objectives* (Table 3.1-4). Selected sectors and major objectives of the sector policies for them are shown in Table 3.1-2.

Table 3.1-2 SELECTED SECTORS AND MAJOR OBJECTIVES
— INDUSTRIAL POLICY OBJECTIVES, 1993 —

The defense industry sector
• implementation of the ownership transformation program, by which state-owned companies are transformed into companies 100% owned by or with a majority controlling interest of the State Treasury
• reduction of cooperation ties to a minimum level in order to reduce production costs
• retooling of a part of military production to civilian use
• preservation of production capacity of industry to maintain the country's independent status
The fuel and energy sector
• security of the country's energy
• efficient and economical use of fuels and energy
• reduction of the negative impact on the environment to a minimum level
The sectors with heavy energy consumption and capital intensity
Sectors included are: a. the iron and steel industry, b. the cement industry, c. the shipbuilding industry, d. the pulp and paper industry, and e. the heavy chemical industry.
• reduction of production capacity to the level of demand
• implementation of technical modernization (both for the reduction of energy consumption and the noxious effect on the environment)
The sectors with high priority
Sectors included are: a. the petrochemical industry, b. the electronics industry, c. the automotive industry, d. the packaging industry, e. the pharmaceutical industry, f. the agricultural and food processing machinery sector, g. the light industry, h. the environmental protection devices production sector, i. the rolling stock industry, and j. the construction materials industry excluding the cement industry.
• development through sector studies and other instruments
The higher chance sectors
Sectors included are: a. nonferrous ore mining, and b. nonferrous metallurgy.
• support with loans by banks and other financial institutions

Source: Ministry of Economy.

(2) Industrial policy program for 1995 – 1997 (issued in April, 1995)

Industrial Policy Program for 1995 -1997 was adapted by the Council of Ministers on May 16, 1995. The general outline of the policy was adopted by the Economic Committee of the Council of Ministers on December 19,

1994, and it put its basis on *Industrial Policy Objectives* and *Strategy for Poland* (which was adopted by the Council of Ministers on July 7, 1994).

The situation underlying the industrial policy program for 1995 - 1997 was that Polish enterprises had to adapt to increasingly intensive national and foreign competition. Even now, such a situation is not eased but rather intensified by the universal trend of liberalizing international trade and the Association Agreement with the European Union.

Based on such a situation, the state's industrial policy is required to provide a stable environment for corporate management and opportunities for structural changes of both enterprises and the industrial sector of the country, so that the Polish industrial sector can survive and grow steadily for the future.

The purpose and the summary of the policy program is shown in Table 3.1-5.

a) Composition of the program

The program consists of three kinds of approaches, namely the issue-oriented (horizontal), sector and regional approaches. These three approaches may be considered as more elaborated forms of the problem and sector approaches explained in *Industrial Policy Objectives*.

The concept of the **issue-oriented approach** is to tackle problems common to all industrial sectors, from the viewpoint of formulating and applying the appropriate legal, organizational, economic and program measures. The **sector approach** focuses on the restructuring of enterprises which have developed technological or organizational ties with each other, or enterprises selected in a certain way based on the criteria specific for each sector. The **regional approach** is an integrated approach which takes into consideration the economic strategy of regions with a high concentration of industry as well as of cities economically dominated by one big industrial plant.

The priority directions (or policy) highlighted in *Industrial Policy Program for 1995 - 1997* are policies of:

a. export orientation,

b. technology upgrading, and

c. structural changes.

In order to implement the three priority policies, the three above-mentioned approaches are individually and jointly used.

b) Policy of export orientation

Under the Objectives of the Export-Oriented Policy adopted by the Government on September 14, 1993, and the Schedule of Activities Aimed at the Implementation of the Export-Oriented Policy of the State adopted by the Economic Committee of the Council of Ministers (KERM) on May 18, 1994, the prime target is to promote the state's economic growth primarily by accelerating exports and to set such growth into a sustainable trend.

The principles of acceptable state aid shall be regulated in accordance with the European Communities practices, GATT/WTO and OECD regulations in this respect.

c) Technology policy

The technology policy is aimed to improve the technological standards of industry. It may be necessary to select the priority directions of research and apply a system of support for certain technological fields as well as legal and system regulations.

The areas in which actions are taken for technology improvement are:

a. Research and development;

b. Infrastructure required for implementations;

c. Quality and modern production profile; and

d. Information and training.

d) Policy of structural changes

The objective of the policy of structural changes is connected directly to the objective of the entire industrial policy, increasing competitiveness of industry.

The policy of structural changes is expressed through the following:

a. successive commercialization and privatization of enterprises (transfer of ownership);
b. changes in industry structure;
c. guiding development in regions with high industrial concentration; and
d. internal restructuring of enterprises.

The privatization policy takes into account the sector aspect of industrial policy. In parallel with privatization conducted in a variety of forms,
state-owned enterprises are commercialized with modern forms of management. Commercialization of all state-owned enterprises will eliminate the double standard of law and offer equal terms for all, irrespective of ownership forms, and facilitate the process of ownership transfer and organizational change.

With regard to changes in the industrial structure, the government focuses on increasing the share of high-value manufacturing industries in the total output.

Measures employed in *Industrial Policy Program for 1995-1997* are listed in Table 3.1-3.

Table 3.1-3 MEASURES EMPLOYED IN INDUSTRIAL POLICY PROGRAM FOR 1995-1997

Export Orientation

a. financial instruments developed through creating the appropriate institutional infrastructure of insurance and government guarantees of export contracts as well as tax incentives;
b. information and organizational instruments;
c. promotion of foreign trade by the means permitted under the Association Agreement between Poland and the European Communities, and GATT/WTO regulations.

Technology Policy

a. assistance in providing necessary information and training in the area of modern technologies, in improving cooperation between industry and research and development facilities, and in improving the quality of products and promoting the best national practices;
b. implementation of programs aimed at adaptation to regulations and standards of the European Union, including quality systems, increasing international cooperative arrangements;
c. introduction of clean production rules into production and development programs of enterprises;
d. application of a special system of organizing and implementing support for small and medium enterprises in their access to technology;
e. provision of an appropriate institutional infrastructure, such as creation of a Technology Agency and expansion of the Energy Conservation Agency and regional development agencies;
f. implementation of formal, legal, organizational, and financial instruments defined in "Objectives on the Pro-Innovation Policy of the State" adopted by the Council of Ministers on November 22, 1994;
g. support for close links between science and industry; and
h. investment promotion, focused on creating advantageous conditions for modernization of plants and equipment; intensification and modernization of the structure of research, development and implementation efforts; and renovation and modernization of the product range.

Structural Changes

Transfer of ownership:
a. Commercialization and privatization

Changes in industry structure:
a. introduction of mechanisms stimulating development of small and medium enterprises through extending a wider range of institutional assistance in securing access to skills and expertise, modern technologies, new markets, and capital resources;
b. continuation of sector restructuring, especially in the field of energy and defense sectors and high-opportunity sectors.

