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# The Expected Effects of EU-Accession on the Electricity Sector in Poland

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## **1. Introduction**

The power generation sector is a crucial part of any economy. Due to its importance for the economy, this sector is quite often monopolized by the State. Nevertheless, setting of electricity prices by central authorities results in economic inefficiency of the sector

Poland's forthcoming accession to the European Union speeds up transformation in the sector and the introduction of competitive market mechanisms. Polish power generation sector enterprises will be able to compete effectively on the Single European Market thanks to a structural reform of the sector, which was initiated in the early 1990s. General objectives, principles and measures adopted by the Polish government to reform the power generation sector, are fully consistent with the activities simultaneously taken up in the European Union towards creation of an All-European power market. However, both in Poland and in the European Union the process of liberalisation of the power generation sector poses many difficulties and its implementation is bound to take a long time.

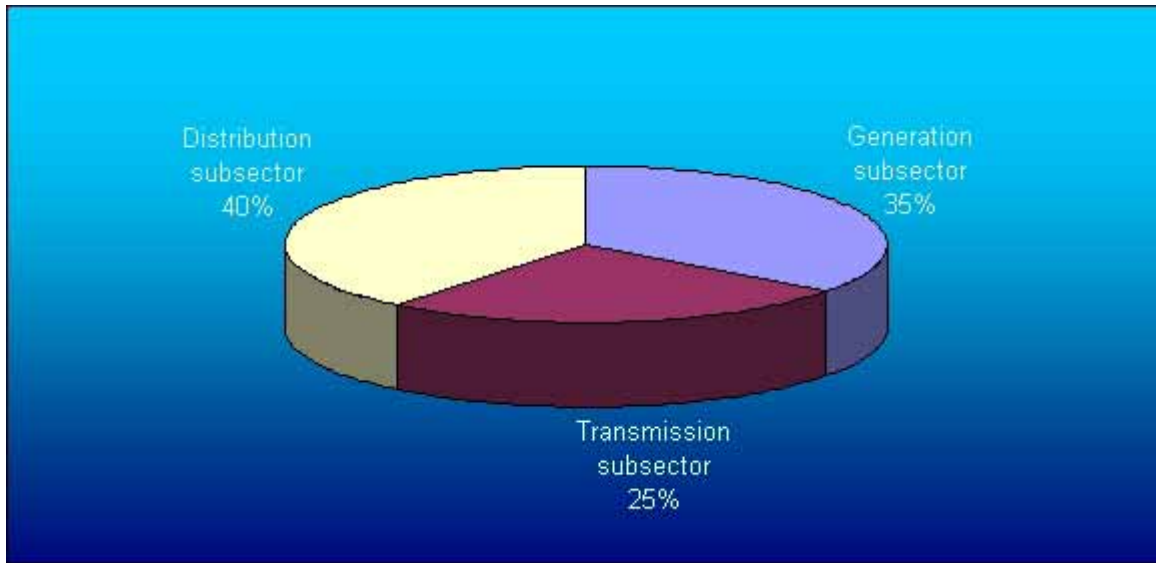
The report presents developments taking place on the Polish energy market and evaluates the possible impact of integration on the power generation sector in many fields of its operation – starting from its impact on the sector's growth rate, through foreign trade, and ending with the government policy. The report also provides an assessment of opportunities and threats concerning the power generation industry in Poland in the light of integration with the European Union.

Along with other references, information included in the study i.e. "Energy Policy Guidelines for Poland until 2010", adopted by the Polish government and "Energy Policy Guidelines for Poland until 2010 – implementation assessment and adjustment" adopted by the Council of Ministers on April 2, 2002, has been used for preparation of this report.

## 2. General characteristics of the sector

The power generation sector in Poland consists of three subsectors. The first one is the electricity generation subsector, consisting of 55 power plants. The second subsector is that of transmission and comprises a transmission grid fully owned by Polskie Sieci Elektroenergetyczne S.A. (the Polish Power Grid Company – PPGC). The third subsector, that is distribution is represented by 33 state-owned distribution companies.

**Figure 1. Sales revenue structure in the electrical power generation sector in 2000 (percent)**



*Source: Own calculations based on: Elektroenergetyka Poland 2000, Agencja Rynku Energii SA, Warsaw 2001*

Apart from electricity, the power generation sector also generates heat (transmitted by means of hot water). Heat is produced in heat generation plants, focusing solely on this form of activity, and in combined heat and power plants (CHPs), whose main activity is electricity generation and heat is produced in cogeneration. Above 250 heat generation plants and 230 combined heat and power plants are operating in Poland.

Generating facilities can be divided into professional (public) power stations and industrial power stations (autoproducers). Professional power plants sell electricity through power grid companies acting as intermediaries. Industrial power stations are parts of industrial plants or of their affiliates. Electricity generated in industrial power plants is used mostly for own needs of parent industrial plants.

At the end of 2001, the installed generating capacity of Polish power stations amounted to 34.7 GW and was by 0,4 percent higher than towards the end of 2000. The installed generating capacity has been growing steadily since 1990, when it totalled 31.9 GW. This means that it grew by almost 9 percent between 1990 – 2001.

**Table 1. Capacity installed in Polish power plants (MW, as of Dec. 31, 2001)**

	<b>Capacity installed</b>	<b>1990 = 100</b>
Total	34 723	108,7
Public power plants	31 979	111,1
Thermal	29 819	111,3
Hard coal fired	20 450	115,3
Lignite fired	9 233	101,9
Hydro	2 160	107,7
Industrial power plants above 0.5 MW	2 665	84,1

*Source: Statistical Yearbook of The Republic of Poland 2002, Central Statistical Office*

In 2001, compared to 1990, only the capacity installed in industrial power plants above 0.5 MW showed a decline. This trend has been continuing since 1993, when the capacity installed in industrial power plants amounted to 3,300 MW. Between 1993 - 2001, the capacity installed in industrial power plants declined by above 20 percent. This indicates that industrial enterprises rely less and less on own power generation sources, and more often purchase electricity on the market.

Small power plants of 1 to 20 MW of power, accounting for above 32 percent of the capacity installed, have the largest share of the Polish power generation sector. They are followed by power plants of 100 – 200 MW of power (25 percent) and power plants of 20 –50 MW of power (17 percent).

The power generation sector in Poland is based primarily on hard coal and brown coal (lignite). In 2001, hard coal firing power plants accounted for 61 percent of electricity production, with lignite firing power plants contributing another 36 percent. Hydro power plants generated 4,220 GWh of electricity, while the renewable energy sector virtually does not exist, as only 36 GWh of electricity was produced that way, which accounted for just 0.03 percent of electrical power output in Poland.

The issue of construction of a nuclear power plant in Poland arises a lot of anxiety. At the moment no nuclear power generating plants are in operation in Poland, and their construction is not envisaged in the Strategy for Poland's economic development by the year 2020. The reasons presented by opponents of the use of nuclear energy in Poland focus on safety issues and problems of nuclear wastes disposal. At the same time, proponents of nuclear power plant construction in Poland argue that this is the cleanest and environmentally least hazardous way of generating power.

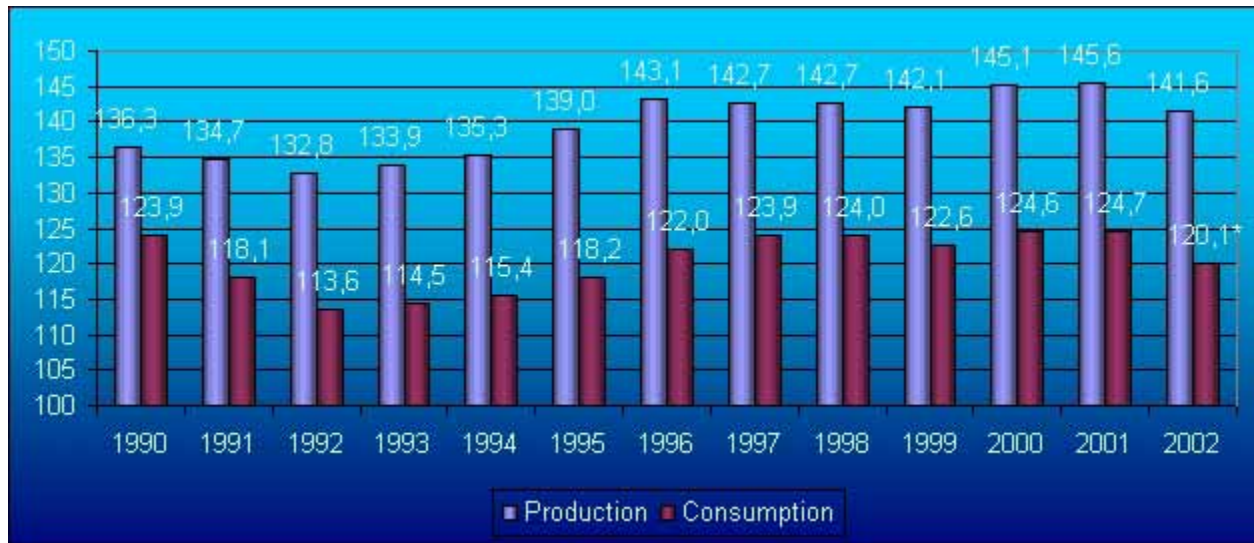
As a matter of fact, in Poland's neighbourhood only Belarus does not operate any nuclear power plants. In Sweden, where strong emphasis is put on environmental protection, nuclear power plants account for above 50 percent of electricity output. In France, the nuclear energy sector's share in power generation is as high as 70 percent. The experience of those and many other countries shows that nuclear power plants are not particularly harmful for the environment. It seems plausible that if the Polish economy should develop at a faster rate, the construction of nuclear power plants may prove inevitable, as conventional power plants would not be able to satisfy the country's growing energy needs.

