

8 Process of Mutual Understanding

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8.1 Company Management Diagnosis and General

1) Continuous Dialog with Mielec Engine Co.'s Top Management

About every other day during the period of the study the company president devoted about an hour and a half in the morning upon arriving at the company to discussion with the head and deputy head of the study team. Other members of the team also participated depending on the topics discussed. For the first 3 weeks of the first part of the local study all we did was listen. The company president told us how he had been a champion of progressive thinking regarding restructuring since the company was established by split-off from its parent company, and it is clear that that was in fact the case. He first gave a detailed account of the company's efforts and achievements in restructuring by its efforts from the stage of preparations for the split-off, and he said that he intended to use that as a basis for leading the company further along the road to restructuring with our help. Besides that, he talked mostly about the market and sales, a field into which the company is putting the most effort.

2) The Company President's Reaction and Response to the Study Team's Suggestions Concerning Restructuring

On September 10, 1996, the study team held a reporting session attended by all counterparts and the company president, who arranged for one representative each of the company's two labor unions to attend as well in order to see how they would react. The labor unions understood the study team's policy concerning restructuring and the intent of the line improvement teams and assumed a positive attitude in that regard, and the improvement activities received the endorsement of the whole company. That was a decisive day for the study. Because of that at the meeting with the company president the next morning we requested preparation of medium- and long-term restructuring plans and also strongly recommended establishment of a restructuring promotional committee consisting of top management figures in the company. Up to then we had only listened to the other side's views, but then we decided to change to an active stance because of fears that otherwise we might not have enough time before the end of the study to present our suggestions and proposals and have them implemented.

Since the study team had already heard detailed explanations of why the company was not able to have mid- and long-term planning, the study team was not surprised that they were not a little disconcerted at that. Anyway, the company president's reaction was to state the opinion that such activities might be useful in educational terms, and since he had already made it clear that the main emphasis in introduction of ISO 9001 was on the educational effect, we were able to perceive how much importance he attached to changing attitudes in the company for the sake of the restructuring that he was aiming at.

Just before termination of the first field survey, the first meeting of the restructuring committee was held, at which the study team explained the results of simulations, but at that stage the study team received the impression that they were not yet aware of the urgency of the matter.

Later, in the second field survey, that committee met three times, and its attitude had changed to a positive posture. The reason for the change in attitude appears to have been abrupt change to severer conditions in the environment which the company finds itself in.

(3) The Company President's Leadership

At the last meeting for reporting to the company and the steering committee on the first field survey the company president clearly stated that he intended to have all of the study team's proposals implemented, and when we went back for the second field study, the study team learned that they had, in fact, been implemented. Furthermore, changes had been made in company organization and in personnel assignments, with promotion of executives with a positive attitude toward restructuring as proposed by the study team.

Undertakings provided by the Company were almost perfect. One can even say that the favorable attitude of the company's top management was the biggest single factor in the success of the study.

(4) Communication at Lunch time

Team members were provided lunch in the plant restaurant for visitors, the production department chief usually serving as the host. By the second field survey he had been promoted to vice president of the company. Every time team members had lunch with him, he asked each of members to describe study activities that day and what impressions were. That was his idea, but the team, too, appreciated the chance that it gave to exchange information on a daily basis.

It is important on occasions such as that for the consultant to show confidence and provide concrete answers to questions in order to win trust. Also, it was necessary, when talking with Polish people, to bear in mind that Europeans in general put great stock in logic and rationality and are proud as individuals.

Another thing that the team noticed is that they do not take many notes. It is not that they do not listen seriously, but only that, apparently, their training has taught them to take notes only of the most important points. Although they have good documentation of the work itself, the team did not see any minutes of meetings, memoranda for passing on and other such minor documents.

8.2 Improvements on the Lines

The following is an account of the steps followed for technology transfer to those concerned as a basis for ensuring success of efforts to make improvements on the lines.

1. Proposal to the counter-part to select two model lines, organize an improvement team for each of them and implement, on that basis, joint activities with the study team for improvement of production.
2. Explaining to the counter-part and the company officials in charge why the proposal of 1. above should be implemented, discussion of and advice concerning improvement team makeup and other details and obtaining of their approval.
3. Time study by study team for three days using their own stop watches, during which time we got to be on familiar terms with each of the workers on the line. Needless to say, we dressed in the same as them, without suits or ties.
4. Requesting of the company president and all of the top officials of the company at the session for our interim reporting to the company president that the members of the two improvement teams be selected as soon as possible for implementation of the proposal of 1. above.
5. Explanation, using pertinent information materials, of the purpose of the improvement activities to the total of eight members of the two teams plus one labor union official in terms that they could understand.
6. Discussion with the improvement team members concerning selection of improvement themes and decision on the themes on the basis of mutual agreement.
7. Heated debate in our hotel lobby with the leader of one of the improvement teams concerning reduction of number of cylinder blocks on each subline each day to ten, which resulted in his acceptance and promise to start such activity.
8. Implementation of time study by production line group leader using his own watch.
9. Two-three appearances on the line each day by the study team member, shaking hands with and conversing with all of the workers. Checking of the equipment by him for possible trouble using his "five senses" and pointing out to the workers the trouble that he found (they were kind enough to bring him a vest to wipe his hands with when they noticed that he had dirtied them in the check).

10. Presentation of Mielec Engine work cap to study team member, who made a point of wearing it whenever he visited the line after that.
11. Wearing by study team member of his favorite gaiters that he had brought with him from Japan when appearing on the line on the days of regular shutdown for preventive repairs, which was a matter of interest to everyone on the line and prompted them to start up conversations with him that resulted in more and more friends.
12. Transfer of skills to Mielec Engine inspector in three days of checking with them on the basis of the "five senses."

On the basis of the above experiences it is possible to summarize the reasons for the success of the improvement activities on the lines in the following six points:

- (1) Always relating to the workers on the line in a gentlemanly manner, considering the problems together with them and implementing joint action with them from a common standpoint.
- (2) The appropriateness of the proposals made, most of which got good results, thereby enhancing trust in the study team on the part of the other side.
- (3) The fact that they were given an overall picture (blueprint) of what we intended to do and what kind of technology transfer we were aiming at, with setting of goals and indication of where they presently stood so that they could understand as they made headway.
- (4) The fact that the study team members actively sought out personal contacts with all of the workers at other times beside official meetings, thereby making a lot of friends.
- (5) Announcing the activities of the improvement team members whenever possible and openly bestowing praise as deserved.
- (6) Acting as forward and friendly as possible at parties and other social events.

The success of technology transfer depends on getting the other side to fully understand and accept as early as possible what the two sides will do and how they will do it and on whether or not it is possible to make an arrangement that is conducive to joint implementation with mutual cooperation and sharing of the same goals.

In cases of technology transfer involving persons of different cultures and only short periods in which to achieve results, it is extremely important that the side that wishes to impart the technology be capable of giving a good impression as regards their characters as human beings and also be able to select technical know-how that is easy to put across to the other side as well as knowing how to do it in a timely fashion.

If those conditions are met, most technology transfer undertakings ought to be crowned with success.

8.3 Communication

How to minimize the communications gap due to the fact that we spoke different languages was an important consideration in our study activities at Mielec Engine. In the case of that company, only a few of the employees were able to speak English, and therefore we did not count on that. It was therefore necessary to engage the services of capable interpreters in the same number as the number of members of the study group. By detailed management of the daily work of the interpreters it was possible to keep them busy at all times. The interpreters were also asked to translate documents that we obtained and our presentation materials as well as economic and other pertinent information in the daily press.

There is not a very large number of capable interpreters between Japanese and Polish. Most of them majored in Japanese in college, and there are more women than men. They are specialized in the humanities but are also able to handle interpretation and translation in the field of science and engineering thanks to extra study and effort in that regard. In the case of interpreters between English and Polish, there are some who are very capable in the field of economics and business, and even in the case of interpreters between Japanese and Polish, some have a high level of English as well and have no trouble understanding materials in English.

For the present study a 200-page Japanese-and-English dictionary of specialized terms concerning motor vehicles and engines was specially prepared and proved to be a great help.

Needless to say, briefing of interpreters is very important, and we also made sure to have the same interpreter assigned to the same study team member throughout the study period.

Polish interpreters have a professional attitude and are very enthusiastic about their work as well as being proud of their country, particularly, no doubt, because of their high level of education. They are enthusiastic about their country's acquisition of foreign technology as if it were their own personal affair.

The inception report and the interim report that we submitted to Mielec Engine Co. were not completely translated to Polish in time. The person who undertook the task is a technician who had left the company. He is capable, but the volume (more than 200 pages) was too much for him to be able to complete in just one month. That being the case, a Polish translation of a digest of those two reports (about 20 pages) was made as material for the study team's presentations. That was the only document that we were able to furnish the other side in Polish. In that connection, one cannot overemphasize the importance of providing all pertinent documents in translation in studies such as this.

The most important interpreter of all to the study team was the Japanese national interpreter who constituted one of the members of the team, serving throughout the project period. He also made a big contribution in terms of translation work during the work in Japan concerning the study.

Part 2

Fact Finding Studies

9 Economic Situations in Poland



9 Economic Situations in Poland

9.1 Macroeconomic Conditions

9.1.1 Macroeconomic Policies of Economic Reforms

The Solidarity Government started in September 1989 had to face with serious shortage of goods, hyper-inflation, and critical balance of payment situation. In order to tackle with this situation, the Government introduced following policy measures:

- 1) Short-term measures of stabilizing macroeconomic situation and liberalization of economic activities, and
- 2) Structural changes of economy including ownership changes through privatization, reform of tax system, etc.

The main goal of reform was to curb inflation, chiefly through stringent fiscal and monetary policies based on the liquidation of subsidies, tax system reforms and the limitation of tax breaks. These measures were accompanied by the introduction of a realistic interest rate, the liberalization of foreign trade rules, and the introduction of an internal convertibility of the zloty.

While the reform of economic structure implemented from January 1990 was effective and successful to bring down the hyper-inflation and to improve the macroeconomic stability, it also brought serious stagnation to the economy of Poland. The inactive economic situation brought economywide unemployment problems. In the latter half of 1990, in order to recover losses in production, the government slightly relaxed the stabilization programs and took measures of increasing fiscal expenditure and easing monetary restraint including the following:

- 1) Relaxation of monetary restraint and searching for revitalization of economy keeping in mind of inflation,
- 2) Improvement of fiscal deficit,
- 3) Revitalization of state-owned enterprises and industries,
- 4) Trade policies to raise tariff rates in order to protect domestic industries, and
- 5) Introduction of a policy to protect agricultural production.

9.1.2 GDP Growth Rates

The economic activities responded favourably to the government's policy changes and begun to recover from 1992. Real GDP growth rates have turned into positive since 1992. Particularly, since 1994, they were consecutively more than 5 % (5.2 % in 1994, 7.0 % in 1995 and 6.0 % (forecast) in 1996) and regained its pre-transformation level of production in 1989. It is considered to be possible to continue the GDP growth rate of more than 5 % after 1997, which depends on

whether Poland is successful to implement the privatization of state-owned enterprises and to attract foreign direct investments.

Table 9-1-1 Major Economic Indicators

Item	Unit	1989	1990	1991	1992	1993	1994	1995
Real GDP Growth	%	0.2	- 11.3	- 7.6	2.6	3.8	5.2	7.0
Industrial Output	%	- 1.8	- 20.6	- 12.8	2.9	5.4	6.8	10.2
Agricultural Output	%	0.5	- 2.2	- 1.6	- 12.8	1.5	- 9.3	13.0
Unemployment Rate	%	0.1	6.1	11.4	13.6	15.7	16.0	14.9
Population	mil	38.0	38.1	38.2	38.3	38.5	38.5	38.6
Consumer Prices	%	639.7	249.3	60.4	44.4	37.6	29.5	21.6
Real Wage Increase	%	n.a.	- 24.5	- 0.1	- 2.7	- 2.9	1.7	2.7
Budget Revenue	PLNbil	n.a.	35.90	21.09	31.28	45.90	62.99	83.50
Expenditure	PLNbil	n.a.	29.88	24.19	38.19	50.24	68.89	91.19
Balance	PLNbil	n.a.	6.02	- 3.10	- 6.91	- 4.34	- 5.90	- 7.69
Prime Rate of Lending	%	64.0	504.2	54.6	39.0	35.3	32.8	n.a.
BNP Refinance Rate	%	140.0	55.0	40.0	38.0	35.0	33.0	29.0
Export	\$ bil.	12.9	15.8	14.4	13.9	13.6	17.0	22.9
Import	\$ bil.	12.8	12.2	15.1	14.1	17.1	17.9	24.7
Trade Balance	\$ bil.	0.0	3.6	- 0.7	- 0.1	- 3.5	- 0.9	- 1.8
External Debt	\$ bil.	39.8	46.0	48.4	46.9	46.4	41.3	44.0
Foreign Reserve	\$ bil.	2.3	4.9	3.8	4.3	4.3	6.0	15.0

Source: GUS, IMF, IBRD, EBRD

9.1.3 The Rate of Inflation

While economic activities showed recovery, structural problems such as unemployment and inflation still remained excessively high until now. Although the rates of inflation in recent years are in the downward trend, retail prices of goods and services are still measuring high rates of 29.5 % in 1994, 21.6 % in 1995 and are forecasted to be 19 % in 1996 and 12 % in 1997.

The main determinants of inflation can be classified into several structural factors as following:

- 1) Banking sector's financing of budget deficit,
- 2) External liabilities,

- 3) Expansion of the Polish economy,
- 4) Demands from households,
- 5) Government-controlled prices,
- 6) Protection of domestic market, and
- 7) Increase in production costs.

Factors 1) through 4) are those of the demand-pull nature, while factors 5) through 7) are the supply side impulses.

9.1.4 Unemployment

Generally, the improvement of economic activities creates new job opportunities and has an advantageous influence on the labour market. In case of Poland, the impact of economic growth is rather mild. In 1995 average unemployment decreased by 209 thousand compared with 1994, the rate of which fell from 16.0 % to 14.9 %. However, this improvement took place against a background of stagnation in employment which rose by only 0.2 %. The fall in unemployment does not necessarily mean a proportionate increase in job opportunities. It can be estimated that there are growing number of discouraged workers who have been unable to find jobs for a long period of time and ceasing to register at employment offices. Although the unemployment rate hit its peak of 16.9 % in the middle of 1994 and, since then, is steadily coming down to 14.1 % as of July 1996, the unemployment problem is still very serious in Poland.

Another significant feature of Poland's unemployment problem is its geographical difference. Within the large cities such as Warszawa, Krakow, Poznan and Katowice, the unemployment rate is less than 10 % while in the area of deep economic depression such as northern provinces (voivodships) it measures more than 25 % of total labour active population.

9.1.5 Exchange Rate

During 1995, while domestic inflation was 21.9%, the NBP held the nominal exchange rate at a virtually unchanged level; i.e. the zloty depreciated by 3 % implying a real appreciation of the zloty of around 15 %. However, in the first half of 1996, the zloty depreciated by 8 % over January-June alongside domestic inflation of 11.4 %, generating a real appreciation of the zloty of about 3 %. This means that the exchange rate has been kept in the higher side. Nevertheless, it is necessary to take into account other policy issues such as to keep down the inflation rate, etc. the present level of the real appreciation of the zloty would be in a acceptable range.

9.2 Privatization

9.2.1 Privatization to Date

The economic reforms initiated in 1990 have radically changed the internal and external conditions in which Polish businesses operate. The transformation process has led to profound changes in the rules governing state enterprise functioning, and it has also changed the institutional environment and decision-making processes within enterprises. The transition to a market economy called for the creation of a new economic structure whose components would operate according to market rules. The introduction of a market system forces business organizations to redefine their goals and methods. Enterprises have no other options but change their behavior because adaptation to market economic requirements is a precondition for survival in the new system. The failure of adjustment to new system eventually eliminates them from the market.

State-owned enterprises have been hardest hit by systematic transformation. These enterprises, accustomed to market shortages and soft-loan financing available to them for decades in the past, suddenly found themselves in a completely different situation. The transitional period is characterized by the co-existence of structures and behavior patterns typical of both the traditional management system of centrally-controlled system and the market-oriented system. This means the co-existence of businesses based on different rules, which is largely a feature of the transitional period. The changes which have taken place in the functioning of both state-owned enterprises and commercialized companies reveal a varying degree of adjustment to the changing surroundings.

During the initial period of transformation, business enterprises, including both private and state-owned enterprises, were primarily oriented toward short-term gains and survival. This primarily resulted from the lack of funds and reluctance to seek bank loans to finance development projects because of high interest rates. Banks are also interested in limiting risk and preferred to invest in state securities in order to guarantee stable short-term profits.

The basic weaknesses or obstacles to state enterprise development include the following:

- 1) The privatization process seems to be behind the schedule than the original privatization program of government prospected. This can not be interpreted that the privatization has slowed down but it is a time-consuming process, involves various uncertainties in the course of implementation process, and requires longer period to complete the necessary steps of obtaining consents from concerned parties.

- 2) Ownership changes have been mostly biased towards viable industries and enterprises and has so far failed to cover the "sunset sectors" which most require the restructuring, transfer of ownership, and a well-defined corporate governance.
- 3) The implementation of government's privatization program has encountered resistance of trade unions in some cases. The slowing-down of the pace of privatization is in line with this problem.