Guiding development in regions with high industrial concentration:
a. more effective operation of the institutions involved in carrying out industrial policy measures on local and regional levels;
b. support for the development of the small and medium enterprise sector;
c. integration of government restructuring programs for individual sectors with regional economic programs;
d. establishment of special economic zones.

Internal restructuring of enterprises:
a. shaping the legal framework required for financial, organizational and technical restructuring;
b. providing organizational and financial assistance channeled through extra-governmental organizations, such as the Industrial Development Agency, the State Foreign Investment Agency, regional development agencies and so forth;
c. accelerating the liquidation process of structurally red-ink making entities.

Source: Ministry of Economy.

Table 3.1-4 SUMMARY OF INDUSTRIAL POLICY OBJECTIVES, 1993

Date of approval, Ministry and Time frame
Date of approval: 1993/9/14 Proclaimed by Ministry of Industry and Trade Time frame: 10 years
Purpose
To improve efficiency, competitiveness and innovativeness of industrial enterprises in a market economy through the execution of social and economic policies.
Summary
There are 12 social and economic areas to be worked out: 1. Overcoming the recession, 2. Crea sound economic foundations, 3. Creating conditions ensuring greater competitiveness and effectiveness, 4. Ecodevelopment, 5. Export increase, 6. Development of SMEs, 7. Promotion Polish inventions and technological solutions, 8. Ensuring economic security, 9. Activation regions and local governments, 10. Creation of a labor market, 11. Acquisition of foreign capit and 12. Creating and training staff for industry. The paper consists of three part: Part 1. Defining industrial policy; Part 2. Problem approach; and Part 3. **Part 1. Defining industrial policy** Industrial policy is an element of the social and economic strategy of the country, concentrating problems connected with restructuring industry. It is an action of the government. It also economic law and the content of international agreements. Industrial policy is to be with two complementary approaches: problem and sector approaches. **Part 2. Problem approach** Problem approach consists of: 1. Ownership and organizational restructuring of 2. Development of small and medium sized enterprises 3. Economic and financial 4. Trade policy 5. Technology policy 6. Environmental protection 7. Conservation of fuels and energy 8. Labor market policy 9. Regional scope of industrial **Part 3. Sectorial approach** Sectorial approach consists of four complementary processes, the restructuring of:ownership, organization, finance and technology within the structure of the industrial Selected sectors are: 1. Strategic sectors 2. High energy and capital intensive sectors 3. High priority sectors 4. High chance sectors

Source: Ministry of Economy.

Table 3.1-5 SUMMARY OF INDUSTRIAL POLICY PROGRAM FOR 1995-1997

Date of adoption, Ministry and Time frame
Date of adoption: 1995/5/16 Proclaimed by Ministry of Industry and Trade Time frame: 3 years
Purpose
To obtain better international competitiveness of the Polish industry and secure economic grow in an open economic environment.
Summary
The policy paper put its basis on "Industrial Policy Objectives" adopted by the Council of on September 14, 1993 and "Strategy for Poland" adopted by the Council of Ministers on June 1994. The policy employs three approaches: issue-oriented (horizontal), sectorial and individually and interactively. The paper consists of four **Section 1. Actions to implement an export-oriented policy** The export orientation policy targets to leverage Polish economic growth primarily by accelera exports. Proposed measures for export promotion are: financial instruments; information organizational instruments; and promotion of foreign trade by means of permitted under the Association Agreement between Poland and the European Communities, and GATT/WTO regulations. **Section 2. Technology policy measures aimed at improvement of international competitiv of industry** The objective of technology policy is to improve technological standards of industry. Technolo policy includes prioritizing research directions, applying a system of support for technological fields, providing legal and system **Section 3. Structural changes necessary for improvement of the industry** The objective of structural changes is to sustain the present growth dynamics and to secure furt development of industry. The basic spheres of actions include: transfer of ownership, change the industrial structure, guiding development in regions of high industrial concentration internal restructuring of enterprises. **Section 4. Financing the program** The sources of finance for implementation of the program are: own funds of enterprises, foreig direct investment, budgetary resources, assistance funds consisting of grants under the PHARE program.

Source: Ministry of Economy.

3.1.2 Industrial Policy for Small and Medium-Scale Enterprises

As mentioned in 3.1.1, one of the important issues within the industrial development policy of Poland is the development of small and medium-scale enterprises (SMEs). Because of the importance of SME development in the country's economy, *Policy towards Small and Medium-Scale Enterprises* (subtitled Small and Medium-Scale enterprises in the National Economy) was prepared by the government in May 1995. The basis for the preparation of the government policy towards SMEs is *The General Outline of the Industrial Policy* approved by the Council of Ministers on Sept. 14, 1993 and *The General Outline to the Industrial Policy Program for the Years 1995 - 1997* (subtitled International Competitiveness of Polish Industry) approved by the Economic Committee of the Council of Ministers (KERM) on Dec. 19, 1994. Policies for small and medium-scale enterprises indicated in the three policy papers are summarized in Table 3.1-6, 3.1-7 and 3.1-8.

In *Industrial Policy Objectives*, development of small and medium-scale enterprises is included in the nine problem approaches. However, the instruments to be used are limited and implementation of the actions is not indicated clearly. Additional focus on policy measures for SMEs is expressed in *Industrial Policy Program for 1995-1997.* In this policy paper, implementation methodology for each action is indicated with the institution responsible as well as the deadline for implementation. *Policy towards Small and Medium-Scale Enterprises* describes the actions mentioned in *Industrial Policy Program for 1995-1997* in detail.

The mission of the policy towards SMEs is to design activities targeting elimination of existing barriers for SMEs' development; creation of conditions conducive to the development of SMEs; and extension of institutionalized assistance in the field of organization, information, training and technology focused on the promotion of SMEs.

The instruments used for the implementation of the policy are:

a. legal instruments;

b. financial instruments;

c. organizational instruments; and

d. information and training instruments.

Activities under each instrument are shown in Table 3.1-9.

Table 3.1-6 POLICIES FOR SMALL AND MEDIUM-SCALE ENTERPRISES — INDUSTRIAL POLICY OBJECTIVES, 1993—

The purpose of developing small and medium sized enterprises is to provide services to industry and satisfy the needs of local markets.

Ministry of Industry and Trade is responsible for:

- coordination of assistance for small and medium sized enterprisees in regions,
- implementation of the legal conditions in which units of private sector operate,
- implementation of foreign aid resources,
- designing and establishing environment profitable for development of small and medium sized enterprises operating in the area of production, trade and services.

Support for SMEs includes:

- training programs (managerial, financial, marketing, quality, and professional development),
- access to modern technology and research results,
- access to new markets and export promotion,
- access to financial resources (foreign credits and their guarantee, other forms of support)

In order to implement the development strategy for SMEs, there are two instruments:

- Agency for the Development of Small and Medium Sized Enterprises
- Credit Guarantee Fund

Source: Ministry of Economy.