### 3. The impact of integration on the power generation sector in Poland

#### 3.1 Growth rate and financial results of the sector

Following the period of decline between 1990 – 1992, electrical energy production was growing substantially from 1993 to 1996. Since 1996, the annual electricity output has been stable. The 2001 output level reached its peak in ten years, and was 6.8 percent higher than in 1990. In 2002, electrical power production in Poland amounted to 141.6 TWh, which was 3 percent less than a year before. Low economic growth was the reason of this declining in 2002 in Poland.

Figure 2. Electricity production and consumption in Poland between 1990 – 2002 (TWh)



Source: Statistical Yearbooks of The Republic of Poland 1996-2002, Central Statistical Office  
\* GIME estimation

Domestic electricity consumption is lower than its production and accounts for approximately 85 percent of electricity expenditure in Poland. In 2002, it amounted to 120.1 TWh. In 1990 – 1992, domestic consumption fell dramatically as a consequence of both the recession and a rise in energy prices, encouraging its more rational use. Since 1993, energy consumption in Poland has been growing steadily (except 1999 and 2002), resulting in a return to the consumption level of 1990 in 2000-2001.

Following its drop in 1999, in the year 2000 electricity consumption amounted to almost 125 TWh, which was 1,7 percent more than in the previous year. In 2001, domestic consumption went up slightly in comparison with 2000, which was an indication of a gradual stabilisation of domestic consumption. In 2001, domestic consumption peaked since 1990. Year 2002 was the year of low economic growth in Poland. It lowered demand for electric energy.

There was an apparent stagnation of electricity both production and consumption in 2000-2001. On the one hand, this was due to slow economic growth – energy saving and reduced requirements, and on the other hand it resulted from a declining level of outlays on power generation sector infrastructure, especially on its refurbishing. Modernising the existing power grids and constructing new ones requires investment expenditure financing, the prospects for which are rather remote, given the poor economic standing of electricity distribution companies. Integration with the European Union will enable taking advantage of assets within the framework of the EU funds allocated for the support of regional development. This opportunity might be beneficial for areas, in particular rural ones, characterised by a relatively low level of electrification. Power grid density growth will

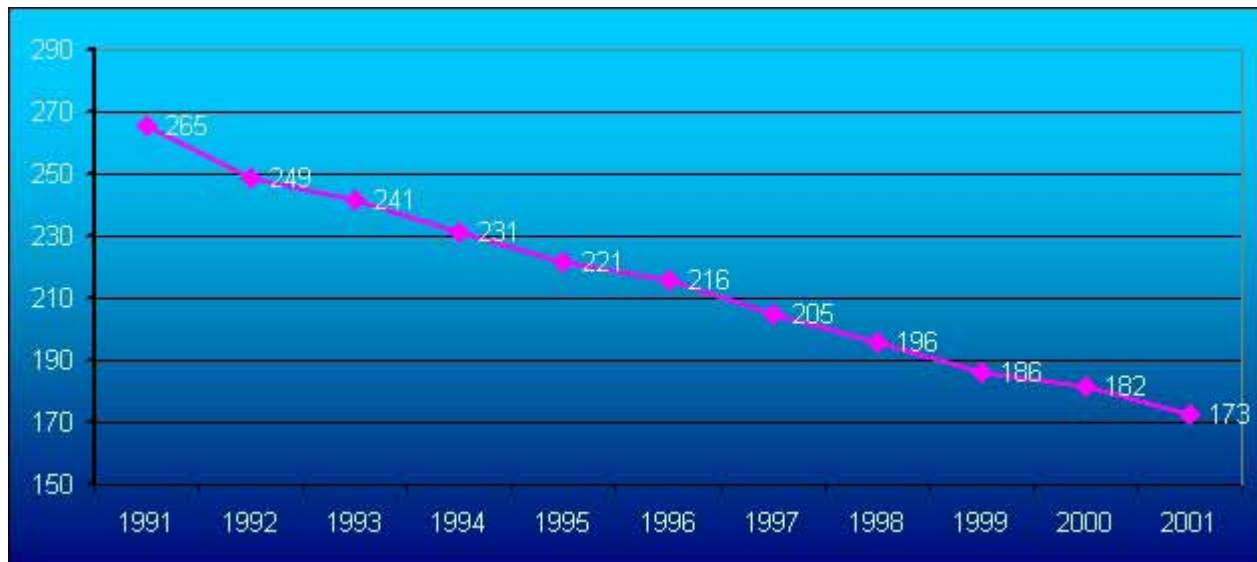
result in increased demand for electricity and so it may considerably contribute to accelerating the growth rate of the sector's production. It should be emphasized, however, that external sources of financing provided by the European Union may play a vital role here.

Foreign investors are also expected to get involved in development of the power generation sector infrastructure in Poland. Apart from funds for development, Polish energy sector operators may acquire foreign capital by attracting new investors. At present, companies from the EU countries invest in the Polish power generation sector, which may contribute to a long-term increase in electricity production in the future. As a matter of fact, this increase will result from modern management of power generation sector companies, and effective use of energy generated.

### GDP energy intensity

Large-scale implementation of state-of-the-art, energy-saving technologies, in connection with greater rationalisation in energy consumption, have contributed to a marked decline in gross domestic product energy intensity in Poland. Its ratio fell down from 265 MWh of electricity per each PLN million of GDP in 1991, to 173 MWh in 2001. This means a decline in GDP energy intensity by almost 35 percent over 10 years.

**Figure 3. Energy intensity GDP (at constant prices) in 1991-2001 (MWh/PLN million)**



*Source: GIME calculations based on CSO statistics*

In 1991 – 2001, the average annual decline in GDP energy intensity equaled 4 percent. The rate of this decline was faster in 2001 (4.9 percent). After integration with the European Union this trend will probably slow down progressively, but its reversal is not to be expected, as decline in GDP energy intensity will still be present.

Industrial customers, accounting for 61 percent of domestic consumption are the largest group of electricity users in Poland, followed by households, which account for almost 17 percent of domestic consumption. The following trend has been recorded in recent years: energy consumption in industry has remained unchanged while slight increase in households and transport. It is largely due to slow economic growth in Poland. Economic recovery expected to follow Poland's accession to the European Union is likely to result in a reversal of this trend, with households losing and industrial customers gaining on importance as electricity users.

Accession experience of other EU-Fifteen countries indicates that Poland will enter a faster economic growth path as a result of integration with the EU. However, this increase will be strongly involved with the tertiary sector growth (services). As services are less energy-intensive than the manufacturing industry, the economic

growth carry-over effect on the growth rate of electricity production will be less pronounced. Nevertheless, increased energy needs will be the consequence of economic growth acceleration after joining the European Union.

The Union's enlargement will have a positive effect on the level of wealth in the candidate countries. This will result in a higher level of households' disposable incomes; and thus stimulating the demand on consumer durables, including electrical appliances. Although these appliances are becoming less and less energy-consuming, growing demand will boost electricity consumption and increase the share of households in the energy market, rather than lower electrical energy needs. Furthermore, the switch-over of low-voltage networks to a higher voltage will be of serious significance for an enhanced power intake.

To sum up this part of the analysis, it should be stressed again that electricity consumption and production in Poland increased in 1991 – 2001. The simultaneous decline in gross domestic product energy intensity is the consequence of application of energy-saving technologies in the economy, and of energy consumption rationalisation. This tendency is supported by the already mentioned changes in the GDP generation structure, namely the growing significance of less energy-intensive services at the expense of energy-intensive industry. It cannot be ruled out, however, that due to technological progress taking place in the Polish electrical power generation sector as a consequence of integration with the European Union, electricity consumption will fall substantially in the near future and the downward trend of GDP energy-intensity will intensify even further.

### Sales revenues

Sales revenues (jointly from electricity heat) in the power generation sector in 2002 totalled almost PLN 79 billion and accounted for almost 13 percent of total industry revenues. In terms of revenues, this sector proved to be Poland's second-largest after the food-processing industry.

**Fig. 4. Sales revenues in the power generation sector in 1995-2002 (current prices in PLN and EUR billion, at the official Central Bank exchange rate)**



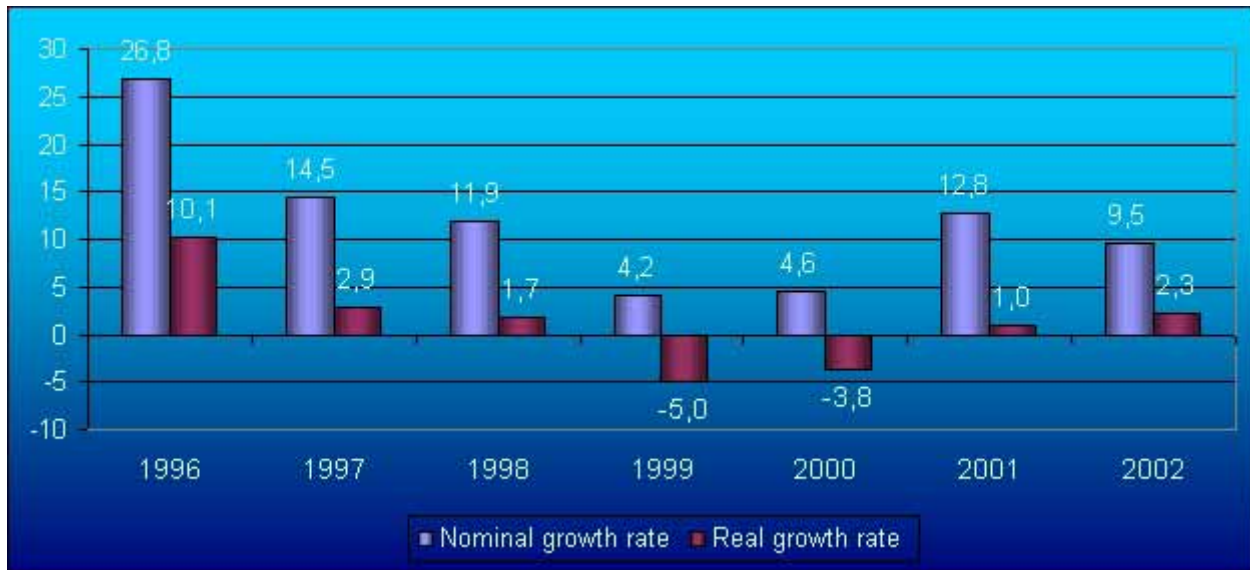
*Source: GIME calculations based on CSO statistics*

Above 85 percent of the sector's revenues (about PLN 67 billion in 2002) is generated by enterprises, for which production, transmission and distribution of electricity is the basic activity. The remaining 15 percent of revenues (PLN 11 billion in 2002) goes to companies dealing only in heat production and distribution. In nominal terms, sales revenues confirmed to grow in 1996-2002. The sector reached the highest revenues in real terms (at constant prices of 2002) in 1998 (almost PLN 84 billion).