Although there are many problems and difficulties to implement the privatization of state-owned enterprises as is mentioned above, the overall balance of the last six years of ownership changes in Poland can be assessed positive. It is likely that the further privatization process will come across with growing and stronger political, social and economic difficulties since what remains to be privatized are in a poorer financial position and are large and underperforming SOEs in strategic sectors, such as mining, metallurgy and power generation. At the same time, the ongoing mass privatization program will open up a new momentum to the entire privatization process.

9.2.2 Present Situation of Economic Transformation

At the initial situation of the economic transformation in Poland, there was a heavy burden of the negative legacy of the former centrally-planned economy. The people's attitudes, values, standards and rules of behavior are deeply fostered and entrenched during the years of earlier system. The total lack of market institutions aggravated the situation.

Under such situation, major challenges to the government in the transition process are; 1) the redefinition and reconstruction of the activities of the state, and 2) the change of attitude of people toward the transformation of economy and society. The former involves a shift from state control of the whole economic system towards a well-functioning market economy, while the latter requires a persevering persuasion and the leadership of the government towards transition. From this viewpoint the government's contribution to a economic reform has generally been positive if, under certain circumstances, it is genuinely committed to the reforms. The subsequent governments' policies of deregulation and trade liberalization have more or less been continuous, which made the systematic changes positive.

If the newly-established market economy is to work well, the state must provide for law and order, macroeconomic stability, and the basic physical and institutional infrastructure for a market. At the same time, some basic partnerships between the state and the private sector are essential for a market economy. The state must ensure for the functioning of financial and capital markets.

When a member of the Study Team visited international and bilateral aid agencies in the middle of November 1996 for the exchange of opinions on the performance of Polish economic reforms, the European Bank for Reconstruction and Development (EBRD) just published an evaluation report of economic transition in central and eastern Europe and the former Soviet Union, which is titled "Transition Report 1996", which is found very relevant to the analysis of the subject under consideration. The report summarizes the results of transition to date. The following Table 9-2-1 is mainly based on the Report as well as results of discussion made at the EBRD and other aid agencies, which have been actively engaged in the economic reform of Poland and other central and eastern European countries.

Table 9-2-1 The Present Situation of Poland's Transition Toward Market-Oriented Economy

Enterprises	
Size of private sector	<ul style="list-style-type: none"> - The private sector shares 55% of GDP (1995) - The number of private companies reached 2.2 million (June 1995)
Large-scale privatization	<ul style="list-style-type: none"> - Three main tracks for privatization; <ol style="list-style-type: none"> 1) liquidation (sale or leasing of enterprise assets) 2) commercialization (conversion into a treasury-owned joint-stock company) 3) the National Investment Funds(NIF) program - 2,624 out of 8,853 state-owned enterprises in 1990 privatized through 1), 248 sold, 1,049 through 2), 512 in the NIF program - 1996 target of Privatization Guidelines call for 90 sales and commercialization, which is unlikely to be met
Small-scale privatization	<ul style="list-style-type: none"> - The retail, wholesale and construction enterprises of 20,000 privatized by local governments
Enterprise restructuring	<ul style="list-style-type: none"> - State subsidies were substantially reduced from 12.9% of GDP (1989) to 3.2% (1992), and to 2% now - Soft credits through banking system largely eliminated - A major restructuring challenge is the coal sector, production to be dropped 18%, employment to be reduced 30% according to a draft restructuring plan - Gdansk shipyard bankrupted (June 1996)

Markets and Trade

Price liberalization

- Most prices liberalized in 1990-91
- Centrally-administered prices still remains for district heating, electricity, gas, medicines, spirits, rents in local authority housing
- Distorted coal prices by the operation of loss-making mines
- Intervention by Agency for Agricultural Markets for farm products

Competition

- 1990 Law on Monopolistic Practice to prevent anti-competitive practices; to foster competition, to safeguard consumer interests
- Anti Monopoly Office monitors enterprises sharing over 80%

Trade liberalization

- Most tariff and non-tariff barriers suspended or reduced, and the state monopoly of trade ended (1990)
- Average tariffs declined from 18.3% (1989) to 5.5% (1991)
- Suspended tariffs reimposed in late 1991 after a significant trade balance deterioration, average tariff rate returned to prereform level
- 6% import surcharge imposed (1993)
- Multilateral trade agreement with the EU, EFTA and CBFTA signed (1992-93)
- Quantitative restrictions on agricultural imports converted into tariffs in line with GATT and EU commitments (May 1995)
- Poland became a member of WTO (July 1995)
- In 1996, average tariff rate for industrial products 5.6% and agricultural goods 20.2%, import surcharge to be eliminated by the end of the year

Currency convertibility

- Full current account convertibility of zloty (Dec 1994)
- Poland accepted obligations of Article VIII of IMF's Articles of Agreement
- Zloty to fluctuate within a band of +/- 7% around the central rate against a basket of five currencies, center of the band adjusted daily
- The central rate revalued to 6% (Dec 1995)

Financial Institutions

Banking reform

- The two tiers banking system devised by the Banking Law and the NBP Act (1989)
- The commercial banking operations and branches of the nine regional departments of NBP were transferred into independent commercial banks
- New private banks licensed (1991-92)
- Slow pace of bank privatization with only 4 of 9 commercial banks privatized by mid-1996
- The Law on the Banking Deposit Guarantee Fund came into force (Feb 1995)
- Weak performance of banking system with total domestic credit to GDP ratio 35%, of which one-third to the private sector (end of 1995), 50% of credit being short-term

Non-bank finances

- The 1990 Insurance Law and its 1995 Amendment provide for the regulations of insurance companies
- The insurance sector dominated by state-owned companies
- Pension reforms is a present key issue

Security markets

- The Warsaw Stock Exchange reopened (1991), the Securities Commission charged with supervisory role
- WSE expanded steadily with 53 listed companies and a total market capitalization of US\$4.3 billion (3.8% of GDP) at the end of 1995
- 12 companies of total US\$150million capitalization listed in the Exchange's parallel market
- A substantial fillip with listing of NIFs on the WSE in early 1997 expected

Fiscal Reforms

Taxation

- A substantial overhaul of tax system took place 1989-96:
 - 1) An uniform 40% corporate profits tax (1989)
 - 2) An unemployment insurance scheme financed by a 2% payroll tax (1990)
 - 3) A personal income tax of 20, 30 and 40% (1992) and raised 21, 33 and 45% (1994)

- 4) A value added tax of 22, 7 and 0% (1993)
- 5) A payroll tax to fund the social security was raised in two steps from 38% (1989) to 45% (1992), and 3% for the Labour Fund (1993)
- Government recognizes needs for gradual cuts in the personal and the corporate tax rates
- Although its high taxes, the labour cost still relatively low in Poland, half as much as Portugal
- Drastic change in the composition of government revenues, levies on enterprises accounted 10% (43% in 1989) and VAT and personal income tax accounted 68% (1995)

Social security

- Outlays from the Social Insurance Fund and the Labour Fund increased rapidly in recent years, which amounted 15% of GDP (1995)
- Pensions and benefits indexed to wages, transfers from the state budget to these funds increased sharply
- The government considers comprehensive pension reform which are prerequisite for fiscal reforms

Source: Data from EBRD, "Transition Report 1996"

9.3 Trade and Investment

9.3.1 Foreign Trade

Since the start of economic transformation in Poland in 1990, geographical pattern of Poland's trade has changed a lot. The share of the EU in total Polish exports went up to 80.5 % in 1995. The share of the Central and East European countries kept decreasing in 1991 - 1993 and this trend reversed in 1994. The increasing trend continued in 1995 and the combined share of CEFTA (Central European Free Trade Association) and other East European countries recorded 16.9 % in 1995. Imports from the EU has also increased in line with the rapid increase of foreign direct investment from the EU, particularly in the period 1993 - 1995.

In the next few years prospects for the foreign trade of Poland depend on the possibility whether Polish enterprises would be able to adjust to increasing foreign competition in and out of Polish market. Under the liberalization schedule of European Agreement, Poland already started to lift its import duties and other trade barriers. Increase of foreign competition will stimulate and force the domestic producers to manage and operate their businesses more efficiently and to produce their products of higher quality. The need of Polish enterprises to adjust to a new competitive situation seems to be the most challenging issue. It is also a challenge for the Polish government: how to diminish the unavoidable adverse effects of tough competition from European producers?

Following a drastic decline in 1990 - 91, Polish trade with Russia and other post-soviet countries started to recover in 1994. Since they are still in their unstable economic situation and involve high payment risk, they are considered peripheral or secondary markets compared with the fast-growing West European and domestic markets. However, potential demand in those countries is substantial in medium- and long-term perspectives and the market is not yet cultivated by European competitors. The CEFTA is to establish a free trade area by the year 2001 in Central Europe covering Poland, the Czech Republic, Slovakia, Hungary and Slovenia. As from 1997, industrial products will be freely traded, with certain exceptions, in the area. It will have a substantial impact on trade expansion in the area. Some multinational enterprises have already started to establish large production facilities and to produce goods aiming to capture the custom duties-free benefits of expanded markets.

Table 9-3-1 Foreign Trade by Major Country Groups

Country Group	1991	1992	1993	1994	1995
Total Export (\$ mil)	14,903	13,187	14,143	17,240	23,189
(previous year = 100.0)	(-)	(88.5)	(107.2)	(121.9)	(134.5)
European Union	8,285	7,632	8,951	10,805	16,357
Other Developed Countries	2,739	1,843	1,679	2,187	1,166
Developing Countries	1,373	1,686	1,645	1,750	1,735
CEFTA	798	674	683	823	1,239
Other East European Countries	1,708	1,352	1,186	1,676	2,692
Total Export (%)	100.0	100.0	100.0	100.0	100.0
European Union	55.6	57.9	63.3	62.7	70.5
Other Developed Countries	18.3	14.0	11.9	12.7	5.0
Developing Countries	9.2	12.8	11.6	10.2	7.5
CEFTA	5.4	5.1	4.8	4.8	5.3
Other East European Countries	11.5	10.2	8.4	9.7	11.6
Total Import (\$ mil)	15,757	15,913	18,834	21,569	29,070
(previous year = 100.0)	(-)	(101.0)	(118.4)	(114.5)	(134.8)
European Union	7,836	8,466	10,784	12,403	18,791
Other Developed Countries	3,010	3,070	3,587	3,809	2,761
Developing Countries	1,948	1,808	1,932	2,295	3,047
CEFTA	655	654	677	919	1,622
Other East European Countries	2,308	1,935	1,854	2,144	2,849
Total Import (%)	100.0	100.0	100.0	100.0	100.0
European Union	49.7	53.1	57.3	57.5	64.6
Other Developed Countries	19.1	19.2	19.0	17.7	9.5
Developing Countries	12.4	11.4	10.3	10.6	10.5
CEFTA	4.2	4.1	3.6	4.3	5.6
Other East European Countries	14.6	12.2	9.8	9.9	9.8

Source: Polish Foreign Trade in 1993, Foreign Trade Research Institute
Poland International Economic Report 1995/96, Warsaw School of Economics

9.3.2 Foreign Direct Investment

According to the data by Polish Agency for Foreign Investment, foreign direct investment in Poland amounted to US\$ 2.1 billion in 1995 and it has already reached to the figure in the first half of 1996, as compared to US\$ 4.3 billion over the whole 1988 - 94 period. This is the reflection of the recent intensification of merger and acquisition by European and American large enterprises. By the end of 1996 the inflow of foreign capital may reach to US\$ 4 billion. In order to attract more foreign direct investment, changes in regulations are currently under way including rules of land acquisition by foreign companies, which will be eased. Major factors affecting the foreign investors may include the following:

- 1) Poland's favourable macroeconomic conditions and government's stable management of economies have further encouraged foreign investors to invest in Poland,
- 2) The Ministry of Ownership Changes has recently put an increased number of large state-owned enterprises for sale, to which foreign investors responded positively, and
- 3) Many big foreign enterprises entered the Polish market in the early 90's through strategic alliances with domestic partners are now changing their strategies and buying out their Polish partners, who in many cases lack of funds for further investments.

Other factors in the following have also favourably affected:

- 1) Positive market environment
 - good strategic location
 - large market size
 - low production and labour costs
 - a pool of qualified personnel
- 2) Favourable government policies
 - government's positive policies transformation to free market-oriented economy
 - positive policies towards privatization
 - tax incentives for foreign direct investments
- 3) Favourable social condition
 - lack of internal ethnic problems

9.4 Industrial Sector

Polish industry is undergoing a historically-important process of organizational and technological transformation. Comprehensive restructuring programs are being implemented for various sectors of industry. During the implementation of all-out reform process, the share of industry in Poland's GDP has been gradually decreasing over the last few years since the start of economic reform in 1989. At the same time, a significant improvement in efficiency and product quality has been realized. These trends resulted from the dynamic growth of services and trade as well as structural changes of the sector from heavy to consumer industry.

Industrial output in 1994 registered 12.1 % higher than that in the previous year. In 1995 industrial output is 9.4 % higher compared to that of a year earlier. According to the data prepared by the Central Office of Planning, industrial production in the first seven months of 1996 increased by about 9 % compared with the same months of 1995, mainly as a result of growing domestic demand for investment goods and consumer goods.

Throughout the post-war period the electrical and mechanical engineering sector dominated Polish industry in terms of its share of total industry sales. The food processing industry and fuel energy industry have also played an important role. Now, structural shifts are taking place: the engineering sector's share in sales is declining, while fuel energy sector's share has been increasing which reflects relative price adjustments as energy prices have risen rapidly. Other sectors have experienced modest progress as far as the shares of total industry sales is concerned. These include food, wood and paper, chemicals. Those sectors that have borne the burden of adjustment in the transitional period include metallurgy and light industry, which saw their share in sales fall.

The adjustments which are now under way in Polish industry point to a future structure in which the private sector will increasingly important. The food-processing sector, wood and paper sector can be expected to do well. A critical issue for Poland is how the vast engineering sector will be restructured. Presently, the sector is drawing considerable investments where Western firms are setting the pace and direction of future patterns of specialization. There are problem areas within the engineering: the defence, aircraft and agricultural machinery industries are among the typical troubled sectors. Among the mining and its semi-processing industries, coal and steel industries still awaits the considerable restructuring, while copper and sulfur industries, the latter of which is the basis for chemical industry processing, will have minor problems.

Table 9-4-1 Production of Selected Polish Industries

Sector	Units	1993	1994	1995
Hard Coal	mln tons	130	134	135.2
Hard Coal Coke	mln tons	10.3	11.5	11.6
Refined Oil	mln tons	13.4	13.4	134.4
Electric Energy	GWH	133,702	134,831	138,990
Crude Steel	mln tons	9.9	11.1	11.9
Electrolytic Copper	ths tons	404	405	407
Passenger Cars	ths.	334	338	366
Farm Tractors	ths.	11.5	15.3	21.5
Ocean-going Vessels	ths DWT	613	538	603
Colour TV sets	ths tons	841	881	1,084
Sulfur	ths tons	1,893	2,163	2,419
Plastics	ths tons	671	651	715
Pharmaceuticals	pr. year = 100	107.7	106.9	100.1
Cement	mln tons	12.2	13.8	13.9
Furniture	pr. year = 100	112.2	119.9	119.5
Cotton Fabrics	ths km	229	256	219
Sugar	ths tons	1,982	1,383	1,528
Meat and Fats	ths tons	1,093	1,019	1,232

Source: Data from Polish Agency for Foreign Investment (PAIZ), Sep 1996

9.5 Industrial Policy

9.5.1 Industrial Policy Objectives

In the process of radical economic reforms started in 1990, a leader of radical reform is reported to have said that "the best industrial policy is no industrial policy". However, a recognition of the huge economic and social cost of transformation needed for a transition to a market economy inspired a rethinking of the then economic reform process. The Ministry of Industry and Trade began to draft the "Industrial Policy Objectives" in the middle of 1991 and officially approved by the cabinet in September 1993.

The Polish industrial policy consists of:

- (1) The issue-oriented approach which deals with problems common to all sectors such as the ownership and restructuring of industries, the development of small and medium-sized enterprises, export promotion, technological development, environmental protection, measures to facilitate employment adjustment, and regional development policy for specific depressed regions, and
- (2) The sectoral approach which is targeted primarily at individual sector including policies for the defense, fuels and energy, iron and steel, cement, shipbuilding, pulp and paper, chemical, petrochemical, electronics, automotive, packaging, pharmaceutical, agriculture and food processing machinery, environmental protection devices production, rolling stock, construction materials, and the light industries.

The policies in the "Industrial Policy Objectives" are based on the strategy of reducing ineffective and excess capacity and, while addressing common problems under the issue-oriented approach, the sectoral approach is applied to address issues peculiar to each sector of industry. The government has shown its determination to pursue realistic measures of addressing actual economic conditions under the difficult transition process to a market economy and, therefore, the adoption of the industrial policy approaches in Poland should deserve high credit. However, some problems can be pointed out in the "Industrial Policy Objective" as follows:

- 1) The financial scheme to support the industrial policies have yet to bring about the intended results. Although the Industrial Development Bank and the Export Development Bank exist they are acting somewhat similar to commercial banks and fail to play their designed roles as government financial institutions for supporting industrial development and export-promoting finances.
- 2) It lacks of a clear emphasis on the strengthening of international competitiveness and export promotion, which seem to be the most important issues but are listed in the "Industrial Policy Objectives" as only one issue of many areas of industrial policies.