Table 3.1-7 POLICIES FOR SMALL AND MEDIUM-SCALE ENTERPRISES
— INDUSTRIAL POLICY PROGRAM FOR 1995-1997 —

Policy measures addressed to small and medium business are discussed as a part of the policy for structural changes of the Polish economy.

The objectives of developing small and medium business sector are:

- to reduce unemployment caused by restructuring or liquidation of state owned enterprises,
- to expand private sector's share in the economy structure,
- to creat modern sub-supplier and services environment.

Responsible ministries and government organizations are:

- Ministry of Industry and Trade,
- Polish Foundation for the Promotion and Development of Small and Medium Enterprises(planned),
- Ministry of Finance,
- Regional Development Agencies,
- Technology Agency(planned).

Actions for supporting the SME sector include the following four areas:

- Creation of a conducive environment for SME development,
- Reduction of risks for SME business activities,
- Creation of conditions for improving SME competitiveness,
- Development of the finincial services market.

For each action, implementation methodology has been specified with responsible institutions and deadline.

In addition to the above documentation, another policy paper for the SME sector, titled Policy towards Small and Medium Sized Enterprises, has been prepared.

Source: Ministry of Economy.

Table 3.1-8 POLICIES FOR SMALL AND MEDIUM-SCALE ENTERPRISES
— POLICY TOWARD SMALL AND MEDIUM-SCALE ENTERPRISES, 1995 —

The objectives of developing small and medium enterprises are:

- to reduce unemployment,
- to increase participation of the private sector in the economy structure,
- to stimulate activities of local communities,
- to develop an environment of modern services and sub-contractors,
- to increase exports.

In order to achieve the objectives, the government will ensure conducive conditions to the establishment and stable development of enterprises in the SME sector by facilitating their access to financial resources and modern technologies within the principles of equal treatment of all economic entities.

The main directions of the policy towardsd small and medium enterprises cover the following activities:

- Creating and sustaining conditions conducive to the establishment and development of SMEs,
- Creating conditions to increase opportunities for SME financing, for example, facilitating access to credit,
- Creating conditions for entrepreneurs under which training and information in the field of management, marketing, quality standards, enterprise organization, production process and new technologies are accessible to them,
- Creating conditions to increase production capability and competitiveness of SME in both the domestic and foreign markets.

The instruments to be applied are:

- legal,
- financial,
- organizational,
- information and training.

For each action, implementation methodology has been specified with responsible institutions and deadline.

Source: Ministry of Economy.

Table 3.1-9 POLICY INSTRUMENTS AND ACTIONS FOR SME SECTOR DEVELOPMENT
— POLICY TOWARD SMALL AND MEDIUM-SCALE ENTERPRISES —

Legal Instruments
a. Reviewing and amending the civil and commercial law and other specific acts such as the Public Procurement Act from the perspective of their influence on establishment and functioning of SMEs as well as their compliance with EC regulations; b. Preparing a draft industrial law, which will contain the definition of SME, legal forms and principles of conducting business activities, and the regulations regarding economic self-government and organizations of entrepreneurs; c. Creating a legal framework to define the basis of the establishment and operation of financial institutions providing services to local credit guarantee funds for SMEs; d. Preparing a draft law on court business registration; e. Completing the work on the draft collateral law and collateral register; f. Completing the work on the draft law on commercial exchanges.
Financial Instruments
a. Completion of the work on draft business taxation law; b. Further development of the system of credit guarantees for SMEs on the basis of the credit guarantee funds established in Bank Gospodarstwa Krajowego; c. Development of the concept of a credit re-guarantee system aimed at local institutions granting guarantees on the basis of the resources at the disposal of the government; d. Development of the system of criteria to grant SMEs various kinds of state aid; e. Support of SME development in rural areas through providing preferential credits.
Organizational Instruments
a. Supporting the creation of local networks of credit guarantee funds for SMEs including the creation of a local credit guarantee fund based on donor resources; b. Promoting and supporting the creation of a system of regional mutual insurance companies and other non-banking financial institutions; c. Developing an organizational structure for industrial cooperation; d. Creating the Foundation for the Promotion and Development of SMEs, in order to ensure the rational utilization of foreign assistance funds allocated to SMEs; e. Preparing a report on accessibility, level of implementation and efficiency in the utilization of foreign assistance resources allocated for institutions supporting SMEs.
Information and Training Instruments
a. Supporting the development of regional and local institutions to promote and support SMEs; b. Developing a special system of organizations and procedures to support SMEs in their access to technologies and new designs; c. Supporting and promoting production efficiency and other activities; d. Supporting and promoting institutionalized assistance focusing on access to the knowledge of management, finance, marketing, quality standards, training, and so forth; e. Designing school and university programs which promote and encourage entrepreneurial behavior; f. Developing and implementing a system of monitoring the conditions of SMEs and their sensitivity to changes in economic and financial instruments.

Source: Ministry of Economy.

3.1.3 Current Status of Industrial Policy

Since 1993, the industrial policy of Poland has been reviewed and revised every two or three years. The industrial policy toward 1998 including the policy for SMEs is now in the process of revision. Therefore, it is not possible to mention the industrial policy for coming years. However, in a practical sense, the industrial policy since 1993 is still an important basis for the new policy to be developed, and there will be a consistency between the current policy and the one to be introduced later.

3.1.4 Support Measures for SMEs in Konin Province

Although there are various instruments for SMEs support described in Section 3.1.2, Konin Province has limited access to such instruments. One reason for such limited access is the socio-economic conditions of Konin Province to be entitled to receive the benefits of the instruments. For example, Konin Province is not entitled to the STRUDER program (10 provinces) by PHARE. Another reason is the limited monetary resource allocated to entire SMEs support from the government budget. Because of the budget constraints and the government policy of putting a high priority on privatization, supporting activities for SMEs by the government are restrained.

Therefore, the major source of funds for SMEs support is the funds from donors including both multilateral and bilateral cooperation. Presently, three instruments funded by the Polish Foundation for Small and Medium Enterprise Promotion and Development (SME Fund) exist in Konin Province for supporting SMEs, although they are not fully functioning yet. The three instruments are: Business Support Center; Credit Guarantee Fund; and Information and Technology Transfer Center. All of the three instruments are available at the Regional Development Agency (RDA) in Konin Province. In addition to the three instruments, there are some other SMEs support projects such as FIRMA2000, funded by USAID and implemented by RDA.

Konin Chamber of Commerce and Industry (KIG) also has instruments to support SMEs. Currently, SMEs support is a priority of KIG. Among the instruments are an advising service for business enterprises, support for writing business plans, training courses, and preparation of business exhibitions.

Another organization, the Konin office of the Federation of Scientific-Technical Associations Head Technical Organization (NOT), provides technology consulting and training for technicians and engineers aiming at SMEs support.

All of the above-mentioned instruments are in the categories of organizational as well as information and training instruments. In terms of the financial instruments for SMEs, there are few schemes in Konin Province.