With electricity and heat price growth taken into account, the real growth rate of revenues in 1996-2000 recorded an apparent downward trend. While as recently as 1996 sales revenues in the power generation sector went up by more than 10 percent in real terms, in 1997 they rose by less than 3 percent, and a year later by less than 2 percent. In 1999 and 2000, real revenues of the power generation sector dropped by 4.9 and 6.4 percent, respectively. Nevertheless, in 2001 the downward trend of revenues was stopped, as they dropped by approximately 1 percent in real terms. Compared to 1995, in 2002 real sales revenues in the power generation sector were higher by 9 percent.

**Fig. 5. Nominal and real growth rate of sales revenues in the power generation sector in 1996 – 2002 (percent)**



*Source: GIME calculations based on CSO statistics*

The level of electricity sales revenues depends on levels of energy production and prices. The level of production expressed by the number of terawatt hours of electricity is to increase due to integration with the European Union. Nevertheless, the prices level is to fall as a consequence of market liberalisation and liquidation of the state monopoly.

It is already now that electrical energy has been perceived more as a commodity, and after accession to the EU, prices will be determined exclusively by free market mechanisms. Electricity price fall may stimulate demand for electrical energy, especially in industry. Manufacturing companies may decide to expand their operations and to start up the so far economically unprofitable (because of energy prices) production departments.

An optimistic scenario assumes that the percent growth of production will outpace percent fall in prices, resulting in a rise in electricity sales revenues. It cannot be ruled out, however, that due to a slower than assumed pace of changes and restructuring of the sector as well as inadequate development of transmission grids infrastructure, a rise in the sector's revenue will not take place.

## Return on sales

Fig. 6. Gross and net profit in the power generation sector in 1995-2002 (current prices, PLN million)



Source: GIME calculations based on CSO statistics

In 2002, the sector's financial results improved. Gross profit from total activity amounted to PLN 852 million, and net profit reached the level of 508 million. Gross profit was 8 percent higher than in 2001, while net profit was the lowest in the entire analysed period. In 2001 the apparent downward trend of gross profit, which had been observed since 1997, stopped, while for net profit it still continued, but the scale of decline was smaller than in the previous years. In 2002 sector's net profit almost trebled.

Fig. 7. Gross and net profitability ratios in w 1995 – 2002 (percent)



Source: GIME calculations based on CSO statistics

The fall in profits accompanied by growing revenues resulted in declining profitability ratios in 1995-2001. Gross profitability, calculated as gross profit/total revenue ratio, was only slightly higher than 1 percent in 2000 - 2002, compared to 5.5 percent in 1995. Similarly, net profitability, i.e. net profit/total revenues ratio dropped over that period from 3 percent to 0.3 percent in year 2001. While there was a stabilisation of sector's gross profitability in 2002, net profitability increase.

Low profitability of power generation sector enterprise in Poland recorded in recent years is to some extent brought about by the Polish electrical energy market becoming more and more a part of one big European market. In 1995-2001, the fall in profitability was caused primarily by tightening of competition on the energy market. Given the opportunity to choose energy provider by some customer groups, enterprises are more cautious about raising their prices. Apart from that, the President of the Energy Regulatory Authority (ERA), who checks whether price rises are justified by growing costs, must approve any energy price changes.

The rate of profit is also adversely affected by restructuring and investment processes in enterprises, aimed at adjusting to the competitive market requirements and to the European Union regulations. The results obtained in 2002 point to some stabilisation of the sector, which may be an indication that enterprises are better and better coping with new operating conditions and may provide reasons to believe that the coming years will be more favourable for the power generation sector.

In 2003-2004, electricity consumption in Poland should remain stable. Statistical data for 1990-2001 show that the growth of Poland's Gross Domestic Product was not accompanied by a corresponding rise in demand for electricity. This was due to the use of economic efficiency reserves. With GDP growth rate projected at 2.5-3 percent in 2003, no sharp increase in electrical energy consumption in Poland can be expected. Further rationalisation of consumption will be the case, attributable, first, to the implementation of state-of-the-art, energy-saving technologies into the Polish industry and, second, to the necessity to cut production costs in other activities as well.

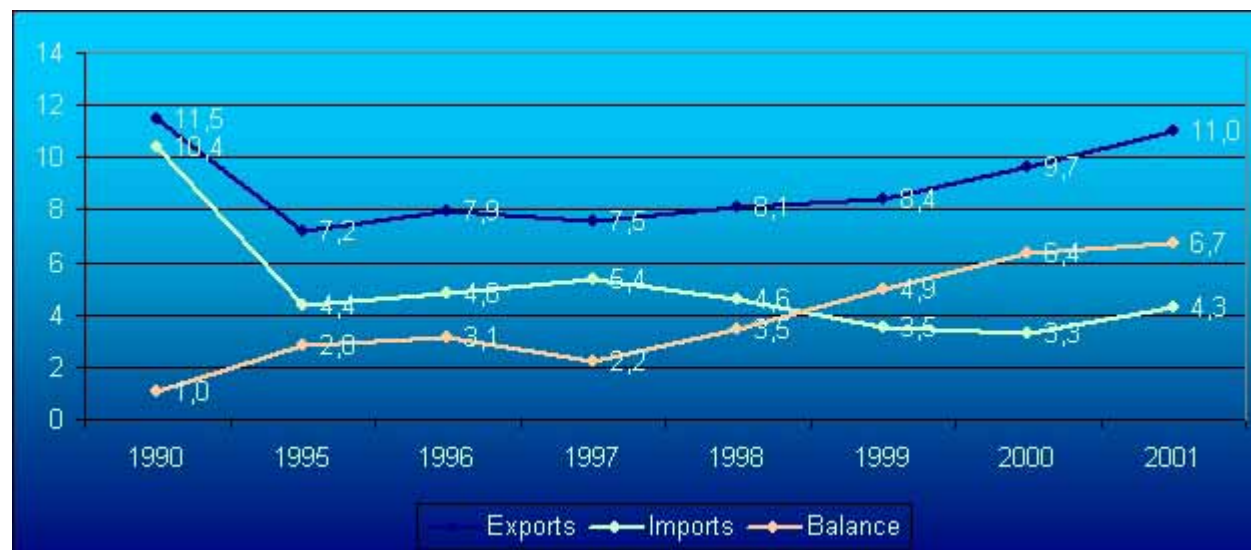
Stabilisation of electrical energy consumption will result in stabilisation of revenues of the sector's companies. In nominal terms, until accession to the European Union they will grow at a rate corresponding with the growth rate of electricity and heat prices, i.e. in real terms their level will remain unchanged. Nevertheless, following the market liberalization induced by accession to the EU, prices will start falling while real revenues will display a reverse tendency.

Efficiency indicators of power generation sector enterprise are also likely to improve. The on-going restructuring of enterprises, cost reduction and privatisation are bound to bring about improvement of production efficiency. Furthermore, the forthcoming accession to the European Union will introduce changes to energy production management, hence efficiency improvement will be enforced on Polish enterprises by the opening up of the Polish market and by the mounting competitive pressure posed not only by domestic, but also by EU operators.

## 3.2 Foreign trade and competitiveness of the Polish power generation sector on the European market

Poland is a net exporter of electricity. In 2001, 11 TWh of electrical energy were exported, while imports totalled 4,3 TWh. Trade balance in electrical energy closed with a surplus of 6.7 TWh.