- 3) At the time the "Industrial Policy Objectives" was presented, Ministries of Industry and Trade and External Economic Relations were independent and different Ministries. It required a single and powerful Ministry to implement the industrial policy since the policy measures for industrial development and trade promotion are closely linked together. (This point is going to be resolved in near future by the creation of the Ministry of Economy.)

9.5.2 Industrial Policy Program for 1995 - 1997

After two years of the announcement of "Industrial Policy Objectives", Ministry of Industry and Trade presented a document "Industrial Policy Objectives for 1995-1997: International Competitiveness of Polish Industry", which was adopted by the council of Ministers on May 1995. This document clarifies one of above-mentioned problems, 2) of 2-6-2. In order to achieve final goal of "establishing competitiveness of Polish economy", three important policy directions are selected. They are:

- 1) Policy of export promotion which indicates a high rate of export expansion as the primary driving force of Poland's economic development,
- 2) Technology policy which aims increased innovation and improved competitiveness of industry, and
- 3) Policy of structural changes which calls for successful adjustments of a market-oriented economy, through adoption of appropriate legal and organizational solutions as well as economic and program decisions for changing its ownership, financial and technical structure.

Objective of each policy is clearly stated. Implementation procedure of each policy is also provided with responsible person and deadline of actions. The results and effects of each actions are yet to be known.

9.6 Science and Technology Development Policy

The Polish economy and industrial technology is by no means underdeveloped. Poland has high cultural and educational tradition and abundant technical human resources. However, the country's economy was fully dependent on the COMECON under centrally-planned system for forty years. During this period Poland tried hard to industrialize and Poland's industrialization was successful, but its technological innovation process was isolated from that of developed economies and the Newly Industrializing Economies (NIEs). Although Poland has some advanced industries, most industries apparently fall behind the same industries in other countries. Now, there exist a clear technological gap between Poland and those economies.

The heaviest task for Poland is, since the shift to a market economy, that these less-advanced industries have to compete in the advanced markets. Therefore, strengthening international competitiveness by filling a technological gap is one of the most important and urgent challenges for Poland.

The issue is how to improve the existing less-advanced technological standards.

The government's "Industrial Policy Program for 1995 - 1997" prepared by Ministry of Industry and Trade deals this problem in "Section II - Technology Policy Measures Aimed at Improvement of international Competitiveness of Industry". The tasks proposed for implementation under the Program specify following four areas:

- 1) To expand industrial research and development activities:
 - exchange of information between science and industry
 - allocation of State budget for R&D activities
 - access to EU's R&D programs
- 2) To strengthen infrastructure required for R&D implementation:
 - formation of the Technology Agency
 - support to implementation, promotion and commercialization of research results through regional development agencies
 - inflow of foreign technologies in the form of licenses
- 3) To attain international quality standards and modern production profile:
 - replacement and modernization of the obsolete machinery and equipment
 - harmonization of national technology standards, the quality assurance systems and safety regulations with those of the EU standards
 - intensification of environment-friendly applied technologies
- 4) To improve the information system and to raise staff qualifications:
 - accessibility of staff with advanced professional training
 - establishment of a system for personnel retraining
 - improvement of data systems in the area of science, technology, markets and marketing

Many enterprises have not applied research results in industrial practice because of poor financial conditions and obsolete facilities and equipments for R&D activities. In order to improve technological standards, advanced technology must be introduced with a longer perspective, while existing obsolete production facilities and equipments must be replaced and modernized. The role of proposed Technology Agency for guiding the industrial research and development in Poland is strategically very important.

9.7 Regional Development Problems and Policy in Poland

The economic and political transformation in Europe in the late 1980s and early 1990s transformed Poland's geopolitical situation. The previous division of Europe into two opposing political, social and economic blocs ended. Those changes included the reunification of Germany, the collapse of the former Soviet Union, and the division of Czechoslovakia into two independent states; all of them took place just beyond Poland's borders, which influenced the regional economic situation in Poland.

After seven years of experience in economic transformation process, it is possible to say that interregional differences are steadily widening in Poland as the country moves toward a market economy. The new processes of transforming into a market economy have changed Poland's geography of strong and weak regions. Multifunctional regions with diversified economic structures of industry and services and relatively well-developed infrastructures and international connections have proven to prosper in a new situation. On the other hand, regions with undiversified economic structures and dominated by state-owned agriculture and traditional industries such as heavy industries have run into problems.

It can be pointed out that the present regional economic imbalances stem from the following factors:

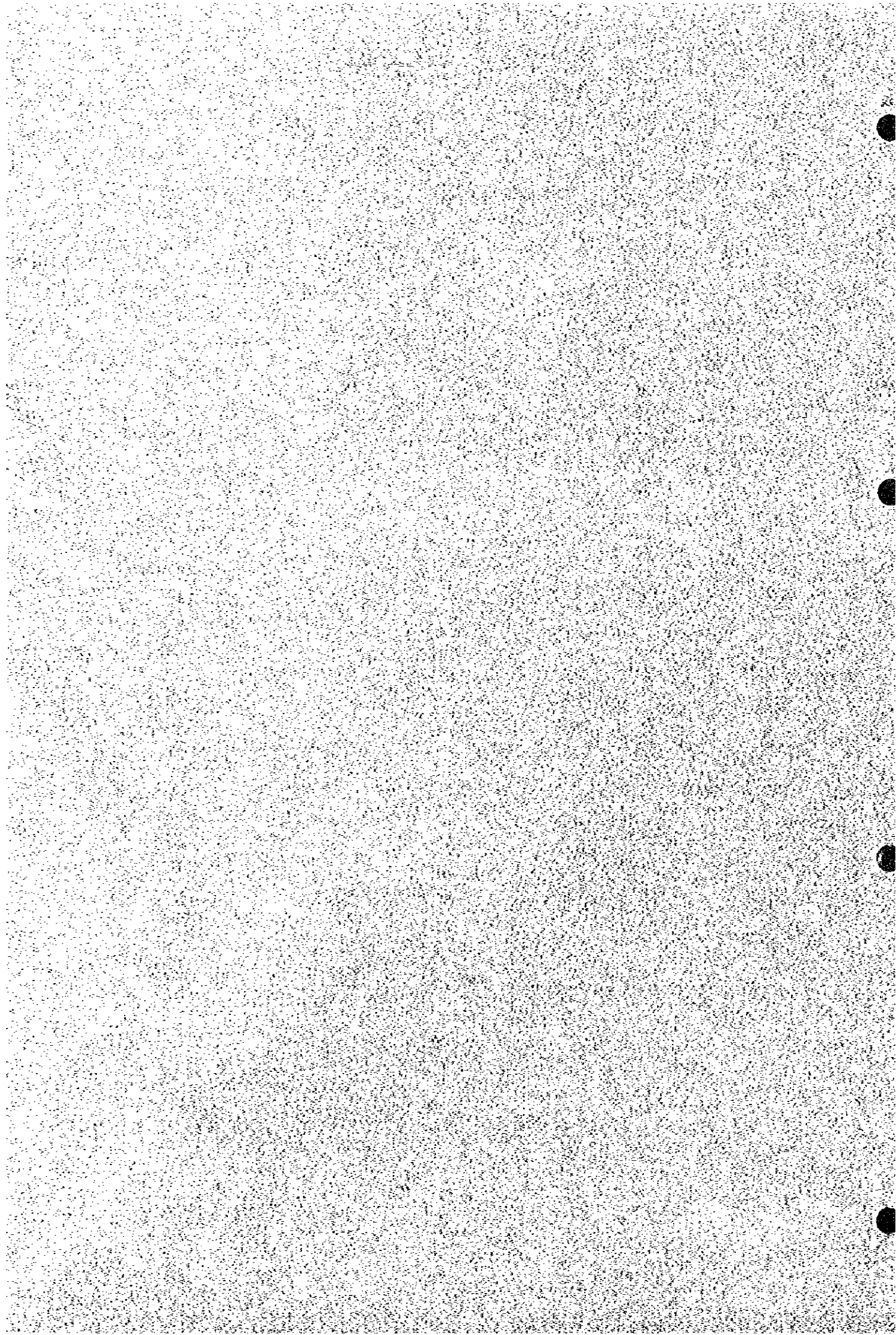
- 1) a dominant agriculture sector with an outdated agrarian structure,
- 2) a dominant industrial sector with obsolete production equipments,
- 3) acute infrastructure shortage in general and regional imbalances in the accumulation of them,
- 4) an excessive concentration of single economic structures in a given area,
- 5) the absence of conditions for stimulating local and regional initiatives and entrepreneurship,
- 6) an excessive dependence on markets of former Soviet Union, and
- 7) lack of human resources for planning, formulating, implementing and administering the regional development policies in market economic principle.

Regional issues are very serious in Poland, because the impacts of the structural adjustment will be felt in every region of the country. The Polish government well recognizes these problems and, in July 1994, the Council of Ministers approved the "Principles of State Regional Policy" prepared by the Central Office of Planning as guidelines for the activities of the state administration. The paper was further updated by the COP and approved by the Council of Ministers in June 1995.

However, there exist many financial, organizational and administrative problems to make a big stride for reducing those regional development problems. The following problems can be pointed out:

- (1) The development plans are currently prepared only by the state level for sectoral and inter-regional issues and the local (gmina) level for local administrative issues. Thus, it lacks regional planning of the voivodship level. In addition, the voivodship is not empowered to cope with regional planning issues. The actual regional development issues will require to cover several neighbouring voivodships, the responsible planning unit of which is also non-existent.
- (2) The lack of regional planning function in the voivodship level will cause another problem; the lack of human resources to handle the regional development issues in the voivodship level.
- (3) Although International Aid Agencies such as the EU's PHARE are assisting Polish regional development, funds to be used for regional development are far from sufficient.
- (4) For the formulation of regional development plans, the integrated regional development approach would be advisable to introduce, since many economic, social, ecological and institutional factors are generally inter-related each other and calls for simultaneous considerations.

1 0 Trends in the Engine Industry in Poland



10 Trends in the Engine Industry in Poland

10.1 Market Environment

(1) Road Conditions

Poland, along with the Czech Republic, is a little ahead of other countries of Central and Eastern Europe in terms of motor vehicle production, and it has a far greater volume of use of motor vehicles than other such countries (see Fig. 10-1-1). The reason is that Poland has the geographic advantage of direct connection with the West and good road conditions which are favorable to active road transportation, which in turn supports the vigor of the Polish economy as a whole.

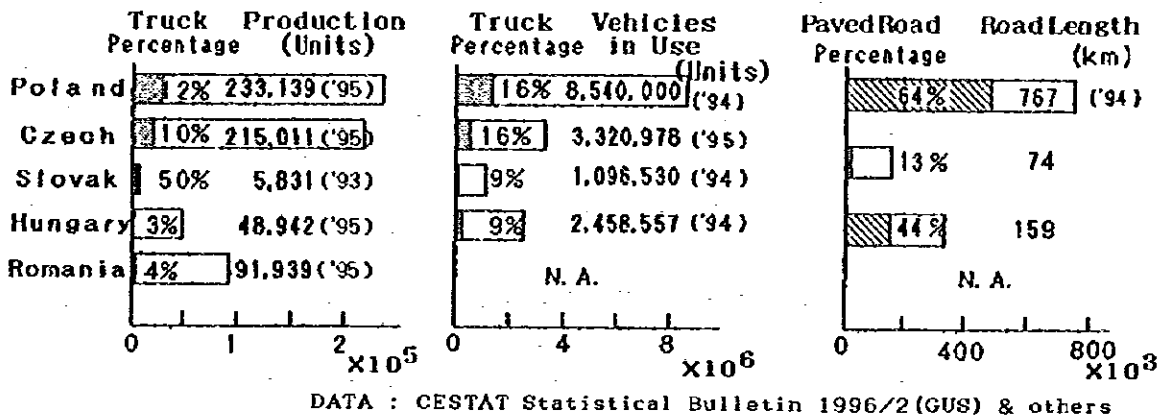


Fig.10-1-1 Automotives Enviroment in Eastern Europe

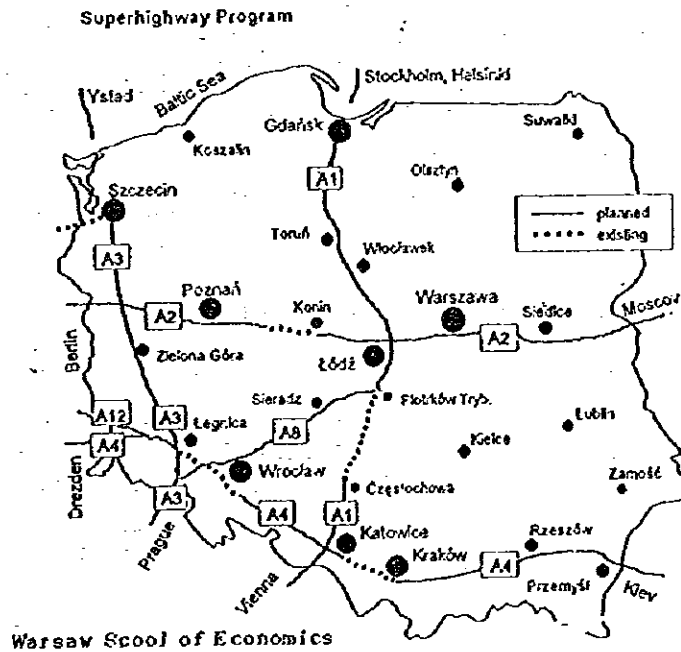
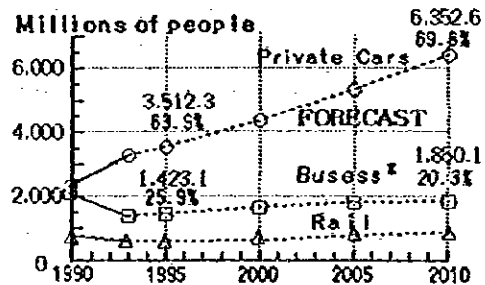
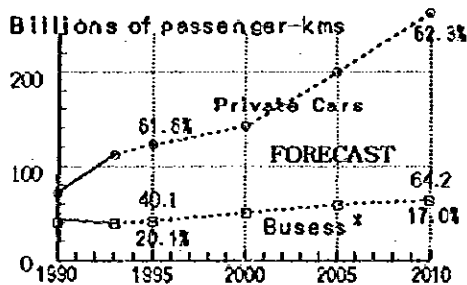
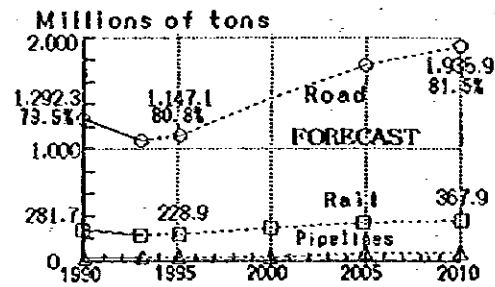
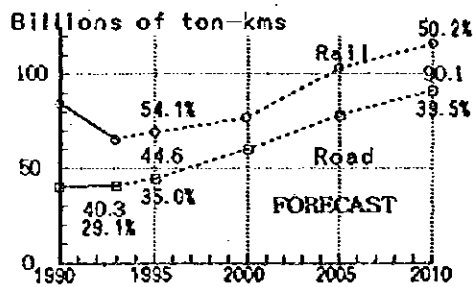


Fig. 10-1-2 Road Plans Source: "Warsaw"



Data: Ministry of Transport Shipping, 1994

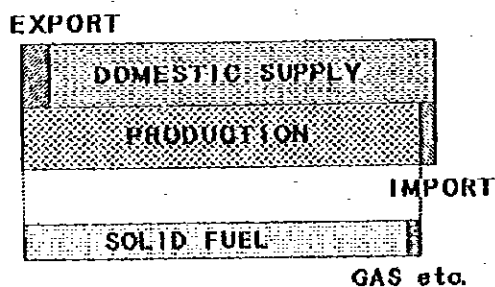
* not including city transport

Fig. 10-1-3 Past and Estimated Future Road Transportation Volume

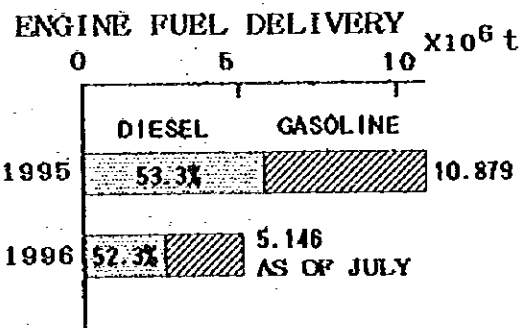
Domestic road improvement (Fig. 10-1-2) is based on planning of the BLD type, and road transportation volume (Fig. 10-1-3), too, is expected to increase.* To that one must add the motor vehicles with Polish registration that are operating outside the country. Furthermore, in 1995 road transportation accounted for 52.1% of all cargo transportation (319 million tons) and 70.9% of all passenger transportation (1,132 million passengers) in the country.*

(2) Situation Regarding Energy

Domestically produced coal covers most of demand. The former economic balance between export of coal to other countries of the Communist bloc and receipt of oil allocations from the Soviet Union no longer exists. Fig. 10-1-4 indicates Poland's energy breakdown. With the influence of the EU's strong stance against "global warming" needs in the way of carbon dioxide countermeasures (and fuel savings) can be expected to grow steadily stronger.