3.1.4.1 Regional Development Agency (RDA)

Being established as a joint stock company with the majority share held by the Ministry of Treasury (83%), RDA conducts its activities to help the economic restructuring of Konin Province. Among its activities are supporting SMEs, inspiring and supporting various initiatives for the development of the province such as creating awareness and preventing air pollution, supporting foreign contacts of the governor, and organizing ownership transformation processes of state-owned enterprises. The activities for SMEs support by RDA are as follows.

(1) Business support center (BSC)

Financially supported by the SME Fund, BSC of RDA provides SMEs with business advisory services including training courses, marketing and finance advisory service, and support for business plan writing. In 1997, two types of training courses, privatization of state enterprises and entrepreneurship, were planned, but such courses turned out to be less attractive to SMEs. Therefore, in 1998, new training courses are being planned from scratch. The marketing and finance advisory service is used for developing business strategies for individual SMEs, but only a few SMEs have used this advisory service. Although 80% of the training as well as consulting fees of BSC is subsidized by the SME Fund, SMEs tend to consider the cost of the service too expensive. One exception is the support service for business plan writing. Because well-organized business plans are necessary for applying bank loans, this service is popular

among the SMEs. Since July 1997, BSC got 9 clients for business plan writing.

The contract period with the SME Fund with regard to BSC is one year, from July 1997 to June 1998, and 15,000 ECU has been granted. However, the SME Fund's disbursement is based on the number of actual activities performed by BSC.

(2) Credit guarantee fund

RDA's credit guarantee fund was started in 1996 based on the fund of 200,000 PLN from the Ministry of Economy (100,000 PLN) and RDA's self-fund (100,000 PLN). The upper limit of credit guarantee for one loan contract is 10% of the total fund of 200,000 PLN. For each credit application, the fund may provide a guarantee of up to 50% of the loan contract, and the remaining 50% has to be guaranteed by the loan applicant him/herself and/or his/her relatives.

In 1997, RDA won the contract with the SME Fund for its credit guarantee service. According to the contract, the SME Fund pays RDA 10,000 ECU for 1) preparation of credit guarantee procedures in cooperation with local banks, 2) promotion of two credit guarantee funds (BGK and RDA), 3) support for 5 clients to fill out the application for the BGK credit guarantee fund, 4) analysis of 5 applications for the BGK credit guarantee fund, and 5) analysis of 12 applications for RDA's credit guarantee fund. The contract period with the SME Fund is from June 1997 to June 1998. After finishing the contract period, so far there is no plan for extending the contract with the SME Fund.

During the contract period, there have been two applications for the credit guarantee handled by RDA. One application was rejected by the evaluation council for credit guarantee, and the other was accepted. For the accepted application the guarantee fund guaranteed 5,600 PLN. Although RDA is getting inquiries from potential clients about the credit guarantee fund every day, very few requests for credit guarantee actually come to RDA. According to the person in charge of handling the credit guarantee fund in RDA, local banks are not so eager to promote RDA's

credit guarantee scheme. They prefer personal guarantees by the loan users and/or their relatives.

(3) Information and technology transfer center

RDA's Information and Technology Transfer Center was started in September 1997. Subsidized by the SME Fund, this project is aimed at providing SMEs with technical advisory services and information about business opportunities with both foreign and domestic companies who want to find business partners and sub-contractors. The center can use several networks including already established international and national databases such as the Business Cooperation Network (BC-Net), Bureau de Raprochement des Entreprises (BRE), System Agencji Kontraktowania Kooperacji (SAKK), Trade and Technological Information Promotion System (TIPS), Trade Match Polska and Siec Informacji dla Biznesu (Business Information Network – BIN). In addition to such existing databases, the center is also now accumulating its own local database of SMEs for matchmaking. Those databases are to be used by local SMEs for either technology acquisition or matchmaking. On the other hand, the local database of SMEs is to be used by foreign and domestic companies searching for business partners or sub-contractors.

In order for SMEs to get information through such databases, the SME Fund subsidizes 80% of the information fees. Local SMEs need to pay only 20% of the fees. With regard to technology transfer, SMEs may need to seek loans for purchasing technologies. The Agency of Technique and Technology, established by the Polish government in April 1997, provides credits to such SMEs. RDA helps SMEs prepare loan applications with charges on a negotiation basis. Although RDA has informal cooperation with both KIG and NOT, no formal cooperation agreement has been made with them for this project.

(4) FIRMA2000

This program is financed by USAID. Under this program, American volunteer consultants are dispatched to Polish enterprises to support their businesses under the supervision of an American consulting firm called

ACDI/VOCA. ACDI/VOCA selected 30 organizations from among all regions in Poland as its operational hands. RDA in Konin is one of the 30 organizations selected. RDA in Konin provides support service for FIRMA2000. So far one ice cream company in Turek has been selected as a candidate for FIRMA2000 and a volunteer consultant will be dispatched in 1998. Another 13 companies are applying for this program. However, this program is to be concluded at the end of 1999. Considering the movement of USAID for Poland, the phase two of FIRMA2000 after the year 2000 may not be expected.

(5) Seminars and training programs

RDA has also started to provide seminars and training programs on management issues for SMEs on a business basis. Major topics targeting SMEs are marketing-related and environment issues. Technically, this is a kind of education program for managers of SMEs. The fees for such programs are charged to the attendees.

3.1.4.2 Konin Chamber of Commerce and Industry (KIG)

KIG was registered on September 18 in 1990. It has around 150 members. The majority of members are SMEs. The KIG bureau consists of the Economic Offers Department, Events Organization Department and Fair Organization Department. As a foreign investor service coordinator, KIG provides foreign investors with introductory information about Konin Province, distributes business offers on behalf of foreign investors, maintains an information bank about personnel, and so forth. KIG also has cooperative channels with Austria and Germany. The following are KIG's SME support services.

(1) Training programs

Training programs of KIG include: (1) Polish and foreign tax customs, foreign currency, transport regulations concerning employment, (2) Total Quality Management, and (3) international trade practices and so forth. The instructors are invited from other institutions. In 1996, there were 7 courses and some 200 companies have attended the courses. The fees for

the training programs are fully paid by the attendees (companies) without any subsidies.

(2) Exhibitions and fairs

Every year, two exhibitions are held by KIG. In 1997, the industries selected for two exhibitions were the construction industry and the food industry. Target companies for such exhibitions are companies from all over the country.

(3) Business service center

The business service center has been established by using the funds from the partnership program of PHARE with the inter-mediation of a German chamber of commerce. Presently, the business service center is operated by KIG's own fund.

3.1.4.3 Federation of Scientific-Technical Associations Head Technical Organization (NOT)

NOT is a federation of associations of technicians and engineers in which Polish technicians and engineers are registered. There are various industry-specific associations in Poland; for example, an association of technicians and engineers in the electric industry, and such associations are participating in the federation. The national head organization of NOT is located in Warsaw, and there is a council office of the federation in each province.

Konin Province also has a council office of NOT (FSTA-HTO, CK). Under FSTA-HTO, CK, all the industry-specific associations of technicians and engineers in Konin Province are organized. There are 14 associations in Konin Province and 2500 technicians and engineers are registered. Most of the registered technicians and engineers are presently full-time employees of companies in Konin Province.