Figure 8. Poland's trade in electrical energy in 1995-2001 (TWh)



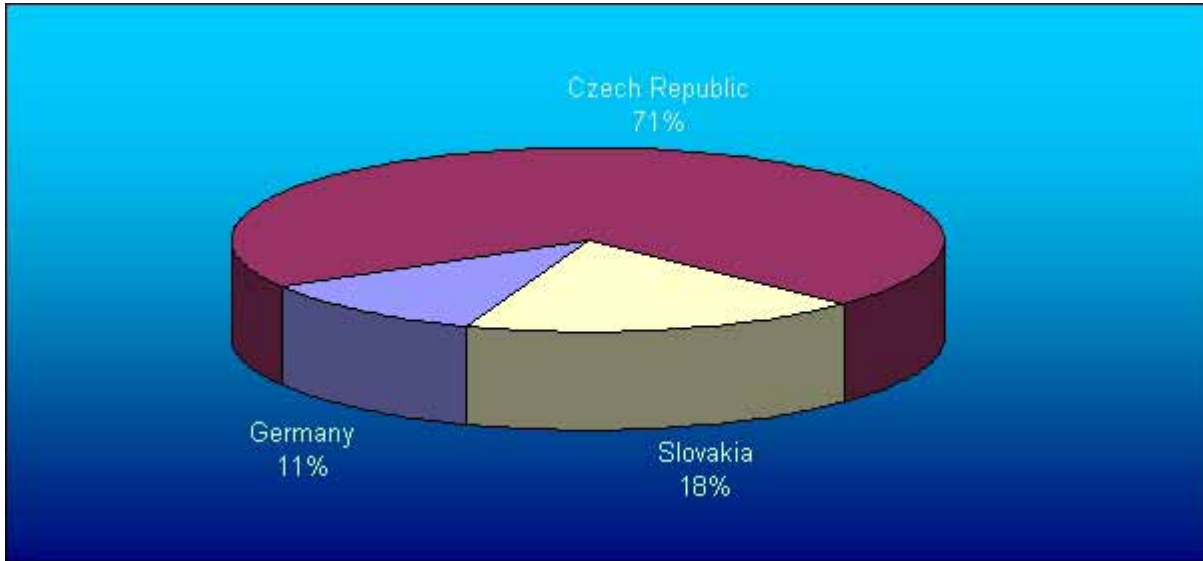
Source: Central Statistical Office statistics

Since 1997, the electricity trade surplus has been growing as a consequence of a fall in imports and a steady rise in the volume of exports. In 1997, Poland's net exports of electrical energy amounted to 2.2 TWh, hence over four years the trade surplus more than trebled. At the same time exports rose by almost a half, while imports dropped by 20 percent. In 1996-2001, exports measured in terawatt hours were growing year over year (except for 1997, when they declined by some 5 percent). The largest increases, by above 14 percent were recorded in 2000 and 2001. This means that in the future Poland may become a major electricity exporter in the European Union.

Exports start playing an increasingly important role in Poland's electricity production. The share of exports in domestic electricity production rose from 5 percent in 1995 to approx. 7.6 percent in 2001. Although the share of exports in domestic production was lower in 2001 than in the early 1990s, this share may rise after joining the European Union, provided that the upward trend continues. Furthermore, if Polish power generation sector enterprises become competitive energy providers on a European scale, these exports may rise to above 10 percent of the total electrical energy output in Poland.

In 2001, only 11 percent of electrical energy exported from Poland was sold to customers from the European Union, and more specifically to Germany. The Czech Republic is the largest buyer of Polish energy (71 percent of exports) while Slovakia imports the remaining 18 percent. In 2001, energy exports from Poland were directed exclusively to neighbouring countries. The number of countries importing energy from Poland is expected to rise following its accession to the EU.

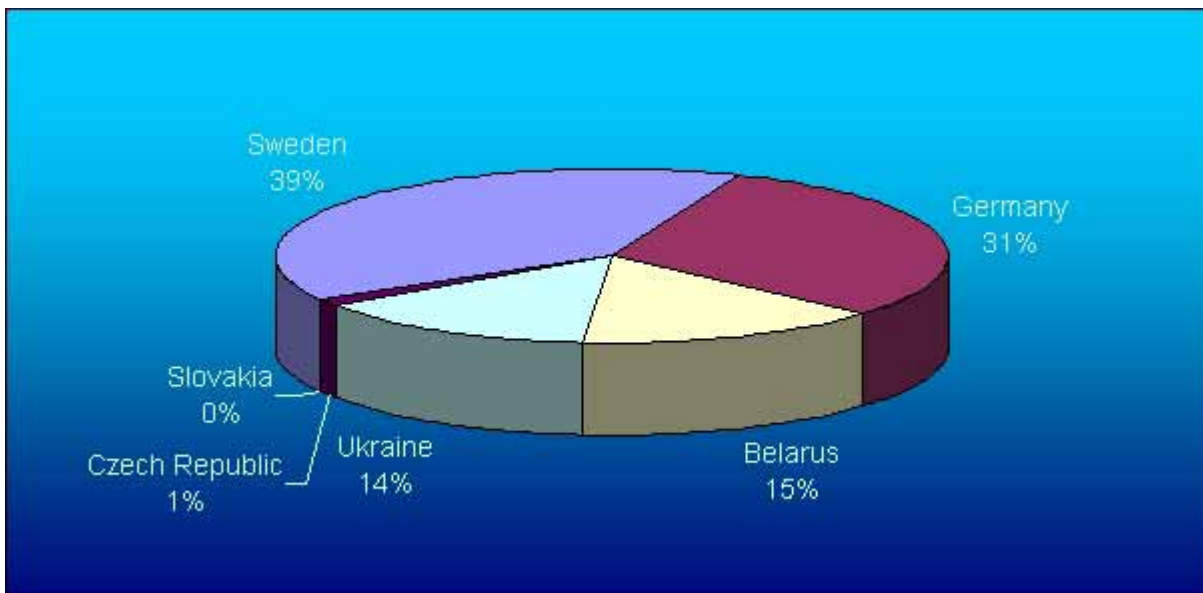
**Figure 9. Geographical composition of Poland's electricity exports in 2001**



*Source: Statystyka Elektroenergetyki Polskiej 2001, Agencja Rynku Energii SA, Warsaw 2002*

The geographical composition of Poland's electricity imports is slightly different. It is dominated by Sweden (39 percent of electricity imports) and Germany (31 percent). Hence, the share of the EU Member States in imports amounts to 70 percent, while 29 percent of imported electricity is provided by CIS countries and slightly more than 1 percent by Poland's southern neighbours.

**Figure 10. Geographical composition of Poland's electricity imports in 2001**



*Source: Statystyka Elektroenergetyki Polskiej 2001, Agencja Rynku Energii SA, Warsaw 2002*

The geographical composition of Poland's trade in electrical energy is largely determined by historical and geographical links. This explains the sizeable share of the neighbouring states. Nevertheless, Poland is becoming a major player on the single energy market in Europe, and its links to power generation sectors in the European Union countries are strengthening. Most probably, at the moment of joining the European Community, the EU Member States will account for 100 percent of Poland's exports and 70-80 percent of its imports. Nevertheless, as the power grid infrastructure connecting Poland with power systems in the EU countries will become more developed following the accession, energy imports should be fully satisfied by power plants from the EU Member States.

## International competitiveness

The power generation industry in Europe is not homogenous. The size of power generation sectors in the European Union countries depends mostly on the country size, which determines the market size through the number of energy buyers.

**Table 2. Electricity production in the EU countries and Poland in 1998.**

Country	Electricity generation (TWh)	Country	Electricity generation per capita (MWh)
Germany	556.4	Sweden	17.8
France	511.0	Finland	13.6
United Kingdom	362.0	France	8.7
Italy	259.8	Belgium	8.1
Spain	195.3	Denmark	7.8
Sweden	158.3	Austria	7.1
Poland	142.7	Germany	6.8
Netherlands	91.1	United Kingdom	6.1
Belgium	83.2	Netherlands	5.8
Finland	70.1	Ireland	5.7
Austria	57.4	Spain	4.9
Greece	46.3	Italy	4.6
Denmark	41.1	Greece	4.4
Portugal	39.0	Portugal	3.9
Ireland	21.1	Poland	3.7
Luxemburg	1.3	Luxemburg	3.1

*Source: Agencja Rynku Energii SA*

Poland is a big country, which is reflected in its power generating potential. Only in six out of fifteen Member States of the European Union the installed capacity of power plants, electricity production and consumption are higher than in Poland. Germany and France are definitely the European power generation sector leaders. In both of them the power generating potential is similar and almost four times higher than in Poland. Besides, in terms of the power generation sector size Poland is also outpaced by the United Kingdom, Italy, Spain and Sweden.

The Polish power generation sector is not ranked so high in terms of per capita value of electricity production. Luxemburg is the only European Union Member State where electricity production per capita is lower than in Poland. In terms of per capita energy consumption and the installed capacity of power plants, Poland is outpaced by all European Union Member States. This is due to lower level of Poland's economic development and its smaller economic potential compared to European Union countries. At the same time, this means that Poland's economic development may be accompanied by a rise in electricity consumption. Moreover, modernization of Polish power plants in terms of both production technology and more efficient energy use may provide an opportunity for Polish power plants to cover demand for electricity on a substantial part of the European market.

Obviously, this will be subject to full liberalisation of the EU market taking a competitive position by Polish operators on the EU market since the very moment of Poland's accession to the Union. Buyers from Germany, the Czech Republic and Slovakia will be most crucial for Polish power generation sector companies.

### **Electrical energy generation costs and prices in Poland and in the European Union**

Electricity generation costs show variations in both Poland and the European Union. In Poland, the average cost of generation of 1 MWh of electricity amounts to PLN 100 (some € 25). These costs, however, range in power plants from PLN 80 to 160 (€ 20 to 40). The main reason for that are varying prices for raw materials used in the sector, and different conditions of access to these raw materials. For example, power plants located close to coal mines (i.e. Bełchatów - south of Poland) incur lower transportation costs of raw materials than power plants from central Poland.

Average electricity generation costs in the European Union are higher than in Poland. The differences range from 20 percent in such countries as Greece, Spain, Portugal to even 60 percent in Scandinavian countries. Higher production costs in the European Union result, among other things, from more expensive labour, higher local taxes and charges, and in the case of some countries from less accessible energy raw materials than in Poland. Higher electricity generation costs in the European Union than in Poland are displayed in higher energy prices.

Compared to the European Union countries, electricity prices in Poland are relatively low. In the households sector the price level in Poland is only one third of that in Italy and a half of that in Germany and Belgium. Among other groups of customers, these differentials are not so apparent, yet present. In the trade and services sector, the lowest prices are charged in France. This is due to a big number of hypermarkets. They are able to negotiate competitive prices as customers buying large quantities of energy.