DATA : U.N. ENERGY STATISTIC YEAR BOOK & GUS



DATA : GUS

Fig. 10-1-4 Energy Supply-and-Demand Balance

Coal production in 1995 was 201 million tons, representing 5.7% of total industrial turnover. The actual figure for engine fuel shipments in 1995 is 10,879,000 tons (diesel fuel accounting for 53.3%).*

In the days of the Communist system enterprises increased their self-sufficiency regarding power supply. In general energy costs are low. Most homes have central heating. In 1995 the average monthly layout by worker households for lighting and heating was 28.55 zloty, or 9.5% of their total expenditures.**

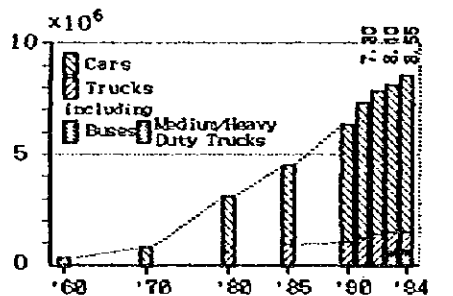
Sources: * Op. cit., GUS.

10.2 The Motor Vehicle and Engine Business

10.2.1 Structure of the Motor Vehicle Market

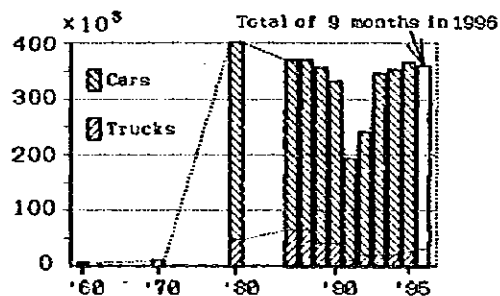
(1) Size of Motor Vehicle Registered

Fig. 10-2-1 shows how the number of motor vehicles on the road has increased over the years. The number has steadily increased, even during the production slump of 1991 (see Fig. 10-2-2), reaching 8.5 million in 1994.



DATA : JAMA, Polish Agency for Foreign Investment

Fig. 10-2-1
Growth in Size of Motor Vehicle
Fleet Over the Years



DATA : JAMA, GUS, etc

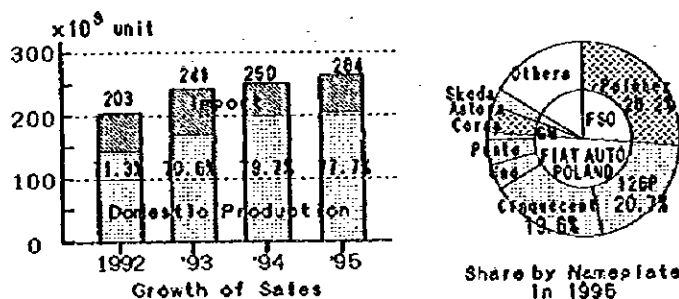
Fig. 10-2-2
Growth in Motor Vehicle
Production Over the Years

(2) Passenger Cars

Passenger cars, at some 7.15 million, account for 84% of the total fleet of motor vehicles. According to the Gowny Urzad Statystyczny (GUS; Central Statistics Bureau), there was one passenger car for every 5.4 persons in 1993 and one for every 5.7 persons in 1994.

According to the survey findings of the two private research entities the Petor Public Opinion & Market Research Institute and the Market Transport Institute, by the turn of the century the size of the passenger car fleet in Poland will reach 10 million, and that figure is expected to reach 15 million by the year 2010.

The 660 cc Fiat is the most popular car, and almost one-half of the registered cars are under 1000 cc. There are many used cars, and about a quarter of the total number of passenger cars are at least ten years old.



Source: Polish Agency for Foreign Investment

Fig. 10-2-3 Domestic Sales of Cars

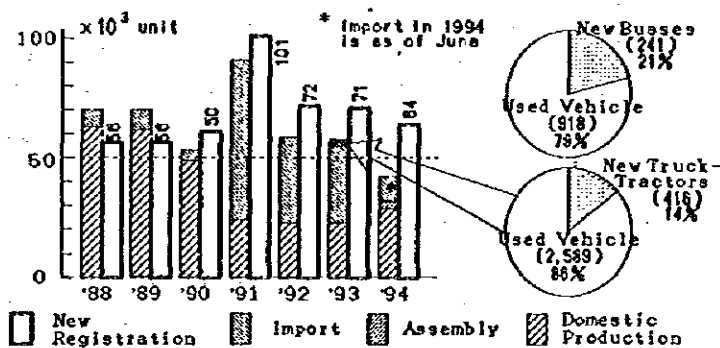
Fig. 10-1-A shows the sales shares for 1995. Fiat produced domestically and FSO accounted for 66%, imports of parts for assembly domestically for 21%, and imports of completed vehicles for 13%. Fiat's share came to 50%, including both full production and just assembly.

(3) All Trucks

The number of trucks* owned in Poland in 1994 came to 1,306,000, or 71,000 more than the year before. As a phenomenon that occurred for passenger cars as well, when the economy was opened in 1991, a large number of trucks were brought into the country (Fig. 10-2-4), the size of the fleet increasing then by about 200,000. Over the next three years the figure swelled by another 155,000. The accumulative number produced over that period was approximately 120,000 and the number imported was approximately 150,000. That pace has resulted in a supply shortage which has resulted in the problems of replacing the large number of old vehicles by new ones.

Truck exports sharply declined with the fall of the Communist regime, but in 1994 trucks assembled in Poland started to appear again in export figures.

Trucks include many different products with different use characteristics and different production systems. In marketing it is extremely important to accurately determine for each market segment the number of vehicles being used in the market. In each country the different companies in the truck manufacturing business cooperate with one another in market surveying to obtain official data as a basis for increasing total demand. In Poland the different companies place orders with market survey companies.



DATA: Agency for Foreign Investment, Warszawa, Rynek Motoryzacyjny

Fig. 10-2-4 Demand and Supply of Trucks

In the case of Poland, trucks are imported in about the same number as they are produced domestically, and 80% of those imports are made by individuals (see Fig. 10-2-4). Many of such imported trucks represent a putting together of parts from several original trucks. Furthermore, there is a risk of double counting with the country of original production when it comes to trucks only assembled in Poland. A distinction is made in GUS statistics, but it is also necessary to make a distinction between domestic sale and export of such vehicles. Verification of data obtained from here and there and everywhere starts from profound understanding of the real circumstances. The actual situation concerning statistical figures is reported on in section 10.2.3.

Although it has not been possible to obtain clear data by segment regarding the number of trucks in the Polish fleet, it is possible to say from actual production figures and observation of the market that the percentage of delivery vehicles that are known as "samochocow dostawcze"*** is preponderantly high in this country.

* "Samochody ciezarow" and "cignik drowe" in GUS statistics. The English translations given are "lorries" and "road tractors." Local experts call them "projazdy usylkowe" (non-passenger vehicles), differentiating them from the normal concept "truck".

** The English translation given is "van," but the catalogs include pickup trucks and 4-wheel-drive vehicles (e.g. "Ciezrowki Swiata 1996," printed by Print Shops Prego).

(4) Delivery Vehicles

Fig. 10-2-5 shows how sales of new vehicles in this category have fared. The Polish makes are the "Polonez" truck of the FSO car factory in Warsaw and the "Zuk" and "Lublin" of the FSC factory in Lublin.

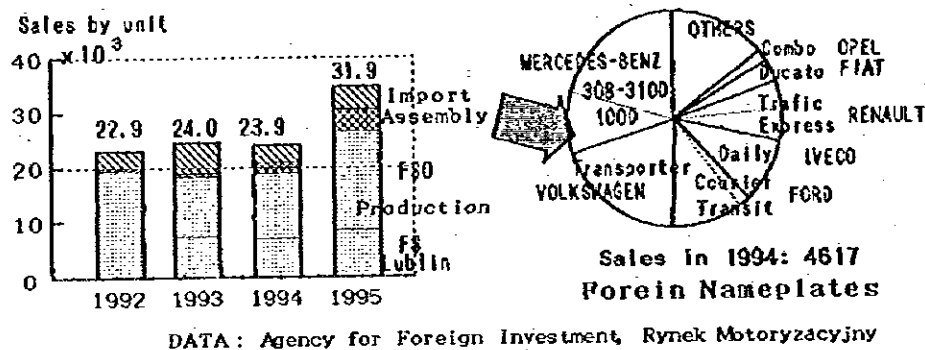


Fig. 10-2-5 Sales of Van

The percentage of those only assembled in Poland has risen from 0.3% in 1993 to 11.6% in 1996. In addition to Volkswagen (Autoninek) and Mercedes Benz (Glowno), Citron (at Nysa) and Ford (at Plonsk) started assembly in Poland in 1995. That has resulted in a decline in assembled imports from 22.9% to 12.4%.

As indicated in right side of Fig. 10-2-5, foreign-make delivery vehicles sold on the Polish market are very diverse. Although Fiat has an overwhelming share in passenger cars, in a joint operation with Peugeot and Citroen it has commissioned PSA to produce trucks in Poland. That shows that it does not have a very active stance concerning the Polish truck market.

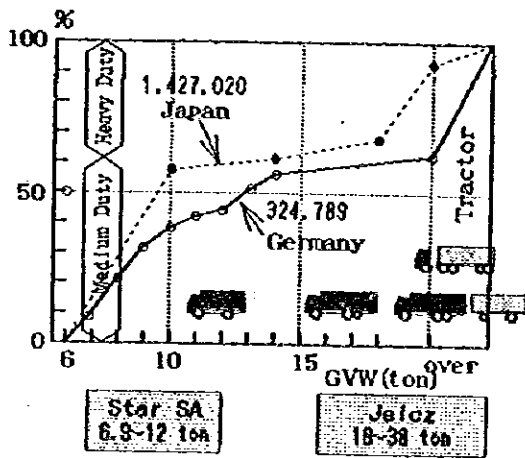
(5) Large and Medium-Size Trucks

Polish experts call this segment "samochody dostawcze" (transportation vehicles). Furthermore, as regards user characteristics, it is important to differentiate between those for long-distance transportation and the rest. Trucks that are used to make money in business have to guarantee the users' interest. Particularly since the users of vehicles in this segment make a business of driving the trucks several million kilometers, it is only natural that they decide on which kind of trucks to buy on the basis of product price and maintenance cost BEP.

In Western Europe and the U.S., where the market extends long distances overland, trucks in this segment are predominant Fig. 10-2-6 shows distribution of trucks over 6 tons GVW in Germany in comparison with Japan. In Western Europe Mercedes-Benz, Volvo and Scania have achieved success by a strategy of high-quality vehicles. In the U.S. customers themselves select according to their needs from the rich selections made available to them by the specialized engine manufacturers Cummins and Caterpillar, which together have a preponderant of the market among Polish truck manufacturers as well. Poland imported 3,015 trucks in 1993 (of which 416 were new; see Fig. 10-2-4), and users no doubt were quick to appreciate the quality.

This survey confirmed that Poland's transportation environment is homogeneous with that of Western Europe. Fig. 10-2-7 gives the breakdown of the 277 trucks observed on the trunk roads E67, E75, E77, A4, etc. and the road between Warsaw and Mielec.** More than half were hauling trailers. We interviewed four truck driver teams on the road and at restaurants and other stopping places; in all four cases they acknowledged that their trucks were used trucks and said that they were satisfied with them as regards fuel consumption and reliability. But the main point in competition between long-distance road haulers can be considered to be on-going improvement of fuel consumption. Those driver teams go very long distances almost nonstop, one man driving while the other sleeps on the cab bed. One of the teams that we interviewed was starting out on a 4-day, 5,000km journey to Spain.

"Truck-tractors" include 2-axle vehicles. Among 2-axle vehicles, some that just happen to be using a truck-tractor as a single unit are also to be seen on the road, but all such vehicles were counted as medium-size trucks. Among tractors, those those without a cab with bed were counted as 3-axle vehicles or 2-axle vehicles.



Data: Japan Automobile Manufacturers Association

Fig. 10-2-6 European Type Market Composition

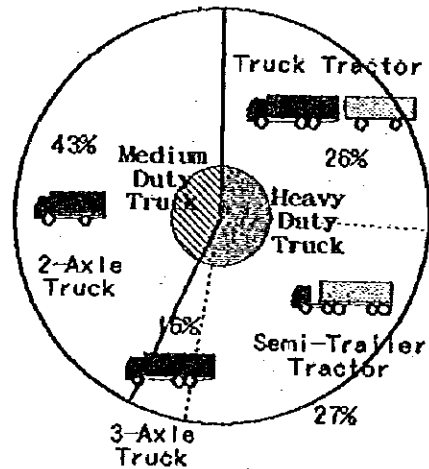


Fig. 10-2-7 Composition of Vehicle Observed on the Road

In the mountain region of E77 leading to Slovakia, the situation changed suddenly to a majority of trucks of Polish makes and the Czech make Liaz, with very few Mercedes-Benz, Volvo and other foreign trucks to be seen. We learned that weight restriction certification stickers were affixed to the truck bodies at the border. We were also told by drivers that their present point of biggest dissatisfaction is not enough power. On the other hand, one can also imagine the difficulties of medium- and long-distance haulers, who supplement trunk-line transportation, in making their businesses a paying concern, including disadvantages in terms of efficiency and local problems. This segment of the market will have to address the differing needs of diverse types of customers separately. Since the distances travelled are not all that long, they are also all the more sensitive to price.

A second category of the non-long-distance segment of the market is those whose main business is not transportation but who purchase vehicles to improve the efficiency of their main businesses. In view of the diverse customer needs and the fact that the necessary measures often do not concern the motor vehicle industry per se, truck manufacturers usually supply body outfitters with the "cab and chassis" as a semicompleted product and leave the rest to them. Since the customers are not transporters by profession, cost is a critical factor. Another category in this sector lies between the first two. At Jelcz they have added fire engines, for which there is considerable demand, as an independent product line for the public interest. Dump trucks, too, are sometimes purchased by nonconstruction companies specializing in transportation. In any case, it must be borne in mind that all such types of users basically differ from long-distance haulers, for whom the quality of the basic functions of the vehicle makes all the difference, and that that "miscellaneous" group of customers has very diverse needs.

Fig. 10-2-8 is the actual new vehicle sales figures for 1995. For all trucks (the figure to the left) domestic manufactures are doing fairly well, but in case of mainly long-distance trucks (the figure to the right) the market is dominated by foreign companies.

- * The data is based on the Japanese Automobile Manufacturers Association publication "World Motor Vehicle Statistics for Leading Countries, 1996." Japanese vehicles are indicated according to useful load; from experience GVW has been taken as twice useful load.
- ** Truck-tractors include 2-axle vehicles. Among 2-axle vehicles, we see some truck-tractors that just happened to be being used as rigid vehicles, but we counted all of them as medium-duty trucks. Vehicles that were tractors but that did not have a cab with bed were counted 3-axle or 2-axle vehicles.

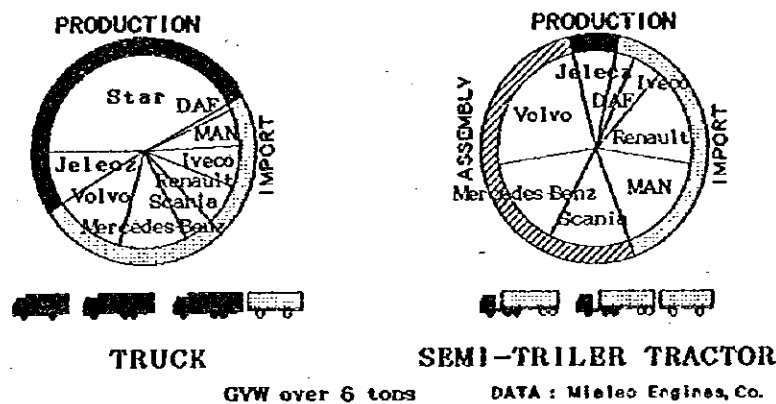
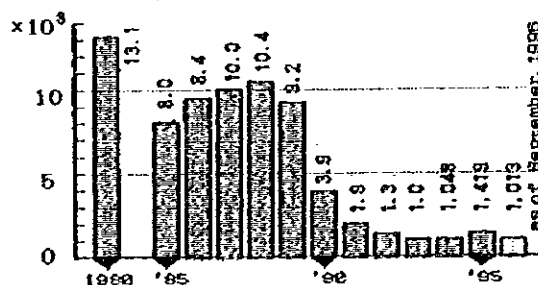


Fig. 10-2-8 Share of Truck in 1995 GVW over 6 tons

(6) Buses

Under the old Communist regime demand for buses was planned as a public service undertaking. The former SAF-Sanok (now Autosan) set up mass-production lines for single products, mostly the regular-service bus standard models in the peak year of 1988 bus manufacturers in Poland set a production record of 10,400 buses. As a result of collapse of the Communist regime and Poland's subsequent economic difficulties replacement of old buses is way behind what it ought to be. Furthermore, in a free economy the segment is undergoing subdivision in order to meet the various needs of the general public regarding bus service, including new types of bus service. That trend started with commencement of import of large numbers of buses in 1993 and has been further intensified by plans by Western European truck and bus manufacturers to start assembling their products in Poland.