FSTA-HTO, CK is operated by 10 full-time officers with around 100 part-time technicians and engineers. FSTA-HTO, CK is financially

independent without any subsidies from the central organization or the government.

Like RDA and KIG, FSTA-HTO, CK is also a member of the national system of the SME Fund.

(1) Technical consulting service of FSTA-HTO, CK

FSTA-HTO, CK's major activities are technical consulting service for companies in Konin Province and training service for technicians and engineers. FSTA-HTO, CK's technical consulting service is used by SMEs to solve their technical problems on a request basis with charges. From among the registered technicians and engineers, suitable persons are selected and dispatched to the consulting services. Examples of the consulting services are: (1) cost estimation for technical investment, (2) technical design (plant buildings and production lines), (3) financial evaluation of equipment and assets, (4) electrical measurement and supervision of equipment at the introduction phase along with national standards and regulations, and (5) feasibility study from the point of environmental protection.

There are some former staff of FSTA-HTO, CK who have started technical consulting services as private consultants. FSTA-HTO, CK has relationships of cooperation with such consultants.

(2) Training programs of FSTA-HTO, CK

FSTA-HTO, CK's training programs include operation and supervision of machinery and equipment, industrial safety, total quality control, computer usage and so forth. Attendees of the training programs are mainly sent from companies; however, individuals can also attend the programs personally. There are some qualifications which require periodic brush-up training. Such kinds of training programs are also provided by FSTA-HTO, CK. Among the training programs, roughly 60% is on-premise training involving on-the-job training (OJT) in companies and the rest is classroom training.

In 1996, FSTA-HTO, CK held a 4-day introductory seminar on total quality control (TQC) by inviting an instructor from the business support center in Gdansk. Out of 100 enterprises contacted, around 10 enterprises, represented by 20 people, attended that seminar. Among the enterprises that attended are major companies in Konin Province, including Huta Aluminum, KWB Konin, ZE PAK S.A., Turek Milk Cooperation, Milk Factory in Konin, Meat Factory in Koto, BINKON, and so forth. The seminar was successful to some extent in terms of creating an awareness of the importance of TQC among the attendees. After the seminar, some companies that attended started to follow up training individually by inviting instructors from business support centers in other provinces.

3.2 Status of Industry in Konin Province

3.2.1 Economy and Industry of Konin Province

The economy of Konin Province viewed from the industrial aspect has the following characteristics.

(1) Employment by sector

As of the end of 1996, the Province had a population of 480,176, with labor population and registered unemployment being 198,400 and 41,500, respectively. As shown in Table 3.2-1, the largest employer was agriculture with 89,200 (45.9%), followed by industry[1] with 42,400 (21.4%), commerce, and education (included in "Other") in that order. The sector that has increased employment most since 1990 is commerce and repair. This coincides with the general trend of economic development in Poland in which this sector was the first to attract active private investment after the transition to a market economy. One big difference , however, is that the agriculture sector in Konin stands at 45.9% compared with 27.0% for the whole nation and with 13.5% of the manufacturing sector compared with 20.7% for all of Poland, respectively.

Table 3.2-1 EMPLOYMENT BY SECTOR

Unit: Thousand

Sector	1990	1995	1996	% in 1996
Agriculture and forestry	90.8	80.2	89.2	45.9%
Industry	44.5	42.1	42.4	21.4%
of which: Manufacturing	-	-	26.8	13.5%
Construction	9.5	8.3	9.0	4.5%
Transport, storage, communication	8.2	8.4	7.1	3.6%
Trade and repair	16.2	21.4	18.6	9.4%
Others	32.4	32.3	32.1	16.2%
Total	201.6	192.7	198.4	100.0%

Source: Statistical Office of Konin

[1] In Polish industrial statistics, mining, energy (electric power, gas, etc.), and manufacturing are classified under one category as "industry." In this report, therefore, the above three sectors are collectively referred to as industry, unless otherwise noted.

Geographically, the majority of the labor population of Konin Province is concentrated in two gminas: Konin gmina and Turek gmina in the southern part of the province. This is due chiefly to the fact that the Province's three key industries of brown coal mining, electric power generation, and aluminum refining, along with textile and food enterprises, are relatively large in scale among its manufacturing enterprises operated in these two gminas (see Figure 3.2-1).

On the other hand, the Province had 36,563 unemployed workers (unemployment rate: 15.9%) as of July 31, 1997. The unemployment rate is higher than the national average (11.2%). Both the Konin and Turek districts each have an unemployment rate lower than the provincial average, and the eastern and western districts, where there are few major industries, each have an unemployment rate higher than the provincial average. Each Province's unemployment rate by district is shown in Table 3.2-2.

Table 3.2-2 UNEMPLOYMENT RATE BY DISTRICT (As of July 31, 1997)

Group of Gminas	Unemployment	Rate in %
Konin district consisting of 13 Gminas	12,582	14.30%
Kolo district consisting of 14 Gminas	9,094	15.90%
Slupca district consisting of 10 Gminas	7,125	20.40%
Turek district consisting of 11 Gminas	7,762	15.70%
Whole of Konin (48 Gminas)	36,583	15.90%

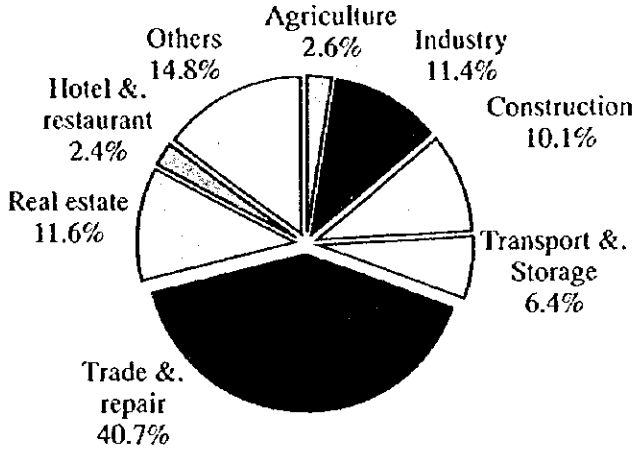
Source: Statistical Office of Konin

(2) Economic units and ownership

As of the end of 1996, Konin Province had 20,175 economic units (enterprises), of which 898 units (4.5%) were under public (sector) ownership and 19,277 units (95.5%) were under private (sector) ownership. Of the 898 economic units under public ownership, 645 units (71.8%) were managed by gminas (local self-governments) and 199 units were wholly owned by the central government. In Konin Province, for instance, the brown coal mining enterprises are placed under state management, and bus transportation service enterprises and schools are managed by gminas. The 19,277 private economic units include 95 foreign-affiliated enterprises. Figure 3.2-2 shows the breakdown by ownership of the Province's economic units. Figures in each frame indicate numbers of economic units.