In the 1990s, electricity prices in Europe had been falling. At that time, the electrical power generation sector was undergoing a deep market-oriented reform. The common European electricity market is only just emerging. As a result of development of the European electricity market, the variation in energy prices in particular countries is bound to diminish. On the one hand, this will be the effect of direct competition mechanisms in international energy trade, on the other hand deregulation of particular national markets. Liquidation of monopolies, which proved to be economically ineffective, and their replacement with new operators, well prepared for competitive market conditions, will have a positive impact on the entire European energy market. Since this is still an on-going process, further declines in electricity prices are to be expected in both Europe and Poland. It seems, however, that if Polish companies succeed in radical cost cuts, prices in Poland will for a long time remain lower than in the EU countries. This will allow Polish companies operating in the sector to maintain comparative advantage on the EU markets, and to establish a strong position until full price convergence in Poland and the EU is achieved.

## **3.3 Foreign Investment**

Foreign investment inflow to the power generation sector is involved with the on-going process of ownership transformation in that sector. Foreign investors have participated in some privatisation schemes. As of June 30, 2002, the total value of major foreign investment projects in the power generation sector, amounted to almost \$1.66 billion. A further \$1.7 billion worth of FDI inflow is declared. The European Union accounts for above 90 percent foreign direct investments. This fact has a positive effect on the inflow of modern technologies and speeds up economic integration of the Polish power generation sector with that of the European Union.

**Table 3. Major foreign investment projects in the power generation sector  
(as of June 30, 2002)**

<b>Investor</b>	<b>Capital Invested (\$ million)</b>	<b>Plans</b>	<b>Country of origin</b>	<b>Investment location</b>
Vattenfall AB	522.0	657.0	Sweden	45% stake in Elektrociepłownie Warszawskie S.A., 25% stake in Górnośląski Zakład Elektroenergetyczny
Electricite de France Internationale	511.7	300.0	France	Elektrociepłownia Kraków S.A. (Kraków), Elektrociepłownia Wybrzeże S.A. (Gdańsk), Power plant Rybnik S.A. (Rybnik), Zespół Elektrociepłowni Wrocławskich S.A. (Wrocław)
Enron International	132.0	n.a.	USA	Elektrociepłownia Nowa Sarzyna Sp. z o. o. (Nowa Sarzyna) – combined heat plant
Tractabel S.A.	87.5	55.2	Belgium	75% stake in Power plant im. T. Kościuszki (Połaniec)
Swepol Link AB	75.0	n.a.	Sweden	Swepol Link (Poland) Sp. z o. o. – power supply
Societe Nationale D'Electricite et de Thermique (SNET)	44.6	48.5	France	Elektrociepłownia Białystok S.A.
Dalkia Termika	40.2	125.0	France	Dalkia Termika S.A. (Warsaw)Poznańska Energetyka Ciepła (Poznań)
PSEG Global	24.8	320.0	USA	Power plant Skawina (Skawina)
Sydkraft	18.4	3.6	Sweden	Sydkraft Złotów Sp. z o. o. (Złotów), Energetyka Ciepła Sp. z o. o., Sydkraft Poznań Sp. Z o. o.
AES Horizons Ltd	9.0	170.0	International	Żarnowiecka Power plant Gazowa
Mitteldeutsche Energieversorgung AG (MAEG)	7.8	22.2	Germany	52,2% stake in Elektrociepłownia Będzin
Westinghouse Electric Corporation	6.0	na	USA	Westinghouse Electric Poland Ltd. (Warsaw) - 40% of shares of Energoservice S.A. (Lubliniec) - power supply
Stadtwerke Leipzig GmbH	3.1	1.0	Germany	Zakłady Energetyki Ciepłej (Tczew)
IVO	3.0	n.a.	Finland	modernization of "Jaworzno III" power plant, modernization of "Kawęczyn" and "Siekierki" combined heat plants



MVV Energie AG	2.6	4.0	Germany	MVV Poland Sp. z o. o. (Warsaw), MVV EPS Poland Sp. z o. o., MVV Skarżysko- Kamienna
Hedeselskabet	2.0	n.a.	Denmark	combined heat plant (Łęgajnie, Warmińsko-Mazurskie Voivodship)
Rolls-Royce Power Ventures Ltd	1.1	40.0	Great Britain	Energobaltic Sp.z o. o. (Gdańsk)

*Source: PAIZ*

Foreign investment has a positive effect on the development of Poland's power generation sector. The presence of foreign investors in Polish power plants means not only transfer of capital indispensable for their modernisation, but also transfer of state-of-the-art technologies and so-called *know-how*. Companies with foreign participation face better modernisation and the development opportunities. The activities of foreign investors in the Polish electrical power generation sector is largely focused on production, and to a smaller extent also on the distribution subsector.

Poland's integration with the European Union may contribute to an increase in foreign investors' interest in the Polish power generation sector. This is indicated by a solid production potential and development prospects of the Polish market. Furthermore, Poland's accession to the European Union will result in foreign investors' growing confidence in this country, at the same time reducing investment risk associated with capital transfer to Poland. Apart from that, membership in the European Union will add to the broad-sense economic stability of Poland.

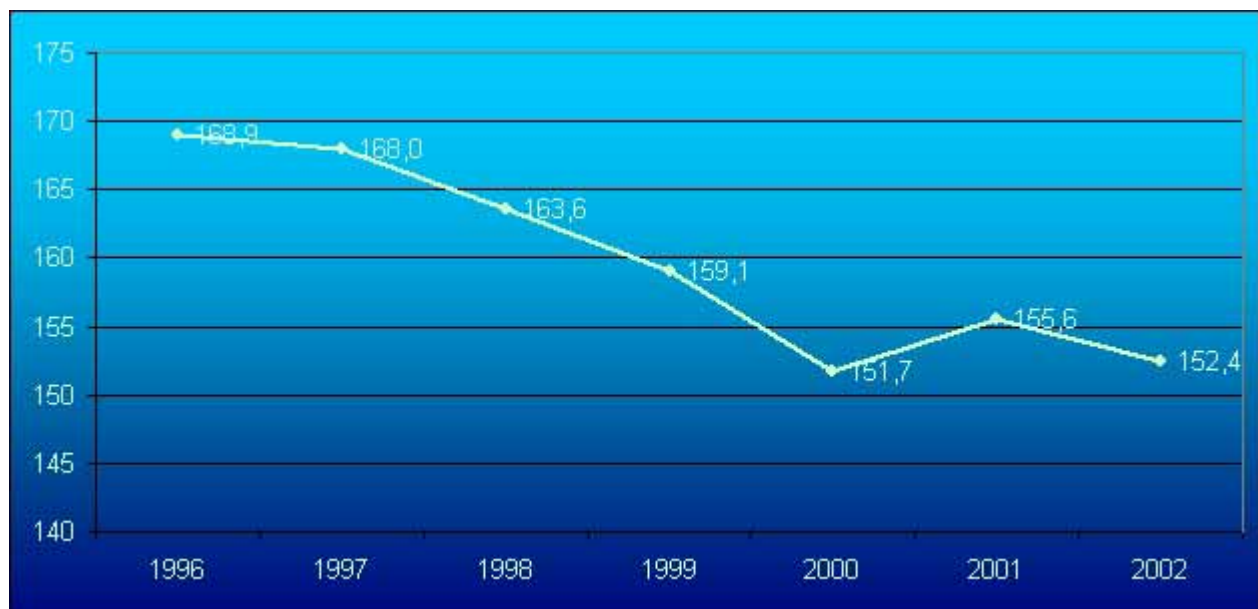
Summing up, one should once again emphasize considerable significance of foreign investment for development of the Polish power generation sector in the pre-accession period. Integration with the European Union should result in further inflow of foreign direct investment to that sector, being one of the major factors of the pace and directions of its further development.

### 3.4 Labour market

Overemployment is one of the characteristic features of the Polish power generation sector. It may pose a serious barrier to establishing of a competitive position of Polish enterprises on the European market. In Spain, where the sales value is the same as in Poland, the power generation sector employment accounts for one third of Poland's level. In France, despite lower employment figures the sales level is twice as high as in Poland. For this reason, labour productivity in the Polish power generation sector is much lower than in the EU countries.

The average labour productivity in the European Union Member States in the power generation sector amounts to €380,000 per employee, compared to slightly more than €100,000 in Poland. Since 1996, employment in the Polish power generation sector has fallen from almost 170,000 to 150,000 persons, but overemployment still remains one of the most difficult problems faced by that sector in Poland.

**Figure 11. Number of persons employed in the power generation sector in Poland in 1996-2002 (thousand)**



*Source: Central Statistical Office*

Decrease employment rate in the Polish power generation sector, accompanied by a simultaneous rise in the level of production in recent years is an indication of an increase in labour productivity in the energy production sector in Poland. The rise in labour productivity was rendered possible by, inter alia, growing demand for electricity, as well as by modernisation of plants and introduction of advanced production methods. The inflow of state-of-the-art technology brought to Poland by foreign investors was also a factor contributing to improvement of production efficiency.

Labour costs reduction is a crucial condition for coping with the EU price competition. Poland's accession to the European Union will be followed by the inflow of cheaper electricity. Power plants, which do not go for a radical employment restructuring and do not prepare for new market conditions will have to be closed down. State-owned enterprises are usually more reluctant than private operators to lay off labour force and care about financial results. Cuts in labour costs, reflected in a decline in wages or in job losses are indispensable to win a competitive advantage on the EU market, hence further layoffs in the sector are expected before the accession to the Union. However, one cannot exclude that after joining the EU western investors will create new jobs in the Polish power generation sector, so that in the long run the net effect of changes may be positive.

## 3.5 The sphere of regulations and adjustments to the European Union requirements

### Alignment of Poland's law with the Community regulations

The basic Polish legal acts in the field of electrical power generation, relating to the area regulated by the Community legislation, comprise the „Energy Law<sup>1</sup>”, which entered into force in December 1997, and implementing regulations to that law. They are to a great extent consistent with relevant EU regulations, as they were drafted after the decision on Poland's applying for EU membership had been made. This is why the necessity of harmonising the provisions of Polish law with those applicable in the European Union had been taken into account since the very beginning of drafting the „Energy Law”. Hence, implementation of the „Energy Law” and its implementing regulations was simultaneously the process of indirect implementation of European regulations into the Polish legal system.