DATA : Polish Agency for Foreign Investment & GUS

Fig. 10-2-9 Bus Production

It is appropriate to divide the bus segment into tourist buses, regular service buses and private buses as the main categories of use. In addition to that, it is necessary to subdivide into different structures and sizes according to user needs. The companies Jelcz and Autosan (Sanok), which are presently engaged in bus production in Poland, are putting out one new product after another because of the sharp competition in the field. An easily understood example of that is the tourist bus "Lider" exhibited in Poznan in September 1996. For regular-service buses they have introduced not only different sizes but also "articulated" buses and low-floor buses as well as minibuses for companies and community groups. Considering the necessary plant and equipment investment, one might say that it is one of the industries that has put the most effort into restructuring for the purpose of succeeding in the market economy.

Risking exaggeration, one might say that the whole population constitutes bus users, and considering the different needs of different people, many different types of buses are needed. In particular, on the basis of privatization and regional subdivision of regular-service bus lines greater efforts will have to be made than up to now to replace obsolete vehicles in order to meet the needs of the customers, public service operators (including their budgetary needs).

10.2.2 The Motor Vehicle Industry

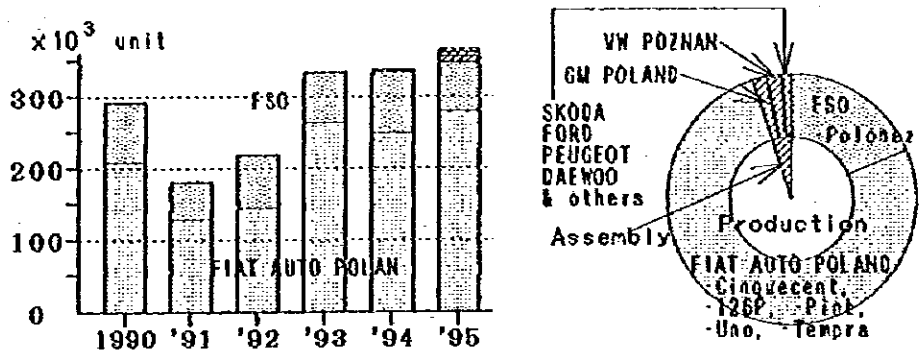
(I) Situation Concerning Polish Domestic Motor Vehicle Production

As indicated in Fig. 10-2-10, domestic production is steadily recovering, and the size of the motor vehicle fleet is continuing to grow, together with domestic assembly and import of products of foreign manufacturers. In addition, please see Table 10-2-1 for information on the present situation remaining the main companies constituting the Polish domestic market.

Exhibit 10.2-1 : Reference of Polish Automotive Enterprises

NAME OF COMPANY	LOCATION	PRODUCTS	PRODUCTION			REFERENCE	EMPLOYEE
			1993	1994	1995		
Fiat Auto Poland (FAP) former Fabryka Samochodów Motorystycznych (FSM) PRODUCTION & ASSEMBLY OF CARS	Bielskie Bita & Tychy	Cinquecent Uno-45 FSM (Fiat 126P)	262,000	248,000	278,000	Established in 1971. Fiat 126 (licence) FAP in 1992 Organized part-suppliers No trucks are produced nor assembled.	16,000
Fabryka Samochodów Osobowych (FSO) General Motors Poland (GMO) PROD & ASM OF CARS & PC-DERIVATIVES	Warsaw	Polonez truck w ambulance Opel Astra	70,450	85,548	69,892	1948 Warszawa (Pobeda) Fiat 126P (Fiat) 1958 Max vol 106,000 GM is to assist modernization of Polonez.	18,000
Zakłady Samochodów Osobowych FSO Berliński Van Plant (Filia FSO) PROD & ASM OF PC-DERIVATIVES	Nysa	Polonez truck Citroen C15 van (Agreement in 1994)	1,100	1,679	1,023	Total 350,000 in 1988-94	140
Fabryka Samochodów Cezarowych (Lublin Truck Plant) (FSC) PROD & ASM OF PC-DERIVATIVES	Lublin	Zuk (deriv van) Lublin ('93-) Peugeot 405	11,165	15,300	19,356	Zuk has been modernized 1994 Agreement with SCZ	4,500
Volkswagen Poznan Sp z o.o Tarpan Sp. z o.o. (74.6%) Fabryka Samochodów Rolniczych "Polna" PROD & ASM OF VANS	Astoria	Tarpan Hooker van VW T-4 Stod Favorit (K-1300)	219	350	0	Established in '84. Production at privatized "Polna" plant.	200
Sobieslaw Zasada Ltd. general representative of Mercedes-Benz ASM OF VANS Sobieslaw Zasada Centrum SA	Katowice Kierow	M-B van M-3000 All-terrain vehicle	-	-	1,040	Establishing a holding company of in automotive industry	477
Starachowickie Zakłady Samochodowe "Star" S.A. PROD OF MED-DUTY TRUCKS	Starachowice	Star 744 Star 742 Star 1142	1,630	2,246	3,059	Restructuring supported by international bank fund Strengthened relation with suppliers.	3,850
Zakłady Samochodowe "JELCZ" Spółka Akcyjna, Zasada Group (J.Z.S.) PROD OF TRUCKS & BUSES	Jelcz-Laskowice	Truck & Tractor Bus (M-B Vito van)	553	429	609	Expanded versions adding new products. Joined to Zasada Group in '84. Started assembly of M-B's P-C derivatives.	3,168
Autosan S.A. Spółka Akcyjna, Zasada Group PRODUCTION OF & BUSES	Sank	Bus Truck Trailer	900	(600)	(700)	New 8.10 10M & 10M11Lider. Plant renovated to cope with multi-version with small volume production. A member of Zasada Group	2,400
Volvo Truck Poland (ASSEMBLY OF TRUCKS & BUSES)	Wroclaw	Volvo Truck Volvo Bus	0	498	935		(200)
Scania-Kapena S.A. ASSEMBLY OF TRUCKS & BUSES Bus Repair Works "Kapena"	Stupsk	Scania truck Bus Icarus & Berlier Bus Renovate	29	369	450	Sales to Poland & former COMECON countries on order Euras Sp. z o.o. handle sales & service. Euras renovates Icarus & Berlier busses. Scania-Kapena to take over Kapena (500 employees).	(200)
Zakłady Komunikacyjne w Koszalinie Municipal Transportation Plant A joint venture with Danish firm DAB. ASSEMBLY OF BUSES	Koszalin	DAB bus	50-60	?	?	Municipal bus 12006-217.	
Wytwarzania Silników Wreckopreżnych ANDORIA S.A. Andoria Diesel Engine Plant ASSEMBLY OF L/D VANS	Andrychow	LDV-400 van	total 1,000 unit (plan)			A purchase from British company LDV. Andoria 4 CI engines installed.	
Fabryka Samochodów Specjalizowanych (Specialized Automotive Plant) Wojskowe Zakłady Motoryzacyjne nr. 5 (Military Motor Works) ASSEMBLY OF H/D TRUCKS	Kielca Poznan	Styr Truck Styr Tractor	around 200 unit in 1993 duplicate with truck manufacturers' cab-and-chassis production.				
SHIBIS (Polan/Israel JV) ASSEMBLY OF L/D UTILITY VEHICLES	Lesza	Ford Transit	-			Transformation into armoured vehicles.	
Zakłady Mechaniczne w Gorzowie Wielkopolskim technical plant in Gorzow Wielkopolski ASSEMBLY OF L/D UTILITY VEHICLES		Land Rover	-				

Table 10-2-1 Reference of Polish Automotive Enterprises



Growth of Sales
 Source: Japan Automobile Manufacturers Association
 Shares in 1995

Fig. 10-2-10 Domestic Production & Assembly of Cars

1) According to GUS statistical data, passenger car production was 338,000 units in 1995, which represents a 34.5% increase over the year before. The figure for this year up to September is 329,000 units, for a 19.2% increase over the same period of last year. The total for both production and assembly of passenger cars is 366,679 units*, Fiat Auto Poland accounting for 76% and FSO for 19% (see Fig. 10-2-11).

Fiat Auto Poland (FAP) has had a relationship of cooperation with Fiat since its predecessor, Fabryka Samochodow Motoritarasowych (FSM), was granted a license for production of the Fiat 126 in 1971, the year of its establishment. The change to the present company name took place in 1992, but the company's activities have remained the same. The FSM, the local version of the Fiat 126, was the leading model in Poland's motorization. Now the company also produces the Cinquecent and the Uno-45. Production abroad of Fiat passenger cars totalled 815,175 units in 1995, which is the top figure for European manufacturers and is comparable with the figures for U.S. and Japanese manufacturers. The figure of 278,000 Fiat passenger cars produced in Poland is surpassed only by Fiat production in Brazil.

Another achievement of Fiat is the fact that it parted with the practice of a planned economy and built its own parts procurement system. Now FAP is not engaged in production of trucks derived from passenger cars.

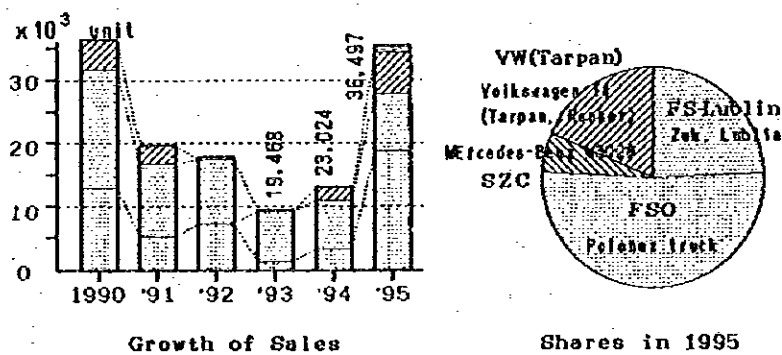
The Polish manufacturer in second place in passenger cars is Fabryka Samochodow Osobowych (FSO), which is older than FSM, having started out with production of Soviet passenger cars in 1942 and later adding Fiat cars. Now it is engaged primarily in production of the Polonez, which it developed later, and trucks derived from it. Derived trucks are also produced at the FSO delivery van plant (Filla FSO). In addition to that, FSO has a tie-up with General Motors Poland for assembly of the Opel Astora, the figure for 1995 being approximately 7,000 units. Cooperation with GM has included modernization (model change) of the Polonez, but now GM is also planning to go it alone in Poland.

* "Motor Vehicle Statistics of Leading Countries, 1996," Japanese Automobile Manufacturers Association, JAMA.

Source: "L'Argus de L'Automobile," French Automobile Manufacturers Association.

** Fiat has commissioned PSA in Spain to produce derived trucks on the basis of a joint body with Peugeot and Citroen. Although not domestically, in 1995 it produced 128,109 truck and bus units in Brazil and four other countries.

- 2) A feature of the field of trucks derived from passenger cars, which are used by both business and the general public for transportation of everyday loads and cargo, as a field that accounts for the greater part of the truck category in Poland is that Fiat, which has practically a monopoly in passenger cars, has not entered it. That being the case, the parts procurement network and sales service network that it has built up are not being directly utilized by truck users. Although it is not clear whether or not that is having an effect, foreign manufacturers are doing better in the truck market than in the passenger car market (see 10.2.1(4) and Fig. 10-2-5).



Source: Japan Automobile Manufacturers Association
Rynek Motoryzacyjny September/October

Fig.10-2-11 Domestic Production & Assembly of Trucks

But Polish manufacturers can be said to be putting up a very good fight in this field, which globally is considered to be derived from passenger cars. Fig. 10-2-11 gives actual production figures in this category. In first place is Fabryka Samochodow Osobowych, the manufacturer of the Polonez passenger car. Besides producing trucks as well at its main plant, it also has a plant specializing in production of trucks at Nyse. In spite of the fact that foreign manufacturers are making headway in assembly of their products in Poland, it is putting up a good show in not allowing the share of Polish manufacturers decline. At Filla FSO is also assembling the Citroen C-15 and consolidating its position in terms of both finances and technology.

In second place is Fabryka Samochodow Cezaroowych (FS-Lublin), which used to be ahead of FSO with mainly the Zuk at its plant specialized in trucks. Although it introduced the Lublin in 1993, the expected results are yet forthcoming, which gives reason to worry. It is also engaged in assembly of the Peugeot 405.

In the field of complete nonderivation from passenger cars in 1994 Tarpan Sp. zo. o. established Volkswagen Poznan Sp. zo. o. as a joint venture with Volkswagen and

started assembly of the VW T-4 and other models there besides continuing with its Tarpan products. In so doing, it has secured the position that it has held up to now. Furthermore, Sobiesław Zasada Centrum SA, as the general agency for Mercedes-Benz in Poland, is working to strengthen the group through production by commission both by itself and by other companies of the Zasada Group and is looking for a chance to reorganize the truck industry in Poland. Plans call for assembly of the Mercedes-Benz new Vito derived van by Jelcz, one of the members of the group.

Andoria SA, which does business mainly with engines of the small-truck class, is engaged in production and sale of the Andoria LDV van on the basis of a contract with LDV of the U.K. in order to mount its own engines.

3) Fig.10-2-12 indicates the situation regarding production of heavy- and medium-duty trucks. Although it has not been possible to verify the sales data given in the circle graph, which was obtained from Mielec Engine (ME) but is from a different source, by comparing the figures for the different companies for import and for export of vehicles produced locally, one can conclude that the structure is the same for light-duty trucks. It is not possible here to clarify the actual situation of the market unless one also takes into account imports by individuals, but it will be interesting to see how the structure indicated here changes as a result of the government ordinance restricting import of motor vehicles of advanced age (old trucks).

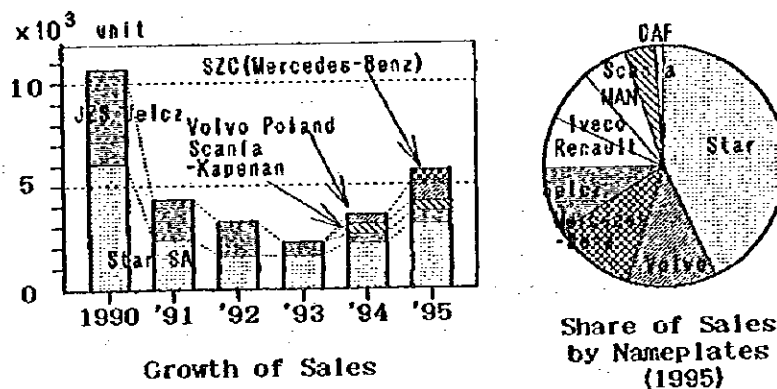


Fig.10-2-12 Domestic Production & Assembly: Heavy & Medium Duty Trucks

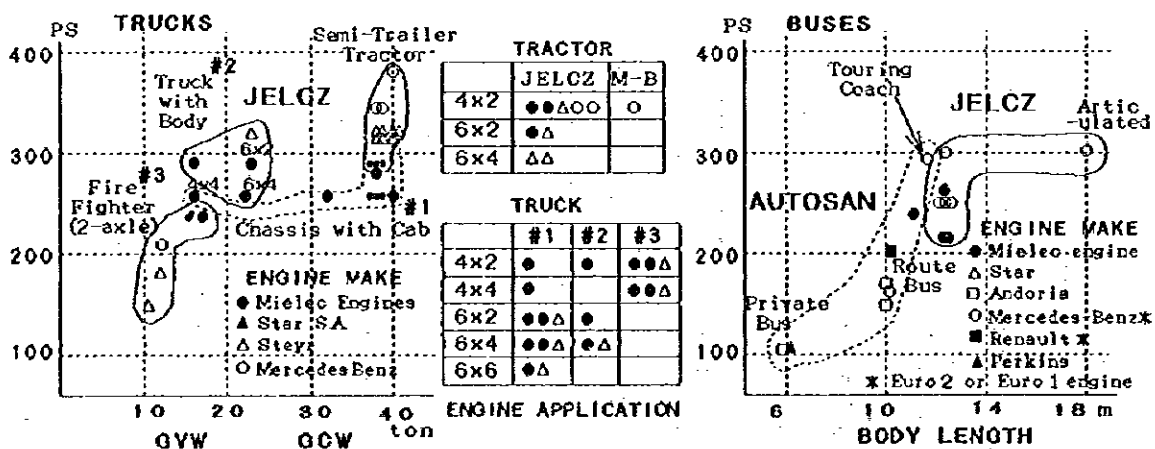
The product series of Starachowickie Zakłady Samochodowe "Star" S.A., which has the top share, are indicated in Table 10-2-2. The makeup is 4 types with type numbers 1142, 742, 744 and 266. The cabs are of modular design, the vicinity of the doors being the same for all of them and variety being provided by variations in the front and rear panels, the roof and the floor. Type 1142, at the upper end, has a total vehicle weight of only about 12 tons, and Type 742, at the lower end, has a rated useful load of 3.5 tons, which is not much different from the upper limit of light-duty 2-ton trucks in Japan.

As for uses, Type 1142 is for transportation, there also being a 1142T tractor for semitrailer use. Type 744 has a 4x4 chassis for special loading for work purposes. Type 42 is a low-floor, low-cab dispatch truck, and Type 266 is a cross-country vehicle as an application of a military vehicle. The design in terms of cab structure and selection of engine characteristics is clearly consistently meant for short-distance operation. Although international universality is lacking, the efforts for compatibility with local conditions in Poland have no doubt won wide support. The company, too, says that it is willing to provide full cooperation, even abroad, with anyone interested in its present products.