By sector, commerce and repair accounts for the largest proportion of all economic units, with 8,214 units, or 41%. Industry occupies a modest 11.4%, which is nearly the same share as that of the real estate and construction sector. Agriculture accounts for a mere 2.6%. This attests to the fact that the great majority of farms in Konin Province, as in the whole country, is operated by individuals (see Figure 3.2-3).

Figure 3.2-3 ECONOMIC UNITS BY SECTORS



(3) Sales income by sector

The Statistical Office of Konin Province has been compiling data called "sales income (Przychod ze sprzedazy)" as something close to district income statistics. For agriculture, however, even this sort of income statistic is absent. Analyzing the scale of production by sector on the basis of the above data, though incomplete, industry accounts for 64.8% of the total income of all sectors, excluding agriculture. In terms of total sales income, including subsidiary income, the ratio of the secondary industry to the tertiary industry is about 7 to 3 (see Table 3.2-3). With in the tertiary industry, the hotel & restaurant business has a very small share, indicating that the position of the tourist industry in Konin Province is relatively low.

Table 3.2-3 SALES INCOME BY SECTOR (1996 I-XII)

Sectors	Sales Income (mil. PLN.)	Affiliated Income (mil. PLN.)	Total Income (mil. PLN.)
Agriculture, Livestock & Forestry	-	-	-
Industry	3,344.1	135.7	3,479.8
Construction	221.2	14.9	236.1
Trade & Repair	74.5	1,391.2	1,465.7
Hotel & Restaurants	9.3	11.9	21.2
Transport, Storage & Communication	56.4	16.6	73.0
Real estate & Business activities	77.8	8.7	86.5
Others	10.7	-	10.7
Total	3,794.0	1,579.0	5,373.0

Source: Statistics Office of Konin

For information, values added (sales minus costs) by sectors (excluding agriculture) are shown in Table 3.2-4. As shown, industry accounts for 80.5% of the total amount of value added.

Table 3.2-4 VALUE ADDED BY SECTOR (1996 I-XII)

	Value Added (Thousand PLN.)	%
Agriculture, Livestock & Forestry	-	
Industry	156,739	80.5%
Construction	6,381	3.3%
Trade & Repair	28,938	14.9%
Transport, Storage & Communication	1,544	0.8%
Real estate & Business activities	560	0.3%
Others	438	0.2%
Total	194,600	100.0%

Source: Statistic Office of Konin

(4) Salaries and wages by sector

The average salary and wage per person in Konin Province is considerably higher than the national average. Average monthly salary and wage by sector is shown in Table 3.2-5. The table shows the average net monthly salaries of Konin Province and the whole nation for 1996 and those of the Province for July 1997. The 1996 average net monthly salary of Konin Province was about 17% higher than the national average. Looking into the breakdown, however, it can be seen that the average net monthly salary of the industry sector is much higher than that of any other sector, where

average net monthly salary is lower than the national average. Looking at the manufacturing industry alone, the 1996 average net monthly salary of Konin Province (696.06 PLN) is nearly the same as the national average (699.88 PLN). Following the industry sector, the agriculture sector shows the second highest level. The reason for this is that the three forestry-related enterprises in the Province offer high salaries. It is not that the salaries and wages of agricultural workers are generally high. Rather, they are estimated to be low, since the total income of farmers is among the lowest of all sectors. All that has been mentioned above indicates that the relatively high salary level of Konin Province is due largely to high salaries in the mining and energy industries.

Table 3.2-5 NET MONTHLY SALARY BY SECTOR

Sectors	Ave. Monthly Net Salary (PLN.)		
	Konin	Poland	June of 1997
Agriculture, Livestock & Forestry	858.23		1,282.11
Industry	926.80	788.72	1,209.00
of which, Manufacturing	696.06	699.88	812.32
Construction	618.82	655.97	762.61
Trade & Repair	553.29		663.90
Hotel & Restaurants	457.53	522.19	518.48
Transport, Storage & Communication	656.24	747.55	734.46
Real estate and Business activities	696.44		780.53
Total Average	834.25	710.22	1,064.50

Source: Statistics Office of Konin

To sum up, it may be said that in terms of corporate income, value added, and personal income, the industry sector accounts for a predominant share, and the mining and energy sub-sectors play an especially important role in the Province's economy, while agriculture holds more than 40% of the labor population and commerce and repair occupies more than 40% of the total number of economic units.

3.2.2 Economic Relations with Neighboring Provinces

Geographically, Konin Province is surrounded by seven other provinces as shown in Fig. 3.2-4. Table 3.2-6 compares the major economic indices of Konin Province and the seven neighboring provinces. Of those provinces, Poznan, Bydgoszcz, and Lodz each have an economic structure in which the

industry sector is predominant in terms of both gross output and total employment. In Poland, they are big industrial provinces next only to Katowice and Warsawa. Therefore, Konin Province, the industrial foundation of which has yet to be consolidated, is extremely dependent on those three provinces for the supply of industrial parts, intermediate goods, materials, etc.

On the other hand, Plock, Sieradz, and so on, which are agricultural provinces engaged mainly in stock-farming, are similar in economic structure to Konin Province. Though the Province has some economic connections with those provinces in the field of food processing based on agriculture, commerce, or physical distribution, it may be said that economic relations are not as strong as those with the above three provinces.

Among the seven neighboring provinces, Poznan is the one with which Konin Province has the strongest relationships not only in historical and cultural aspects but also in economic and administrative aspects. Originally, Poznan flourished as the center of the region from which Poland rose. For some time in the past, Konin was included in Poznan from the administrative viewpoint and grew together with Poznan as one province. Even during that period, Poznan remained the center of activities. As a result, Poznan came to establish an advantageous position over Konin in every respect. Even today, many of the people of Konin Province often visit Poznan for economic, educational, or cultural purposes. Thus, it may be said that there are special relationships between Poznan and Konin.

In terms of the economy, Poznan is positioned as the region's largest commercial city having a population of 1,350,000. This does not mean that the commerce sector of Poznan is big. It means that Poznan's commerce flourishes on its industrial foundation. For example, looking at statistics about the value added by sector in Poznan, the commerce sector accounts for less than 10% of the total value added, whereas the industry sector has a share as large as about 70%. Poznan is also recognized as a city of international fairs. Many events in the Poznan exhibition center have been a fixture in Central Europe since the 1930s. In recent years, Poznan's exhibition center has attracted almost 15,000 exhibitors and more than two million visitors every year.

The number of manufacturing enterprises registered in Poznan Province reaches some 20,000, nearly 10 times the number for Konin Province. As in Konin, small enterprises account for about 98% of all the manufacturing enterprises in Poznan. Characteristically, the types of large enterprises are very diverse--automobile assembly, machinery, glass, chemicals, fertilizer, beer, etc. Therefore, there are many small and medium-scale enterprises which manufacture parts and intermediate goods for large enterprises. Thus, it may be said that a solid industrial structure is taking shape in Poznan. The total number of foreign-affiliated enterprises registered in Poznan exceeds 1,300 (again about 10 times the number for Konin). Those foreign-based firms, including Matsushita Battery Co., Ltd. of Japan, contribute much to the industrial development of Poznan.