### Adjustment to provisions of Council Directive 96/92/EEC

Directive 96/92/EEC of the European Parliament and of the Council concerning common rules for the electricity internal market is the basic act regulating the operation of electrical power generation sectors in the EU. In accordance with recommendations laid down in Directive 96/92/EEC, a vertical disintegration of the Polish power generation sector has been carried out, by splitting its activities into: generation, transmission and distribution. Pursuant to the „Energy Law” the President of the Energy Regulatory Authority has been established as a government administration body, whose tasks include:

- licensing activities, i.e. granting, denial, amendment or withdrawal of a license;
- tariffication, covering the approval and control of electricity tariffs;
- regulation in the field of investment by making arrangements for development projects;
- settling disputes in the field of provision of transmission services, denial of hooking up, denial of concluding sales contracts and unjustified termination of deliveries;
- control of the quality of deliveries and customer service in the field of electrical energy trading;
- imposing fines under principles provided for by the law;
- co-operation with appropriate bodies in order to counteract companies' monopolistic practices;
- publishing information contributing to more efficient use of fuels and energy;
- verification of personnel skills in line with requirements provided for by the law.

Apart from that, licensing of installation of new generating capacities has been introduced. The license is issued by the Energy Regulatory Authority, taking into account, inter alia, technological and financial capacities of operators, professional skills of employees, etc.

Another issue regulated by Directive 96/92/EEC is the way of issuing permits for installation or expansion of production capacities. The authorisation procedure (licensing), introduced in Poland, is one of the solutions allowed by the Directive. The Directive specifies criteria which should be taken into account while granting a licence. The most important ones include the following: energy security, environmental protection, energy efficiency, kind of the source of energy used, technological, economic and financial capacities. Solutions similar to those applicable in Poland have been introduced in Germany, Austria, Spain and in the Scandinavian

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<sup>1</sup> The law of April 10, 1997, Journal of Laws No 54, item 348

countries. Another way of building new installations, envisaged by the Directive is that of a public tender. That version has been chosen in Portugal, Luxembourg and Ireland.

The third area of implementing the provisions of Directive 96/92/EEC to the Polish legislation is the formula of access to the power generation system. In the European Union a principle of direct access of third parties (Third Party Access - TPA) is applicable, which allows to benefit from transmission services and, by the same token, to buy energy from a specific supplier (producer). This means that the existing group of operators dealing with distribution and trade in energy has been extended by end users, who (provided that their annual energy consumption is not lower than a certain level), acquire the right to benefit from transmission services. This principle enables to sell generated energy to a selected buyer by using a local distributor's network.

In Poland, for the time being, relatively cautious regulations relating to third party access are applicable. The TPA principle is provided for by the Energy Law, but only for energy generated domestically. Upon joining the European Union, that principle will have to be expanded upon energy generated in the EU. This means that domestic producers will be compelled to compete on the European market.

In Poland, by virtue of an ordinance, domestic buyers have been divided into six groups, depending on their annual energy consumption level, and for each of these groups a date for gaining access to transmission services has been set<sup>2</sup>. In 1998, buyers, whose annual energy purchases exceed the level of 500 GWh were the first to receive such a right. In 1999, the right to choose an energy supplier was given to users whose annual level of energy consumption was at least 100 GWh. In accordance with the timetable, in 2006 all domestic users will be fully eligible to the third party access. This means that at the moment of accession to the European Union Poland will fully adjust to the Directive's requirements also in this respect.

**Table 4. Timetable of acquiring by users the right to benefit from transmission services in Poland**

<b>Date of acquiring access to the grid</b>	<b>Minimum annual energy consumption (GWh)</b>	<b>Number of users</b>	<b>Market opening (%)</b>
03.09.1998	500	21	21
01.01.1999	100	83	37
01.01.2000	40	180	43
01.01.2002	10	610	51
01.01.2004	1	3300	59
01.01.2006	-	app. 15 million	100

*Source: CIRE (Energy Market Information Center)*

Directive 96/92/EEC also determines the speed of opening up particular domestic markets to international competition. It gives particular countries the right to determine on their own the groups of buyers authorised to participate in the international market, at the same time guaranteeing the access to that market for the largest customers whose annual consumption exceeds 100 GWh of energy. The degree of opening up the market to external competition is estimated to reach at least 37 percent in 2003. Due to the structure of energy consumption in Poland, with customers whose annual consumption exceeds 100 GWh of energy allowed to buy energy abroad the domestic market becomes opened to the extent required by the Directive.

Another major issue regulated by Directive 96/92/EEC is electricity production in cogeneration with heat. The European Union finds cogeneration as the best solution both economically and environmentally. What is more,

<sup>2</sup> Ordinance of the Minister of Economy, Journal of Laws No 107 1998, item 671

the Directive allows preferential treatment of producers obtaining electricity and heat in cogeneration (in case of those using renewable energy sources).

In the “Energy Policy Guidelines for Poland until 2010” many proposals can be found as to adoption of a system of solutions to promote development of cogeneration. Works are continued on introduction to the law of a provision relating to the obligatory purchase of electricity produced in cogeneration.

The Polish law also makes a reference to energy generated from renewable sources. The ordinance to the Energy Law provides for obligatory purchase by power distribution companies of electricity and heat from renewable sources<sup>3</sup>. Such sources include: river hydro power plants, wind power stations, biogas, biomass, solar cells and geothermal energy. In 2010, the share of energy originating from these sources is to rise to 7.5 percent from ca 2.5 percent at the moment.

Directive 96/92/EEC introduces the notion of an independent transmission system operator entrusted with:

- the operation and maintenance of the system;
- development of the system and its links to other systems;
- power and energy management;
- ensuring equal rights of access to the system to all operators concerned.

The Directive also determines the legal status of the system operator and, in particular, separation of the operator’s function from other functions. The Directive also imposes an obligation of elaboration and publication of technical rules establishing the minimum technical design and operational requirements for the connection to the system of generating installations and distribution systems. In order to secure a proper functioning of the transmission system it is also necessary to publish the principles of co-operation between the independent operator and the remaining market players. In Poland, the function of the system operator will be performed by the Polish Power Grid Company - PPGC (*Polskie Sieci Elektroenergetyczne S.A.*), which in terms of its legal status meets EU requirements for independent operators.

The last issue regulated by Council Directive 96/92/EEC, to be elaborated on this part of the report is the financial system transparency. The Directive imposes upon power generation sector operators an obligation of appropriate accounting and submitting account books for audit by authorised bodies. The relevant provisions are consistent with the Polish „Energy Law”, which obliged enterprises to run company accounts and records allowing to distinguish between fixed and variable costs of particular activities. This is of special relevance for vertically-integrated firms.

### **The Polish Power Exchange (*Giełda Energii S.A.*)**

By mid-2000, the wholesale trade in Poland’s electrical energy was performed in two segments:

- the contract market, in which trade in energy takes form of contracts concluded directly between market players,
- the balancing market, in which the transmission system operator balances the differences between supply resulting from contracts concluded in the contract segment, and current demand for electricity.

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<sup>3</sup> Ordinance of the Minister of Economy of December 15, 2000

The third segment of the Polish energy market is constituted by the power exchange. In July 1999, by virtue of a tender procedure a consortium was chosen to establish the Polish Power Exchange company (Giełda Energii S.A.). The company was registered on December 7, 1999, and contracts were concluded on June 30, 2000. The scope of the Polish Power Exchange operations encompasses the following:

- running of a non-obligatory electricity market in Poland, and in the future also an international market,
- co-operation with other power exchanges in Europe,
- provision of extra services for energy market operators (e.g. intermediation in settlement of bilateral contracts).

The power exchange trading involves futures contracts for electricity delivery, the price for which is determined by power exchange demand and supply.

Among the main objectives and assumptions underlying the power exchange operation, the following are worth mentioning:

- improvement of efficiency of the Polish power generation sector and its adjustment to competitive conditions and requirements of the European Union,
- ensuring equal conditions of access to the power exchange market to all players;
- creation of transparent rules for energy market functioning,
- providing information and transaction base for opening-up the Polish power generation sector to world competition,
- obtaining reliable and objective energy prices,
- minimisation of transaction costs.

Operation of the Polish Power Exchange is limited by the already mentioned long-term contracts, covering above 70 percent energy to be used in Poland over the coming years. Consequently, the power exchange price cannot be representative for the entire market. However, more and more often it becomes a benchmark for the energy sale contracts concluded outside the exchange in other segments of the market. In December 2000 the Energy Regulatory Authority recognized the power exchange as a competitive market and decided that enterprises selling energy at the power exchange were not obliged to apply approved tariffs in these transactions. In practice the energy price at the power exchange is some 20-25 percent lower than the price for energy sold within the framework of long-term contracts.

Day-Ahead Market (DAM) was the first market launched by Giełda Energii S.A. It is run one day prior to the day on which physical delivery of energy takes place. The transactions are concluded and the price is set on the basis of placed orders.

The next market, the Futures Market with electricity delivery was launched on May 23, 2001. Since it is a new instrument, market players just learn to use it. The number of transactions and trading are still rather marginal. The second type of contracts offered by Giełda Energii S.A. is a contract for delivery of green energy coming from unconventional and renewable sources, launched on 4th July 2001. The difference between monthly contract for energy from conventional sources and green energy contract boils down to time of quotation, which is months long for the latter.

The financial futures market is the last market launched on the Polish Power Exchange by virtue of the Council of Ministers decision. Its essence lies in conducting financial operations with electricity as its base instrument

and without physical delivery of energy. The futures market will provide an opportunity for Market Participants to hedge their positions against future electricity price fluctuations, which should enhance their operational efficiency.