Type	1142	744	742	266
kerb weight	6 500	—	3 400	7 350
GVW	11 700	7 000	6 900	12 350
GOW	20 000	9 500		16 350
Wheel arrangement	4x2	4x4	4x2	6x4
Max Speed	98 km/h	113 km/h	98 km/h	90 km
Engine Make	Star	Star	Andoria	Star
Engine Power	110KW (147 PS) NA or T	110 KW (147PS) T	77 kW (103 PS) T	110 kW (147 PS) T
Cab type	Tilt type Day Cab	Tilt type narrow	Tilt Type Low cab	Non-tilt paramilitaly
Wheel Base	3 900	3 700 3 100	3 300	3 615
Application	Freight	Special Equipment & Transport	Delivery low deck	Cross Country Military

Table 10-2-2 Star Truck Product Line

As shown in Fig.12-1-16 of section 12.1, the product series of the heavy-duty truck manufacturer Zakłady Samochodowe "Jelcz" (Jelcz) can roughly be divided into buses, trucks and fire engines. In the truck breakdown, unlike the case of Star, vehicle type is subdivided into "with body and tractor" (completed vehicle) and "chassis with cab" (completed by special outfitting firms), and in each series there is a breakdown by cab length and breadth, number of axles (2 or 3), engine type, etc.



DATA : Z. S. Jelcz and Autosan S.A. Catalogue

Fig. 10-2-13 Jelcz & Autosan Product Line

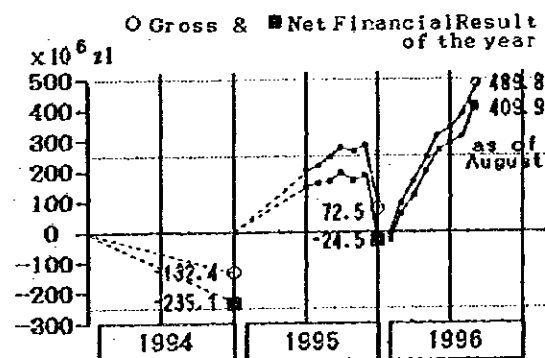
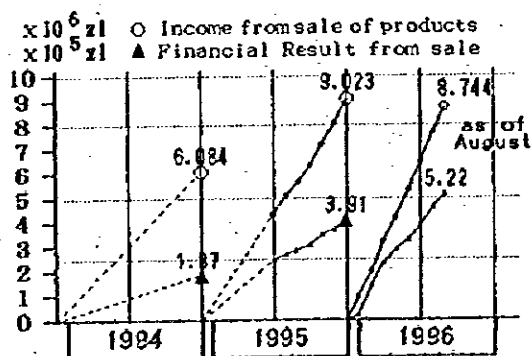
Judging from the cab lengths indicated in the figures in the catalog, most of the cabs have the bed that is needed for long-distance transportation. In trucks of this category it is probably necessary to have several hundred different specifications according to customer loading preferences. On the other hand, for trucks with short runs (dump trucks, etc.) the engine without supercharger is ideal. In any case, cooperation with parts manufacturers is necessary for the adopted response, and strategic joint work with the engine manufacturer is particularly necessary in Jelcz's case.

One cannot help noticing the effect achieved by foreign manufacturers after only a short period of direct involvement in Poland because of limitation on KD import duty exemption. Volvo Truck Poland has established a plant in the suburbs of Wroclaw, Mercedes-Benz is being taken care of by Sobielslaw Zasada Centrum SA, and Scania has established Scania-Kapen as a joint venture with Kapen which is engaged in recycling of Icarus and Berliner buses.

(2) Trends in the Motor Vehicle Industry

Among the different sectors of the Polish economy, the motor vehicle and trailer and semitrailer manufacturing industry registered a turnover of 4,437.3 million zloty in 1995, accounting for 2.4% of the total for all Polish industry. Although that was a 27.1% decline in turnover from the previous year, its percentage of the turnover of all Polish industry increased by 0.3 points. The financial result from sale of products was 245.4 million zloty, 31.1% up from the year before. That figure represented 2.4% of the profit of Polish industry as a whole, and the cumulative profit from sale of products up to and including August of 1996 of 521.5 million zloty represented a 33.5% increase over the same period of the year before (see Fig. 10-2-14).

Fig. 10-2-15 indicates how gross profit and net profit fared month by month in the industrial branch in question.



Source : GUS Sector includes manufacture of motor vehicles, trailers and semi-trailers.

Fig. 10-2-14
Income from Sale
Gross of Automotive Sector

Fig. 10-2-15
Financial Result
Gross of Automotive Sector

Polish motor vehicle manufacturers, driven by fear of losing their shares of the domestic market to Western European manufacturers that have implemented direct involvement in Poland, are continuing their restructuring efforts started in 1993. Our survey of Mielec Engine's client firms has shown that both Jelcz and Autosan have implemented restructuring consisting of reduction of personnel strength and debt consolidation, followed by product development and cost reduction efforts. Furthermore, both have joined the Zasada Group. Besides the 2-company restructuring efforts mentioned above, the company "Star" intends to strengthen ties with parts companies. It is striving for stabilization of its transactions through merger with large corporations of its subsidiaries that split off from it. Furthermore, it has capital participation in the companies that it has transactions with and provides them with technological and personnel information facilities. For example, it has granted parts companies secondary implementation rights concerning licenses received from ZF, Westinghouse, Bosch, Ehrenreich and others, and it also undertakes joint training with them. Against that background it obtains their cooperation in the form of holding down, in principle, annual price increases to 3 points under the rate of inflation and also, it is reported, attains cost reduction goals jointly with them.

Utilizing its position of the general agency in Poland of Mercedes-Benz, Sobieslaw Zasada Centrum S.A. (SZC) has become a holding company for Polish automobile companies and is aiming for reorganization of the industry.* It is true that the new product development of the above-mentioned two companies has been dependent to a great extent on Mercedes-Benz technology. We were told that the companies for which SZC is a holding company include the following: Jelcz Zaklady Samochodowe, Zaklady Strachowickie "Star" S.A., "Autosan" S.A., Fabryka Samochodow w Lubinie and other motor vehicle companies as well as Fabryka Przekladni Samochodow Specialisowanych "POLMO" SHL, Zaklady Motoryzacyjne, Zaklady Montzowe and other parts manufacturers.

Under a planned economy the relationship between the manufacturer of the final product and parts companies was understood to end at delivery, and there was no interest in cooperating with one another. But now one can expect more and more cooperation considering the influence of such foreign companies as Fiat and Daewoo, the restructuring efforts of the different companies as mentioned above, the strategy of the Zasada Group and other factors. We were told at one of the plants that we visited that they expect parts makers that are unable to understand the way of thinking represented by ISO 9000's emphasis on the customer to drop out in competition.

In 1992 an Association of Automotive Employers (Zwiazek Pracodawcow Motoryzacji) was established on the basis of a law passed by the Polish parliament in 1991. It has been joined by seven motor vehicle manufacturers, sixteen parts companies and two research institutes, and its purpose is supposed to be that of protecting the rights and advocating the position of the motor vehicle business in relations with distributors and retailers, government and other public administrative offices, local governments, etc. So far, however, its activities have not gone beyond cultivation of mutual friendship.

* To put it in a nutshell, the enterprise concept of Zasada Centrum is technology transfer and utilization of domestic technology, production capacity and personnel for production of Poland's trucks.

(3) Trends in the Motor Vehicle Component and Parts Industry

According to information published by PAIZ (Polish Agency for Foreign Investment) for 1996, for parts financial results were as indicated in the following table at a time when the financial results for motor vehicles as a whole were negative (1994), as indicated in Fig. 10-2-15.

SECTOR	1994 FINANCIAL RESULTS	
	GROSS ($\times 10^6$) ZL	NET ($\times 10^6$) ZL
PRODUCTION OF VEHICLES, TRAILERS AND SEMI TRAILERS	- 132.4	- 235.1
INVENTORY FOR PRODUCTION OF VEHICLES	- 195.2	- 261.5
PRODUCTION OF TRAILERS AND SEMITRAILERS	- 10.8	- 12.2
PRODUCTION OF COMPONENTS	73.5	38.7

According to other PAIZ information, 9 engine manufacturers, including automobile manufacturers, 17 machinery component companies, 17 electrical and electronics companies and 19 rubber and plastic products companies are listed as parts manufacturers. The motor vehicle business has very broad "skirts" consisting of component assemblers, their subcontracters and their subcontractor in turn. It is difficult to draw dividing lines in view of the fact that each of the companies visited by us in the study has transactions with several hundred companies. In the MIT control plan (10.2.3 (2)) the divisions for collection of information of the motor vehicle business are: A. Metal parts of bodywork and chassis. B. Engines and engine parts, gear boxes and braking systems. C. Rubber and plastic products and upholstery. D. Electrotechnics and electronics. In B, for instance, thirty companies are scheduled.

Although there is no automobile parts industry association, there is an organization called Izba Gospodarcza-komponentow i Technologii (Economic Chamber of Machine Components and Technology), which has a membership of 120 companies. There is also an organization for training courses and other similar activities for company administrators. In a planned economy the relationship between the final product manufacturer and parts companies was understood to go only as far as delivery, and there was not much of an idea of need for cooperation between the two. Final product manufacturers had their own in-house parts plants as a means of protecting themselves against late deliveries and defects due to parts suppliers. Service parts were not the parts of the original plant but rather parts procured within the company or on the open market. In the case of engines and other large-scale assembly components, the parts manufacturers undertook service directly.

After transition to a free economy final product manufacturers had their in-house parts plants become separate and independent as a restructuring measure. But parts manufacturers that has already been independent in the past and newly independent parts manufacturers were not immediately able to cope with the situation, and in 1993 that resulted in a temporary situation of undersupply and customers "standing in line" in front of large parts manufacturers in an effort to receive deliveries.

Since how good business parts manufacturers do depends on how good business their customers, final product manufacturers, do, it is necessary for them to put cooperation with their customers above everything else. With such a change in attitude as the start, restructuring of the parts business is proceeding as follows:

- (1) Improvement of parts companies related to Fiat Auto Poland and improvement by Daeu of companies in the FSO group.
- (2) Improvement under the leadership of Polish final product manufacturers such as in the case of Star S.A.
- (3) Improvement in the context of restructuring of the entire motor vehicle business by Zasada.
- (4) Own efforts by parts manufacturers on the basis of introduction of the ISO 9000 system.

Automotive manufacturers are all setting their hopes on (4) above and asking their customers to cooperate with their business and restructuring efforts.

10.2.3 Survey of Statistics System

In establishing their activity strategies under conditions of competition in the market economy, companies must first of all get a good idea of the outlook concerning their position in their field of business and their future business prospects, and it is an "iron rule" that action plans for implementation of strategy be based on still more detailed information. We undertook a survey of the actual state of the statistics system in Poland because Mielec Engine, the model company of this present study, pointed out to us that it is difficult for them to obtain reliable information. Statistics are important not only to individual companies and whole industries and but also for formulation of government policy. Regarding the needs of individual companies and the whole industry, they are for the purpose of achieving the above-mentioned goals of the motor vehicle business association. Furthermore, according to MIT information, the Polish importers association prepares detailed data with the cooperation of all of its members and is working for expansion of the market as a matter that concerns the entire industry.

Regarding government needs, with a sense of crisis MIT is preparing the building up of a data base and has requested the automobile manufacturers association to cooperate in that task. That is the exact opposition of the way it would be done in Japan.

To be sure, there are problems at present, but there should soon be improvement, and one can expect the situation to become the same as in other countries. After that, it will be up to the industry and individual companies in it to make efforts. However, one cannot help being a bit worried about the fact that not everyone concerned realizes the importance of the matter to the same extent.

- (1) Present Situation Regarding the Activities of the Central Statistics Bureau (Główny Urząd Statystyczny; GUS)

In 1994 GUS adopted the EKD, Europejska Klasyfikacja Dzialalnosci, for the sake of international harmonization of the structure of statistics. Furthermore, in 1995 the law was revised to make it possible to restructure its activities so as to be able to accomplish various new roles of the statistics bureau, including those relating to the right of people to information and other rights guaranteed by the United Nations EEC charter of 1992. It has become considerably more confident thanks to the response to the telephone service initiated in September 1996 as one of the links in such efforts. In the period of 19 working days in that month that service received a total of 4,098 inquiries, including 47 from outside Poland. GUS was able to meet 80% of the requests made, one of the means of doing so being that of allowing the persons in question to visit it and have direct access to its data base. Sixty-eight percent of the inquiries were requests for official statistical information not yet published, but in some cases it was impossible to furnish such information at that time. GUS suspects that the general public and enterprises are often not correctly using the statistics furnished them and has therefore has commissioned a research entity to study the actual situation while at the same time continuing such telephone service, and on the basis of the findings of that study it intends to undertake educational activities concerning optimum use of the statistical information it furnishes.

Besides the Statistics Bureau's regular publications, it also has study reports on individual themes, and access to them is possible not only at the Central Statistics Bureau but also the Bureau's statistics offices in the different provinces. By computer, access is possible not only to Polish data but also international data.

In addition to the above, the countries of the CESTA region (Poland, the Czech Republic, Slovakia and Hungary) have joint compilation of statistics, each of those countries publishing the results in both the local language and English.

(2) MIT's Study

- 1) New information system: In a tie-up with the Automobile Manufacturers Association MIT has placed an order for a motor vehicle statistical information system with Business Management & Finance S.A., a U.K.-based company, the main reason being that the information collected by GUS and government ministries and agencies is inconsistent and cannot be used in formulating government policy concerning the motor vehicle industry. The automobile manufacturers association is not, however, very keen on the idea, and therefore MIT has had to promise that only overall data will be published and not that within the realm of privacy of individual companies.
- 2) Reliability of the data that has been published up to now: Production data has been completely reliable, but data on exports and imports was ambiguous up to 1992. Even since then there have been no clear figures on passenger car imports.
- 3) The problem of used vehicles: Presently there are restrictions on import of used passenger cars more than 10 years old and used trucks and buses more than 5 years old. In the past records of truck and bus imports were expressed only in terms of value and included within the group "all means of transportation, including ships. Since 1995, however, as a result of adjustment for compatibility with EU customs procedures, it has been possible

to get data by segments from the computers of the research facilities of the Central Statistics Bureau, the Central Customs Bureau and the Ministry of Foreign Cooperation. The Ministry of Finance is planning to lower the age limit of used passenger car that can be imported from the present 10 years to 5 years, but that has met opposition from the EU. However, even if that change is implemented, the volume of import of used passenger cars will be reduced by only about 10%, which is no solution to the used-car problem.

- 4) Importer Association activities: The private office Samar is compiling detailed monthly data, including data by province on passenger cars and vans, for that association on a commission basis. The price is US\$300/page, and even outsiders can obtain the information on that basis. The new information system mentioned in 1) above is partly a result of Polish exasperation at not being able to present a counterargument based on data to the EU's opposition to restrictions on used vehicle imports, but an even more important factor has been the desire to achieve, through it, strengthening of the competitiveness of motor vehicles produced in Poland, whether by Polish or foreign capital, as a result of the stimulus provided by the activities of the importers association.

(3) Survey of Other Organizations and Groups

Our interview with the Automobile Manufacturers Association in August did not touch on its above-mentioned cooperation with MIT. At the Economic Chamber of Machine Components and Technology we heard about seminars on statistical methods, but that was not in the context of assertions that there are difficulties in collecting data. As for the parts manufacturers, we got comments from them to the effect that the preferences of their clients, OEM, is the market trend and that it is a matter of cooperation and mutual trust between them and OEM.

We have acutely felt the need to select a survey company that is very familiar with the structure and market of the industry in question. When we inquired about a demand forecast at the above-mentioned Business Management & Finance S.A., we were impressed by the soundness of their survey planning and also felt that their rates were quite reasonable compared with our experience in Japan.

(4) Motor Vehicle Manufacturers

By available information materials and other methods it is possible to get a very good idea of trends in the industry. In making important decisions concerning strategy, manufacturers employ the services of survey

company, including those concerning demand forecasts. They explain their strategy to their main parts suppliers and ask for their cooperation.

Market data is information on claims and dealer information, and it is particularly important that there be opportunity for exchange of views at dealer conferences in individual regions. We heard expression of strong dissatisfaction with the fact that parts manufacturers with their own service networks were reluctant to divulge information on them. That is a very important point considering the fact that, unlike the case of passenger cars, for trucks and

other large motor vehicles it is necessary to cope with individual client needs.

As one of its activities the Japan Automobile Manufacturers Association (JAMA) publishes an annual statistical bulletin in Japanese and in English. The categories of government (Ministry of International Trade and Industry) statistics are those in common with other countries regarding passenger cars, trucks and buses but also the subdivisions "ordinary trucks," "small trucks" and "light trucks" in the "truck" category and "large" and "small" in the "bus" category. Such statistics are also given by individual manufacturer. For 2-wheel vehicles, the breakdown is by "cc" class. Figures on sales are compiled with the additional cooperation of importer associations. Figures on exports are based on data for the different companies concerned, but they are further verified by breakdown of actual customs figures for imports and exports. For all of the latest figures past figures covering 5-55 years are given alongside for reference purposes. Such information is treated as official statistics on the Japanese motor vehicle industry, but the industrial branches themselves also accomplish similar statistical compilation.