In promoting the industry of Konin Province in the future, it is extremely important to position Poznan Province not only as a big market for goods but also as a key place for interchange of personnel and information. In particular, it is an important task for the industry of Konin Province to consider how and in what fields Konin's industrial enterprises can cooperate effectively with their counterparts in Poznan.

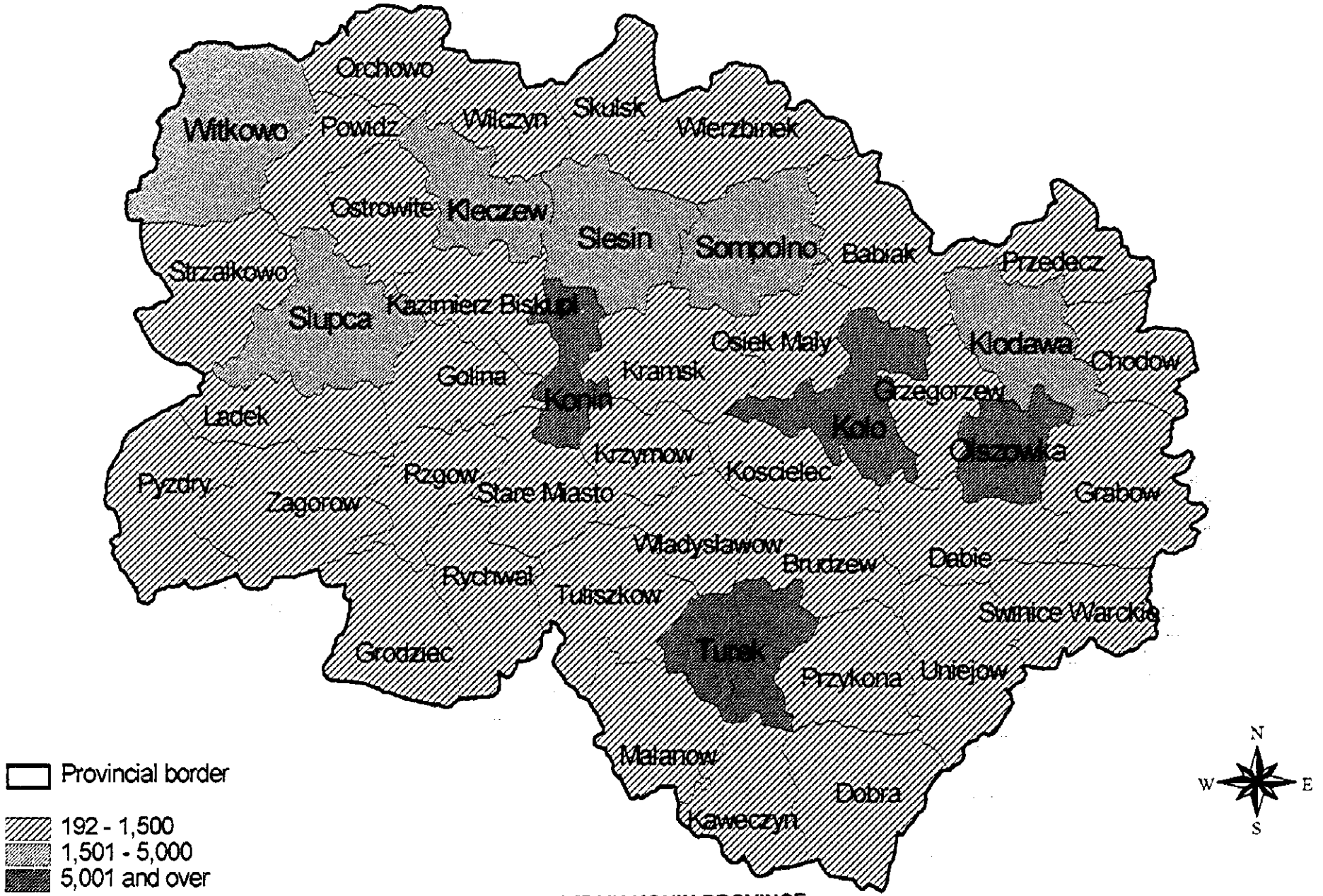
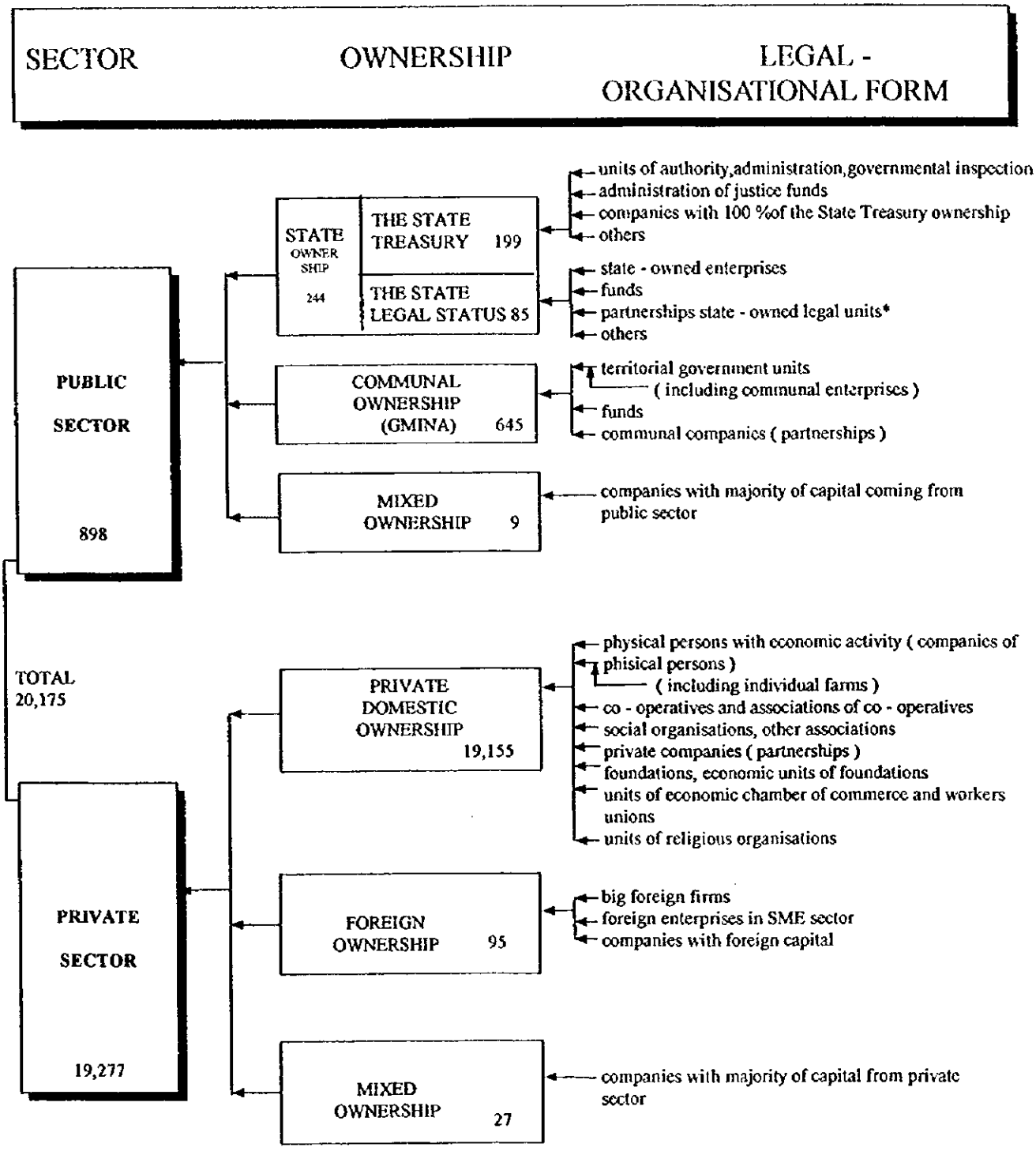