The electricity market development in Poland must take into consideration the conditions of Poland's integration with the European Union. This refers to elements of the market, beginning from its organisation and ending with the scope of responsibility of all its players. Poland's accession to the European Union also means opening up the market to international competition and the necessity for domestic enterprises from all subsectors of the power generation sector to adjust to operation under new conditions. The Power Exchange gives its participants the taste of a fully free market, hence its substantial educational role should also be mentioned in this context.

### **Issues requiring further adjustments**

The above overview of major issues regulated by the key directive for the power generation sector operation in the European Union countries, namely Council Directive 96/92/EEC illustrates that in the field of energy Polish law is largely compatible with the EU legislation. Among the issues still needing adjustments on Poland's part one should mention:

- opening up the market to international competition, i.e. the abolishment of subjective restrictions to energy mined or produced domestically (expansion of the TPA principle on producers from the European Union),
- introduction of appeal procedures and the requirement of notifying the European Commission in case of denial of authorisation for the construction of generating capacity,
- introduction to the Polish legal system of the negative reciprocity clause in the field of opening up the domestic market. This principle allows to deny energy sales between two countries, if the existing regulations make it impossible for carrying out the same transaction in the opposite direction, i.e. to the exporter country;
- extension of obligations of transmission system operators upon forwarding information to the Commission, in accordance with requirements of the Directive,
- abolishment of the subjective restrictions, favouring national operators in licensing activities of power generation sector enterprises.

Since the energy market in the European Union has been changing very dynamically, the necessity to adjust to energy market regulations concerns not only Poland, but also countries, which are already European Union Member States. Article 24 of Directive 96/92/EEC, introducing the notion of transitional regime, relates to the problem of enterprise adjustment to the new rules.

### **Transitional regime**

Transitional regime is involved, among others, with the so-called stranded costs. These are all costs incurred by the power generation sector, which do not find their justification in market processes. For example, stranded costs may be contracts for purchase of fuels typical of a given region or based on long-term contracts, costs resulting from environmental protection, or costs incurred from imposition of public service obligations upon enterprises. The method of settlement of stranded costs will be among the factors determining the competitiveness of Polish power generation sector enterprises on the European market.

In Poland, stranded costs are associated for instance with long-term contracts for electricity supplies, concluded with certain suppliers. Long-term contracts were intended to provide a mechanism of equal financial operating

conditions of the power generation sector and to enable financing of expansion and modernisation of power plants. The share of energy sold under long-term contracts is some 60 percent. Due to the fact that within the framework of long-term contracts conditions have been determined for delivery of some 75 percent of energy to be sold in Poland in the coming years, these contracts impose serious restrictions on the power generation sector reform.

An actual implementation market mechanisms in the power generation sector under conditions created by long-term contracts is not possible. In June 2000, the Energy Regulatory Authority presented a concept of solving that problem, namely the Compensation Payment System (CPS). The goal of the CPS concept was to create opportunities for implementation of competition mechanisms in electricity generation. This is conditioned by equal treatment of energy generated in enterprises covered by long-term contracts, and energy generated under general rules. This concerns both the quantities of energy purchased and prices at which this energy is bought.

One of the major CPS assumptions is the proposal of separating the Transmission System Operator function from activities in the field of energy trading. This would provide an opportunity for a genuine decentralisation of energy trading and would also reduce the role of Polskie Sieci Elektroenergetyczne SA (the Polish Power Grid Company) in the system, which is currently excessively dominating and perceived as one of the major obstacles to marketisation of the power generation sector.

The CPS mechanism is based on dividing settlements for energy into two streams. The first one consists of direct settlements between producers and buyers at market prices, irrespective of whether energy was produced in entities covered by long-term contracts or not. The other stream is the compensation settlements through CPS, between electricity providers on account of price differentials.

According to experts<sup>4</sup> the CPS concept was subject to several fundamental drawbacks:

- the total amount of compensations could not be set in advance – the system assumed annual verification by the ERA President of the compensation level and its step-by-step reduction
- the CPS did not set the period of its application (whereas the comments made by representatives of authorities might have suggested that this period would not be longer than several years).

Generally speaking, all that gave rise to serious doubts as to the level of revenues CPS would generate for producers. That was clearly inconsistent with provisions adopted in Member States of the European Union, where the amounts of compensations were set in advance for the entire period of the system being effective (in the states in which the problem of stranded costs resulted from long-term contracts that period equalled the period of these contracts' duration). EU regulations require both the amount of compensations and the period of the system being applicable to be set in advance. Experts believe that CPS was to be a voluntary system (which, in fact, was its advantage). It is also obvious that producers would find it difficult to make a decision on joining CPS, especially because the above mentioned features of that system would make it difficult to obtain the required permit from producer financing institutions. The most difficult problem of the Polish power generation sector, i.e. long-term contracts, still remains unsolved.

### **Environmental protection**

Environmental protection is another issue to be mentioned in the light of law adjustments during integration with the European Union. In the case of the power generation sector, this issue relates mostly to the generation

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<sup>4</sup> Dariusz Mioduski, Rafał Hajduk, *Nowy plan rozwiązania problemu KDT*, [www.cire.pl](http://www.cire.pl)



subsector. A separate negotiation chapter, covered Problems involved with environmental protection called „natural environment“.

In August 1997, the Sejm passed the law on the protection and shaping of the natural environment<sup>5</sup>. The law, which entered into force on January 1 1998, takes reference of the EU regulations contained in two Directives:

- Council Directive 96/62/EEC on ambient air quality assessment and management – establishing target values and alert thresholds for pollutants in the ambient air,
- Council Directive 96/61/EEC concerning integrated pollution prevention and control (IPPC).

In 1998, selected European statistical standards concerning air quality were introduced into Polish legislation by implementing regulations of the law on the protection and shaping of the natural environment.

Within the framework of preparations for meeting environmental protection standards resulting from Council Directives 96/62/EEC and 88/609/EEC, implementation programmes were drafted in 1998, to a great extent relating to the power generation sector. These are mostly programmes concerning reduction of atmospheric emissions of harmful compounds, as well as the programmes of support for municipal heat supply based on cogeneration, as well as a national economy energy-saving scheme with special reference to local sources of renewable and non-renewable energy.

In October 2001, Poland closed the negotiation chapter relating to environmental protection. It was one of relatively difficult negotiation areas, in which Poland applied for many transitional periods ranging from several to more than ten years. Finally, Poland was granted nine transitional periods, some of them even lasting as long as 2015. The main adjustment problems relate Directives, the implementation of which is associated with considerable costs for the state budget and enterprises.

However, it is worth noting that over the last years the harmful impact of the electrical power generation sector on the natural environment diminished markedly. For this positive process to continue, it is indispensable to introduce modern legal and economic solutions, enabling e.g. trade in emissions. This will allow enterprises to embark on more and more ambitious ecological tasks.

### **3.6 Restructuring developments in the power generation sector in Poland**

Effective competition on the common European market by Polish enterprises would not be possible without a structural reform scheme of the sector. The latter was initiated in early 1990s, when the government approved a comprehensive programme of reconstruction and modernisation of the power generation sector. These activities were consistent with the global trend towards liberalisation of network sectors. Introduction of competitive market mechanisms was adopted as a method of speeding up and guiding the sector's transformation.

The overall objectives and rules as well as measures adopted by the Polish government in order to reform the power generation sector were fully consistent with actions undertaken in the European Union towards creation of an all-European electricity market. It turned out, however, that the process of liberalisation of the power generation sector is very difficult both in Poland and in the European Union, and its implementation takes a long time.

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<sup>5</sup> Dziennik Ustaw nr 133 z roku 1997, poz. 885

## Privatisation and consolidation

Privatisation is a crucial element of the Polish power generation sector reform scheme. Among other things, it is aimed at:

- consumer protection through creation of a free energy market securing an appropriate level of competition within the sector,
- maintaining energy security of the country,
- providing an appropriate capital base, guaranteeing competitiveness in the light of integration with the European Union,

Privatisation of the power generation sector is a difficult process, as can be seen from delays in the so-far implementation of the adopted time schedules. Most privatisation projects have not been met deadlines. At the same time, disproportion emerged in the advancement of privatisation between power plants and combined heat and power plants, caused by privileged position of the latter on the market, by the obligation to purchase electricity produced in cogeneration.

The „Integrated timetable of privatisation of the power generation sector and introduction of an electricity market”, adopted by the Council of Ministers on May 16, 2000 assumes the following strategic goals for the electrical power generation sector:

- consolidation of the sector’s entities through privatisation,
- merging entities with differentiated potential and economic standing into groups proposed for simultaneous privatisation,
- securing a balanced share of particular investors in the electricity market.

In recent time, the Polish power generation sector has been reporting intensification of consolidation. This can be seen for example from the establishment of Południowy Koncern Elektroenergetyczny SA (the South Power Company) and emergence of the G-8 group comprising power distribution companies in the north of Poland. These processes may result in an increase in the market value of consolidated companies, but simultaneously the process of privatisation of big companies or groups of companies may encounter greater difficulties and complexities, so its implementation will require on time.

The privatisation programme assumes that at the first stage of privatisation of power plants the State Treasury offer would cover up to 45 percent of shares of power plants and combined heat and power plants. The programme allows for the possible selling of a majority stake, when investment financing with share capital increase will not be necessary. The majority stake sale offer must be accepted by employees of the privatised company. The State Treasury will retain at least 25 percent + one share in each of the sold companies, and will influence decisions associated with, among others, continuation of statutory activities of the company, liquidation of assets, sales of shares to another investor.

In order to secure appropriate competition on the market, the programme, allows selling no more than a 15 percent stake on the domestic energy market to a single investor (in justified cases there may be derogations from that condition). Since 2002 privatisation of entities regarded as particularly attractive for potential investors depends on progress in privatisation of the remaining operators in the sector.