Furthermore, the registered information furnished for such statistical compilation is also used for compilation of detailed information based on the strategies of the different companies by access to the different companies. Such compilations, which represent confidential information, are important to development of dealer strategy. That appears to be the equivalent of the above-mentioned data of the Polish Importers Association. In addition, we were told that some parts manufacturers also make use of such information, and that is congruent with some of the comments that we heard when surveying the Polish Motor Vehicle Parts Association.

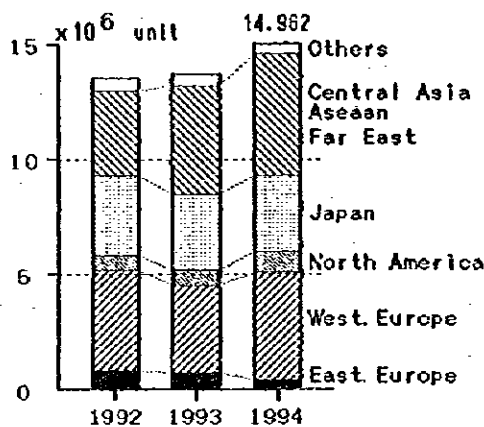
JAMA publishes "Motor Vehicle Statistics of Major Countries" with the cooperation of the motor vehicle industries of the countries concerned. This year's edition covers twenty-six countries, including Poland. For most of the countries the data is furnished by the motor vehicle industry of the country in question, but up to last year the data on the CIS, Hungary and Poland was furnished by the U.S. motor vehicle industry, and this year's edition used data furnished by the French motor vehicle association, l'Argus de l'Automobile.

In view of the fact that such data can be considered to be of great help in determination of government policy and in business cooperation between dealers, parts manufacturer associations, etc., it can be said that the Polish Automobile Industry Association and individual companies in that industry in Poland still have a lot to do in that respect as a means of contributing to strengthening of the international competitiveness their country in the field of motor vehicles.

10.3 Engines and Engine-Related Products

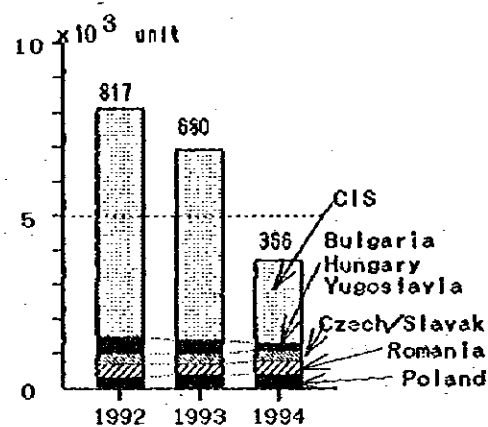
10.3.1 World Trends of Diesel Engines

Overcoming the difficult problems of the emission control measures, diesel engines are showing a growth. Fig. 10-3 shows the changes in diesel engine productions in various parts of the world. Eastern European countries (CIS, Bulgaria, Czech, Slovakia, Hungary, Poland, Romania and Yugoslavia) accounted for 81.0% in 1992, but affected by the fall to 36.1% in CIS in 1994, their amount fell. The figures in Poland were, as shown in Fig. 10-3-2, 31,000 in 1992, 37,000 in 1993 and 40,000 in 1994. The production in Poland in 1994 accounts for 10.9% in the East Europe and 0.3% in the world. A large increase in the Middle Asia, ASEAN and Far East areas has contributed to the phenomenon of worldwide increase.



DATA: MotoData

Fig. 10-3-1
World Diesel Production



DATA: MotoData

Fig. 10-3-2
Production in East Europe

Engines are semi-finished products. Fig. 10-3-3 gives a glimpse of the applications of engines produced in 1994. Those for automobiles account for 55.6% of the entire world production. And a severe exhaust gas regulation has been enforced in West Europe, North America and Japan. The ratio of the total automobile engine production of 14,962 to the total number of engines in these areas is 44.6%. In other words, as the engines are revolving around the environmental measures, this will be taken up in Fig. 10-3-2. In Poland, it is necessary to recover the opportunity loss from not having tackled the problem of improving the performance and cost for three years.

When compared with various countries of the world, as the application to automobiles is extremely low in East Europe and Poland, comparison is made adjusted in this respect in the above Figure. As those for agricultural use occur in large amounts in the Middle Asia, ASEAN and Far East areas and this affecting the world total, Poland represents a peculiar distribution here again. The application to agriculture will be taken up in 10.3.3.

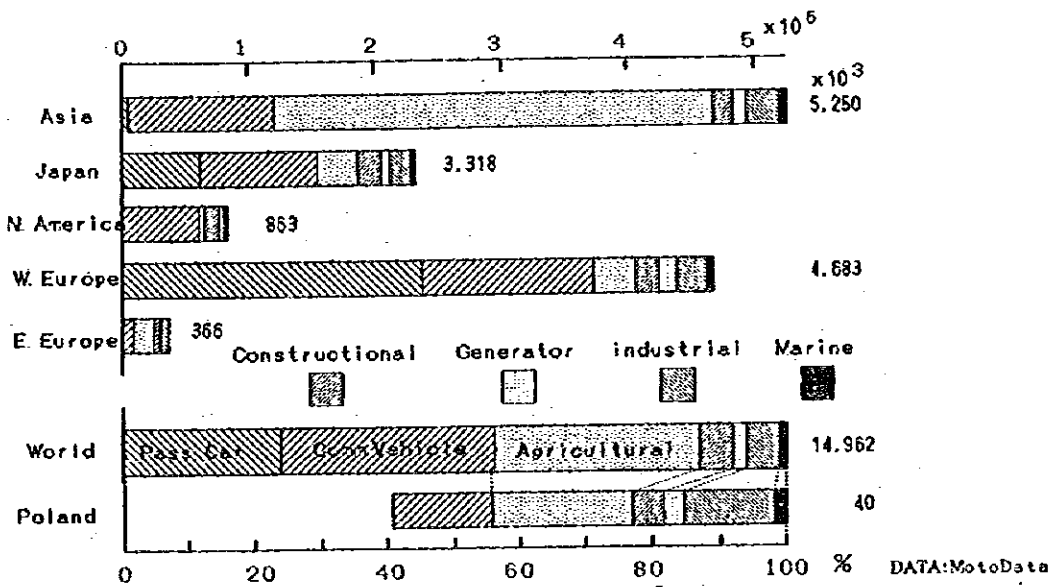


Fig. 10-3-3 Diesel Applications in the World and East Europe

10.3.2 Exhaust Emission Control Trends in Engines

The process of control programs for the nitrogen oxide (NOx) and particulate matters (PM) is shown in Fig. 10-3-4. Japan is oriented to NO_x, while Europe and America try to focus on PM. Regulations were enforced in Japan and America in 1994 and in Europe in 1995 by category one by one. European regulations come in two kinds, UN's ECE and EU's. The EU's regulation is a version into which the international standard is ratified, and is a compulsory for member nations. Europe is aiming at its application from the year 2000 onward and considering to intensify the regulation of the third stage Euro-3.

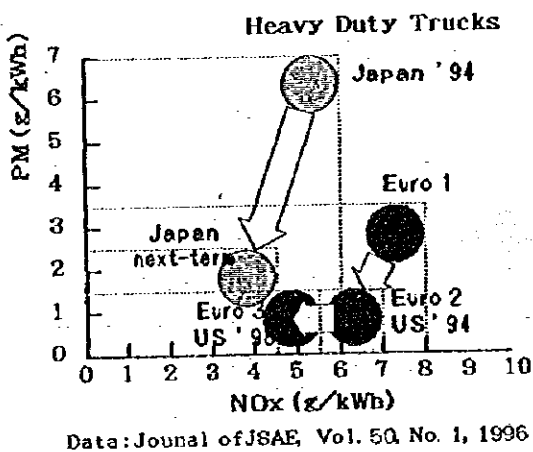


Fig. 10-3-4 Exhaust Control Target

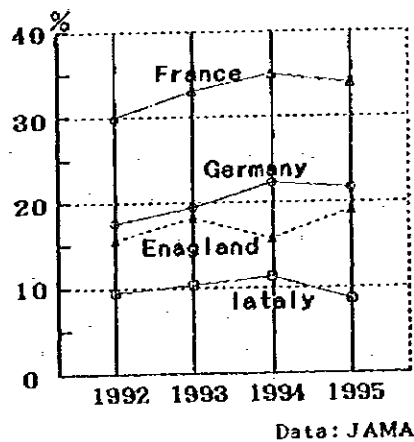
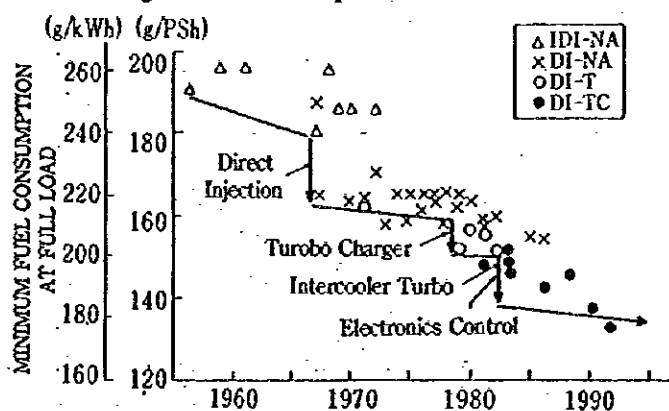


Fig. 10-3-5 Share of Diesel in European Cars

The U.S. discontinued producing diesel engines for passenger cars. In Europe on other hand, toward the new problem of global warming, the advantage of diesel engines is being reapprciated. Fig. 10-3-6 represents, in adjusted figures, the ratios of cars with a diesel engine to the total passenger car productions in the principal European countries. From this we see that the ratio of cars with a diesel engine is apparently on the increase as the total production grows. Passenger car manufacturers are proceeding with the research and development with a view to making the mileage of 3 liter on a 100km travelling as future mileage target.

The same approach applies to the improvement in exhaust gas control and that in the mileage. Taking the opportunity of the enforcement of exhaust gas regulation, they at once adopted a new construction and have made efforts to improve the mileage in various countries. In Japan, they have made an annual achievement of 3% in the mileage (Fig. 10-3-6). In Europe, Mercedes-Benz, Volvo or Scania appealed to long-distance transport customers who have a large demand and gained their support.



Source: N. Hikesaka, Journal of SAE of Japan, Vol 49, No.1, 1996

Fig. 10-3-6 Fuel Consumption - CV Diesel Engines in Japan

On the hand, it is impossible to persuade short-distance transport customers of the initial investment only for the effect of improved mileage. As this engine is of a kind that is not quite suited for use in slow travelling or in the frequent repetition of go and stop operations, corresponding measures for these ends will have to be reflected together. These measures will have to be handled by a product combination approach toward short and long distance trucks and be settled. This is a field in which the experience in Japan where short-distance travelling shares the greater part and the NOx regulation has advanced, could serve as a guide.

It was usual practice that a similar regulation is enforced with a few years's delay on construction vehicles running on highways. Engines for construction vehicles also come in two types, one for continuous long-distance runnings and another for the repetition of a short-distance running. As regards the former type, Cummins and Caterpillar which are offering engines to both of the Class 8 trucks and construction vehicles offered products of the newest quality before enforcement of the regulation and have gained the users' appreciation.

Products other than automobiles will be taken up in 10.3.3 again.

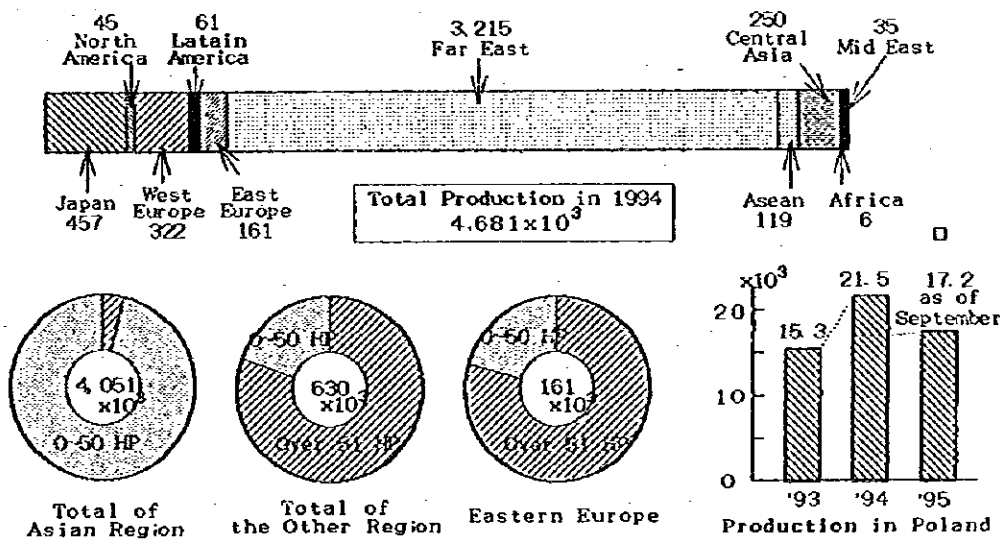
In the case of products not involving homologation it is difficult to apply an exhaust gas regulation with a thorough-going surveillance. For such products, it will be necessary for the trade to have talks within itself and voluntarily choose to use products that are subject to regulations.

10.3.3 Trends in Related Products Industries

Makers of engine-related products also manufacture engines domestically usually. Accordingly, the trend of the engine thus produced is at once the trend itself of the finished product.

(1) Engines for Agricultural Machines

According to GUS statistics, the numbers of agricultural tractors produced were 15,300 in 1994, and 21,500 in 1995 with an increase of 40.7%. In 1996, the figure came to 17,200 as of September with a slight increase of 2.1% over the same month in the year before. When productions in 1994 are internationally compared, the corresponding figure accounts for 9.5% of the total in the East Europe and ranks the 8th, following the 95,000 of CIS and 27,000 of Romania. It also represents 0.3% of the total world production of engines for agricultural machines.



DATA: MotoData

Fig.10-3-7: Production of Agricultural Engines in 1994

86.5% of the world production is produced in Japan, Far East and Middle East areas. A predominant number of small engines of 50HP or under are produced in these areas. Accordingly, on a simple average of the world figures, those of 50HP or under account for 86%, but the average in the areas other than Asian countries is 19.5HP which is about the same as in East Europe.

Principal makers in Eastern European region are Slavia (Slovak), Ursus (Poland), DMO-Belarus (CIS), Kama (CIS), IMR (Yugoslavia) and 21 Mai-Rakovica (Yugoslavia), etc.

(2) Industrial and Construction Engines

Total 566,000 units of construction machine engines were produced in 1994 in the three areas, Japan, North America and West Europe. This figure accounts for 76.6% of the world production of industrial engines. Each area has its own characteristic in terms of horsepower distribution, with 0~50HP accounting for 61.0% in Japan, 100~300HP for 58.8% in North America where very few 5HP are produced, 0~10HP for 69.1% in Europe.

When the cumulation ratios in East Europe is superposed with those of West Europe, they are in a complete agreement (Fig. 10-3-8). In the U.S., specialized engine makers CDC, Caterpillar, Cummins, Deere, DDC, etc. are offering to truck, agricultural machines, construction, generator industries, etc. extensively. The total of 300 ~ 500-class engines they produced came to 202,000, exceeding that in Japan of 61,000 and that in Europe of 145,000. Among the American makers, Caterpillar has accorded license to Caterpillar Mitsubishi and Cummins to Komatsu in Japan, and in West Europe, Cummins is producing 38,000 in the U.K. and Deere 47,000 in France.

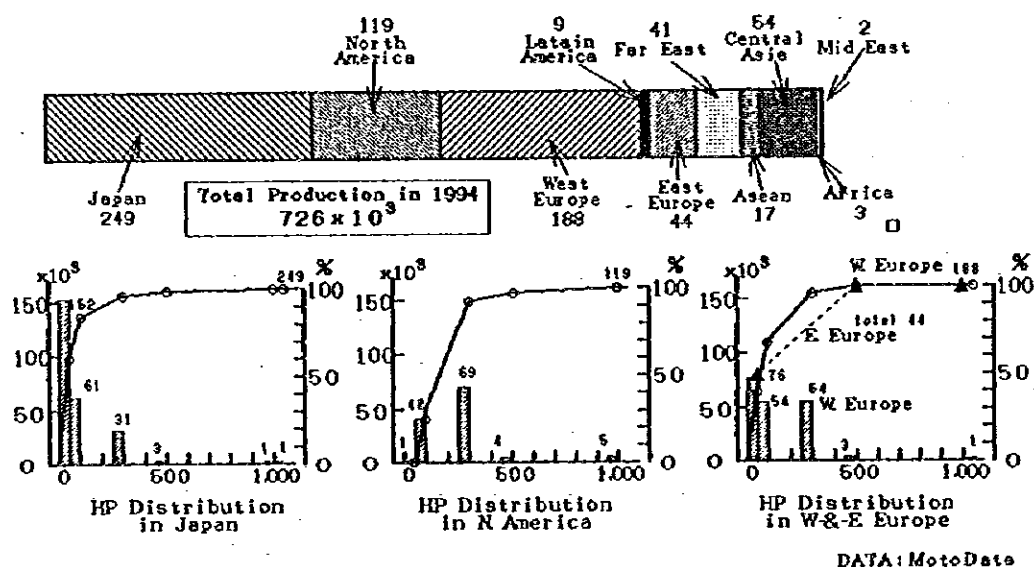


Fig.10-3-8: Production of Construction Engines in 1994

As customers in the market are also desiring a high quality, the idea of delaying the regulation enforcement a few years to construction vehicles seems to be falling apart. In Poland also, when we visited Hula S talowa Wila in August, they were in the middle of performing service-training on Euro-2 engines. In other words, availing of the exhaust gas regulation American engineers are exerting a large influence on the final construction machine users. Vehicles running on highways become the object of the Road Traffic Act and though the regulation can severely be applied to construction machines also, thorough application seems to be hard to other machines and vehicles. In Japan, the use of an engine qualified in terms of regulation has been added to the conditions of application for the public works tenders. The greatest concern of the Polish construction machine industry lies in the transport network design covering East Europe, Central Europe and Mediterranean coast countries. At the Related Government Office Conference of various countries in 1994, expectations were placed to the early construction starts in four of the 9 important road plans.