Figure 3.2-1 LABOR DENSITY IN KONIN PROVINCE

Figure 3.2-1 LABOR DENSITY IN KONIN PROVINCE

Figure 3.2-2 OWNERSHIP OF ECONOMIC UNITS IN KONIN



* shareholders are state - owned authorities (companies)

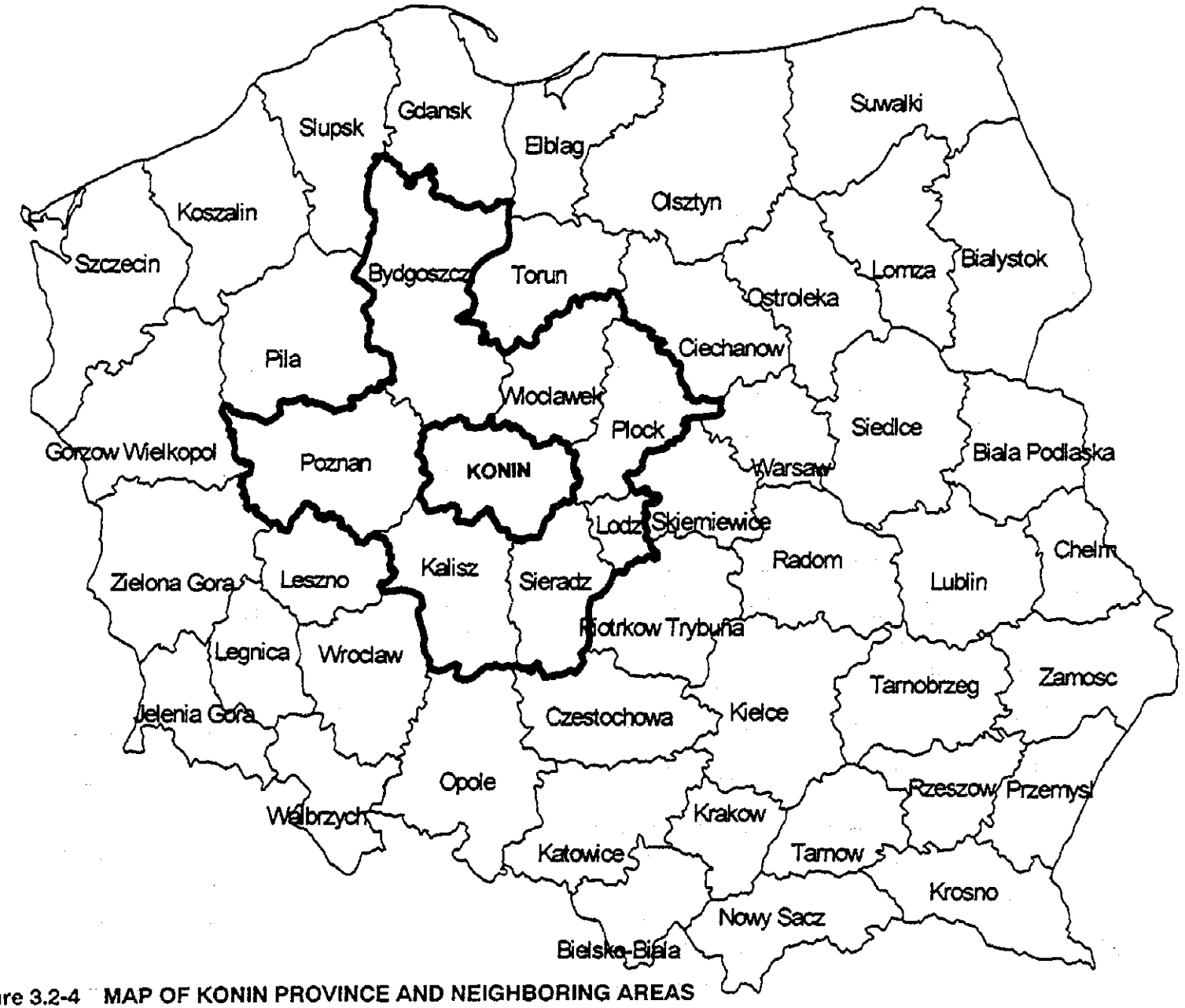


Figure 3.2-4 MAP OF KONIN PROVINCE AND NEIGHBORING AREAS

Table 3.2-6 ECONOMIC DATA OF NEIGHBORING PROVINCES OF KONIN

	POZNAN	BYDGOSZELZ	WLOCLAWEK	PLOCK	LODZ	SIERADZ	KALISZ	KONIN
Total area (Km2)	8,151	10,349	4,402	5,117	1,523	4,869	6,512	5,139
Total population (thous.)	1354	1132	435	522	1116	413	722	480
Employment by Sectors								
Total	538,412	411,362	159,153	215,500	405,120	169,425	294,388	198,400
Agriculture	14.4%	21.8%	40.3%	43.7%	5.8%	49.9%	34.3%	45.0%
Industry	30.3%	28.3%	19.3%	20.4%	36.3%	18.8%	27.1%	21.4%
Construction	6.6%	6.1%	3.2%	6.2%	4.9%	2.6%	4.1%	4.5%
Trade &. services	15.0%	14.8%	11.8%	7.7%	16.1%	7.0%	12.0%	9.4%
Transport &. communi.	6.1%	6.3%	3.6%	4.5%	5.4%	3.8%	4.8%	3.6%
Others	27.6%	22.7%	21.8%	17.5%	31.5%	17.9%	17.6%	16.2%
Unemployment rate (%)	7.7%	18.0%	22.6%	18.2%	18.1%	15.2%	16.1%	18.0%
Av. salaries (gross. zl/m)	668.6	634.4	586.4	720.6	630.9	572.6	577.0	724.4

Note : Data based on 1996's figures.
Source : ROCZNIK STATYSTYCZNY WOJEWODZTW 1996