* Polskie drogi, No. 7(21), Aug., 1996

(3) Generator Engines

As you can see from Fig. 10-3-3, the application ratio of diesel engines to generators is 2.3%. In the supplies to civilian ends, it is essential that the engine can also be used in other finished products. Generators presently come in two types, service generators and self-starting generators for securing emergency power source as supplement to the commercially available electric power supply. Furthermore, use of an engine the most advanced in terms of environmental measures and having the highest thermal efficiency is being studied for a future power supply.

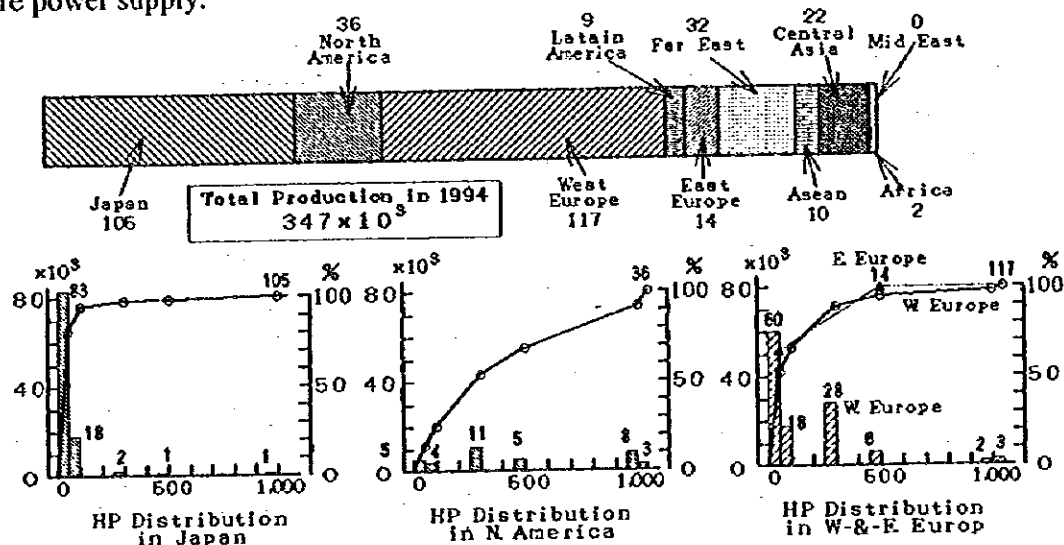


Fig. 10-3-9 Production of Generator Engines in 1994

DATA: MotoData

The production status in 1994 is shown in Fig. 10-3-9. As expected, Japan, America and Europe areas account for 74.4%. The same tendency as in the industrial machines further intensifies in the distribution by output in these 3 areas. What is characteristic is that the number of the class above 500HP which seldom occurs in the civilian demand is relatively large. The number of 100HP or under accounts for 96.1% in Japan. The 100HP or under accounts for 66.7% likewise in Europe as the main item, but 500HP or above comes to 5,000 unit level, accounting for 4.3%. In North America, the number of 100HP or under represents 25.0%, accounting for 30.5%. The share of those for generators in the total production of engines above 500HP comes to 57.9% in North America and to 50.0% in West Europe.

The production in East Europe comes to a 14,000 level or 4.0%. That in Poland is at a 3,000 level. When the output distribution in East Europe is superposed with that in West Europe, they are in agreement also here.

In the engines above 500HP, the share of the marine in Japan comes to 57.1%. That of generators is 14.3%. In view of the future energy policy however, co-generation (power & heat merging system) has come to be in the limelight. The principle of this system consists in that a heat exchanger fixed to the emitting part of a service generator operates to feed warm water. Different from power generation, this process belongs to the world of thermodynamics, and if a optimized system is designed to match the circumstances of

customer, as it leads to realizing a rapid rise of thermal efficiency, engine engineers were tackling this task with a great interest. There are many cases in which petroleum companies become dealers utilizing their affiliated service stations. When the power rate is compared with the cost of fuel, though there certainly is an advantage, at the present level of depreciation coming to 5 years, it was hard to win the support of consumers and was failing to increase.

In the latter half of 1980's, in case of future demand-supply imbalance of power, a policy shift was made from the use of nuclear energy to an environment-friendly co-generation system, and in 1994, including the concrete measures of easing restrictions on the free power sale, it was reconfirmed that the greater part of the requirement to be satisfied be covered by co-generation (Fig. 10-3-10).

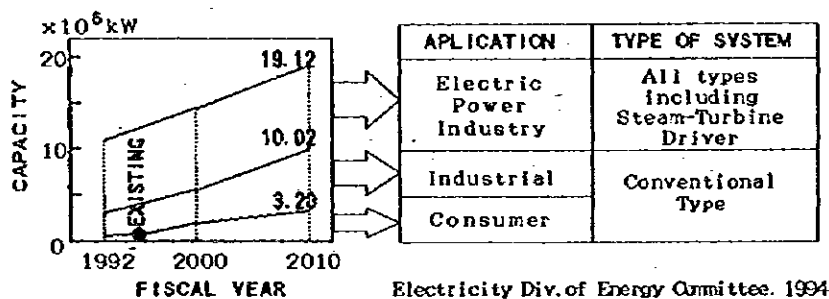
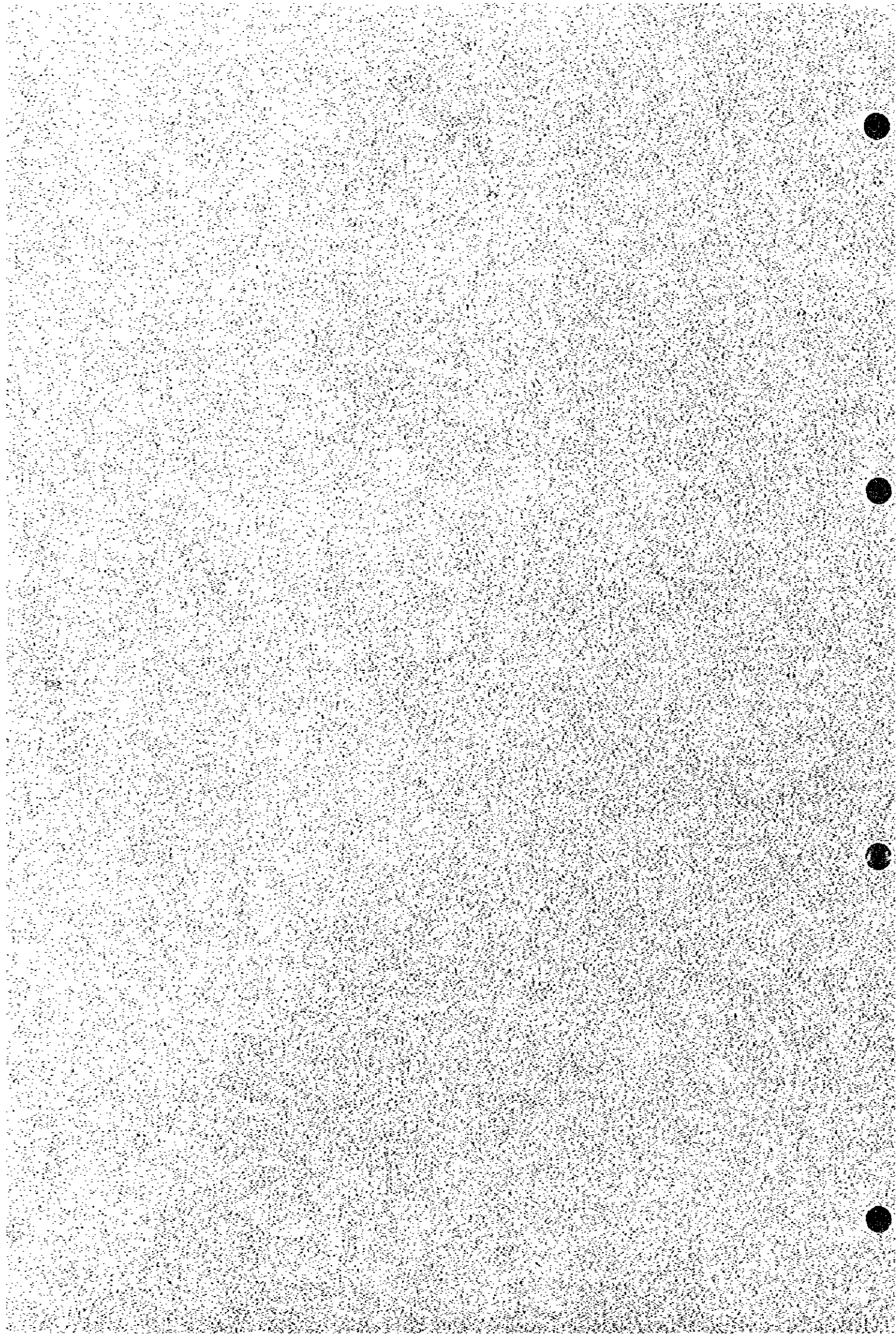


Fig. 10-3-10 Co-Generation System Plan by Japanese Government

For consumers, there are a type of abt. 70kVA as for home use and another of abt. 350 ~ 500kVA including the 2-power-source method as for hotels, hospitals, etc., and for industries, a co-generation type as mentioned above and another that produces steam using waste heat. For electric enterprises, there is also an approach of performing generation with steam turbines using a large volume of steam to be generated by the exhaust gas in addition to the engine generation. In other words, we are in an age when it is necessary to transfer the technologies of attaining reduction in the mileage as well as the reliability in the continuous long-time running.

1 1 Regional Development Problems and Development



11 Regional Development Problems and Development Potentials in Mielec Area

11.1 Socio-Economic Conditions in Mielec Area

In September 1995, the Polish government designated Mielec as the first Special Economic Zone (SSE) in the country. SSE Mielec encompasses the 575 hectare grounds of the former WSK-PZL Mielec, which was formerly the aircraft-maker WSK-PZL Mielec, now a set of 12 spin-off companies including the 350 ha airport. The 150 ha area available to new investors includes ready-to-use production buildings, warehouses and offices with a total area of 80,000 sq m. In addition, there are also telecommunications networks, electricity, heating system, gas, water and sewage systems, a compressed-air network, internal roads, rail side-tracks, garbage dumps and other facilities.

WSK-PZL Mielec's restructuring has had a side-effect: the community's unemployment rate now runs at about 20 percent. There is therefore a large pool of highly-qualified workers available to employers, encompassing a wide range of professions and specializations from Mielec's aeronautic and automotive-engineering heritage. The engineering workforces has professional experience in construction, technology and product assembly and sub-assembly.

Conducting business in the SSE requires a special permit, which also confers following benefits:

- 1) Complete abatement of business income tax for a period equal to half of the life of the SSE (10 years), if an investment of at least 2 million ECU, or employment of at least 100 staff are made,
- 2) A 50 % reduction in business income tax for the remaining life of zone,
- 3) For companies not granted income tax breaks, immediate and full write-off of all investments made in the SSE against current taxable earnings,
- 4) Options of using special accelerated depreciation schedules for fixed assets, and no real estate tax.

The company which has already been carrying on economic activity within the area of SSE can obtain certain privilege of business income tax exemption until the year 2005, provided that:

- 1) it has made investment outlays amounting to at least 25% of company's total value of fixed assets; or
- 2) over the last 6 months prior to the date of applying for the license, it has achieved at least 15% real sales increase from production and service operations in the Zone area; or
- 3) over the last 6 months prior to the date of applying for the license, it has increased employment in the Zone area by at least 15% (but not less than 10 persons).

As of October 1996, the zone consisted of limited-liability companies created out of WSK-PZL Mielec's capital restructuring plus a handful of smaller, newly-created private companies, the list of which is shown in Table 11-1-1. Products of enterprises operating in the SSE are mainly plastic goods, construction materials, etc. and enterprises of high technology industries and engineering industries, which are considered to have comparative advantage from the viewpoint of the region's technological background, are not yet many. The planned increase of employment in the SSE is also not very promising. The net increase of employment by the year 2000 is expected to be 1,329 persons and additional 800 persons of construction workers for airport expansion (* in the Table), though they will not be permanent jobs, may be added. Total amount of investment committed to be made by the year 2000 will be PLN 206 million or approximately US\$ 80 million.

Table 11-1-1 List of Enterprises in SSE Euro-Park Mielec

No.	Name of Company	Date of Approval	Products	Current Emp.	Planned Emp.		Net Increase	Amount of Inv. ('000 PLN)
					1997	2000		
1	AGMAR Telecom Sp. z o.o.	25 Apr. 9	telecom equipme	90	160	200	110	960
2	Witwornia Zespolow Kooperacyjnych "PZL-Mielec" Sp. z o.o.	9 May 96	aircraft components	100	110	110	10	0
3	Zaklad Produkcji Obuwia HEN MAR	25 Apr. 9	footwear	0	0	140	140	2,804
4	Ofcyna Wydawnicza PRESS MEDIA	18 Jun. 9	printing	0	100	100	100	1,990
5	Polsko-Koreanskie Przedsiębiorstw Produkcyjno-Handlowe JOONGPOL	18 Jun. 9	plastic goods	0	18	18	18	2,903
6	KOMANDOR S.A.	18 Jun. 9	const. materials	27	100	200	173	10,000
7	Zaklad Przetworstwa Tworzyw Sztu "PZL-Mielec" Sp. z o.o.	28 Jun. 9	plastic goods	172	172	187	15	1,100
8	EUROCAST Sp. z o.o.	9 Jul. 96	plastic goods	0	40	100	100	1,384
9	ATLANTIS MIELEC Sp. z o.o.	20 Aug. 9	building materia	0	0	120	120	10,815
10	MELNOX Sp. z o.o.	20 Aug. 9	furniture	0	100	100	100	46,250
11	PZL-Mielec Cargo Sp. z o.o.	15 Oct. 9	contractor	0			*800	*300,000
12	Plastic Factory "COBI" Sp. z o.o.	23 Oct. 9	plastics, toys	0	100	180	180	4,400
13	Laboratorium Frakcjonowania Osocz	23 Oct. 9	blood products	0	0	63	63	120,616
14	J.W. INDUSTRIES Sp. z o.o.	29 Oct. 9	const. materials	0	153	200	200	2,742
	TOTAL			389	1053	1718	1329	205,968

Source: Polish Agency for Industrial Development

11.2 Development Potentials and Problems in Mielec Area

Mielec is located in Poland's southeast, close to the Ukrainian and Slovakian borders and about 270 km from Warszawa and 140 km from Krakow. Concerning the infrastructure which serves Mielec and its factories in the SSE, they are linked by a public road and railroad system; the factory also has its own side-track. A major asset is a wide-gauge rail line leading to Ukraine and Russia. This allows large shipments to be sent directly to Ukraine and Russia and possibly reduces the amount of loading and unloading of cargoes sent by rail via East-European countries to Central Asian countries. A two-runway airport is located within the former WSK-PZL Mielec grounds. The runways can accommodate most cargo planes, including lightly-loaded Boeing 747s. The length of the main runway, which is planned to increase in near future, at present limits the versatility of the airport.

The positive elements for the future economic development of Mielec Area are consisted of following:

- 1) A pool of engineers and skilled manpower experienced with various engineering works in Mielec Area and also in surrounding industrial cities within 50 -100 km,
- 2) Good link with A-4 National Motorway of East-West direction which goes across the Southern cities and regions of Poland from German border to Ukrainian border,
- 3) The availability of site for airport which is at present used only for limited purpose and possible for expansion,
- 4) Links to Polish Railway system,
- 5) Clean air, friendly local people and natural environment, and among others
- 6) Designated as Special Economic Zone with various benefits and incentive measures.

At the same time, following points can be counted as problems for the regional development:

- 1) Regional Economic Development Plan is not yet prepared future policy direction of regional development is not clear,
- 2) Engineering standard of existing local roads linking to National A-4 Highway is not sufficient for industrial road and require substantial upgrading,
- 3) Schedule of constructing A-4 Motorway is not yet finalized at the time of the field survey of the Study Team (as of November 1996),
- 4) Mielec Town is too small in population and limited facilities and services for urban life is available, while there does not exist any big cities in the vicinity to substitute the handicap of urban facilities and services, and
- 5) Location of the region is South Eastern part of Poland and far away from Western Europe, comparing with other industrial locations in Poland.

Taking into account of above-mentioned positive and negative factors in all, Mielec can not be assessed to be competitive enough to other industrial regions in Poland including another SSE, Katowice