The power generation sector privatisation concepts were amended or modified on several occasions. In this case, the political factor was of major significance, as the power generation sector, being one of the largest sectors of the Polish economy, has always been in the focus of attention of politicians. This is why it cannot be ruled out that in the nearest future, due to personal changes in the government, the

above mentioned general privatisation targets will be to some extent modified. Definitely, the main objective of ownership transformation in the sector –completion of privatisation before 2005, when the domestic energy market becomes fully open, should not be changed.

According to experts of the Ministry of Economy, Labour and Social Policy (MELSP), for a proper development of the power generation sector it is necessary to reduce energy generation costs, reduce prices, improve management, increase competitiveness, with simultaneous protection of jobs. Market consolidation and liberalisation should be helpful in this context. According to MELSP announcements, horizontal consolidation will be the main consolidation development. It means connecting power plants with power plants and power distribution companies with power distribution companies. Hence there will be no vertical integration, i.e. connecting energy distributors with energy generators.

According to current plans, the main energy producers will be Południowy Koncern Energetyczny (PKE) and BOT - consolidation of Bełchatów, Opole and Turów power plants (to remain for the time being Treasury-owned). The recent announcements by the Minister of Treasury indicate that between 10 to 25 percent of BOT shares will be sold in a public offer in 2004. The Ministry of Treasury wants to attract open pension funds and branch investors to participate in BOT privatisation.

Following the accession to the European Union, the Polish power generation sector will conduct activities on the common European market. In accordance with Directive 96/92/EEC, the EU energy market will become fully liberalised, and Polish electricity distribution companies will be free to trade in energy with any of the EU Member States (some purely technical restrictions may emerge). A similar situation will develop on the Polish market, where home suppliers will have to compete with electricity distributors from the EU.

The opportunity of selling energy to the EU countries provides new development chances for domestic companies operating in the sector. Experienced and well-endowed with capital assets electricity distribution companies operating in the European Union will face tough competitors for Polish electricity distributors. To withstand competition on the common EU market, it is urgently needed to consolidate and privatise Polish electricity distribution companies. Only large and effective entities will be able to compete successfully for any energy buyer in the Union. Their smooth consolidation will largely contribute to appropriate preparation of the power generation sector to integration with the European Union.

The necessity to meet challenges involved with the forthcoming accession to the European Union is seen both the restructuring activities of electricity distribution companies and in the government policy. The currently pursued restructuring policy follows in the right direction, but the speed at which changes are introduced still does not live up to expectations. Fast and effective completion of restructuring (consolidation) and privatisation of enterprises is a precondition for establishing a competitive edge of Polish companies operating in the sector from the very start.

### 3.7 Sector policy of the State

The main guidelines of the energy policy pursued by the Polish government include:

1. **energy security**, i.e. a state of the economy which allows satisfying the current and prospective users' demand for fuels and energy;
2. **improvement of competitiveness** of domestic business operators, as well as products and services offered on international market, as well as on the internal market;
3. **environmental protection** against negative consequences of the power generation impact.

The sectoral policy programme contained in „Energy Policy Guidelines for Poland until 2010“ six groups of activities aimed at implementation of the three above mentioned objectives have been distinguished. These are:

- investment policy;
- policy of licensing the activities of electricity distribution companies;
- price policy;
- policy of ownership transformations in the power generation sector;
- activities in the field of environmental protection
- policy of rational energy use and utilisation of unconventional and renewable energy sources.

### *Investment policy*

The primary goal of the investment policy is to support the on-going processes of privatisation and energy market liberalisation in Poland.

In this context, the priority targets are the necessity of providing legal and fiscal conditions favourable for investment, support for development of transeuropean and regional network connections in the field of electricity and gas, facilitation of overcoming barriers for the acquisition of land on power grid and heat distribution lines construction. Furthermore, the framework of the investment policy also covers activities aimed at exploration of new deposits of energy raw materials, being of crucial significance for satisfying customer needs on the national and regional scale.

It has been assumed that the existing potential of the power generation sector will be able to fulfill domestic requirements over the next 5 to 7 years. On the basis of this assumption, the following directions of investment policy activities have been adopted in the government programme:

- imposition on enterprises, in compliance with the Energy Law, of an obligation to develop power generation potential, adjustment and expansion of the strategic planning and marketing, as well as continuous monitoring and updating of strategic and operational plans (with consumer responses taken into account),
- support for infrastructure modernisation in rural areas and expected financial state aid for municipalities investing in improvement of energy supply using aid funds from the EU,
- responsibility for the transmission system and distribution systems operators for long-term forecasts of these subsectors' development
- investment contract obligations of investors within the framework of privatisation obligations, since companies' own assets have been evaluated as inadequate for satisfying investment needs,
- a comprehensive overview of barriers in acquisition of land for power grids construction and exploration of new deposits of energy raw materials, being of crucial significance for satisfying customers' needs on the national and regional scale.

In accordance with the document „Implementation assessment and adjustment of the Energy Policy Guidelines for Poland until 2010“ adopted by the Council of Ministers on April 2, 2002, the basic tasks of this policy have not been accomplished, and their implementation has not started in the scheduled period (2000-2001). In particular, the unaccomplished task of taking up network investments in rural and agricultural areas has been pointed out.

## **Policy of licensing the activities of electricity distribution companies**

Within the framework of this policy, the Minister of Economy, supporting the active role of the ERA President in the process of licensing, was to verify the scope of activity subject to licensing from the point of view of its optimal impact in accordance with the objectives laid down in Article 1(2) of the Energy Law)

According to the „Implementation assessment...“ document the task of the Minister of Economy has been fulfilled by means of amendment of Article 32 of the Energy Law, through changing the thresholds of the power generation sector activities subject to licensing. The licensing executed by the President of the Energy Regulatory Authority provided for equal treatment of operators applying for a license.

### *Price policy*

The Polish government believes that the best customer protection against any unjustified price level can be secured by allowing competition in all the areas in which this is possible, i.e. in electricity generation and trade. As for transmission companies, it was decided that their activities should remain a regulated market area.

Renegotiations and restructuring of long-term contracts would particularly contribute to pursuit of an appropriate price policy. Equally important would be introduction of a Compensation Payment System (CPS), changing the structure of tariffs towards elimination cross subsidies, and monitoring of phenomena accompanying market liberalisation.

Apart from market monitoring, which is carried out on a day-to-day basis by the ERA President, other tasks have not been accomplished.

## **Policy of ownership transformations in the power generation sector**

The primary aim of the policy of ownership transformation is to adjust the ownership structure of the power generation sector to market economy requirements and to ensure inflow of investment capital. Furthermore, privatisation processes taking place in the power generation sector must be accompanied by employee protection through the so-called social packages. The policy of ownership transformation in the power generation sector also has its fiscal nature, as inflow of contribution to the state budget is one of its objectives.

Scheduled privatisation schemes remain mostly unaccomplished. This is largely due to the lack of a coherent policy of restructuring and privatisation of power generation sector, taking into account the process of introducing a competitive electricity market.

## **Activities in the field of environmental protection**

Within the framework of environmental policy measures have been taken up towards a substantial reduction of environment burdens caused by power generation activities. These measures were largely associated with reducing the harmful impact of the power generation sector on the ambient environment.

According to the „Implementation assessment...“ document, the efficiency of undertaken activities cannot be assessed unequivocally. Although progress in the field of reducing the emissions of harmful substances into the atmosphere by Polish power plants and combined heat and power plants has been apparent, a problem is still posed by ashes and slag.

### *Policy of rational energy use*

The policy of rational energy use is reflected in improved efficiency (reduced consumption) of heat and electricity use. Furthermore, tasks of this policy include promotion of unconventional and renewable sources of energy.

The „Implementation assessment...” document suggests that the Ordinance of the Minister of Economy regulating the issues of obligatory purchase of energy and heat from renewable sources, requires supplementing with principles of trade in the so-called green certificates, facilitating trade in energy originating from renewable sources, irrespective of the place of its production.

Activities aimed at using energy from renewable sources are supported by the President of ERA (in the course of approval of tariffs of electricity distribution companies), and by municipal authorities' activities. The implemented and planned measures, relating to electricity and heat supplies, should necessarily take into account renewable energy sources, including ecological and economic assets of the area, on which such activities are undertaken.

According to the „Implementation assessment...” document, the programme for promotion of energy-saving electricity equipment has failed, especially in households, which was due to high prices of this kind of lighting. Promotion of energy-saving household appliances has been self-perpetuating. Higher prices for electricity from renewable sources and produced “in cogeneration”, as well as obligation of its purchase by distribution companies results in the fact that for the time being the burden of development of cogenerated and renewable sources is carried mostly by customers.

## 4. SWOT analysis of the power generation sector

in the light of integration with the European Union

<b>Strengths</b>	<b>Weaknesses</b>
<p>modern „Energy Law“ consistent with provisions adopted in the European Union,</p> <p>establishing institutions indispensable for a competitive energy market (the Energy Regulatory Authority, the Polish Power Exchange),</p> <p>large, absorptive domestic market,</p> <p>progress in the field of environmental protection.</p>	<p>large share of coal and small share of renewable sources in the energy balance,</p> <p>low degree of the sector’s consolidation,</p> <p>poor progress of the sector’s privatisation</p>
<b>Opportunities</b>	<b>Threats</b>
<p>in the long-term perspective, a rise in demand for electricity due to economic growth,</p> <p>improvement of the sector’s efficiency resulting from implementation of competition mechanisms,</p> <p>progressive acquisition of new customers in the European Union countries.</p>	<p>mounting competitive pressure posed by foreign enterprises,</p> <p>unsolved problem of the high share of long-term contracts on the domestic energy market.</p>

## **5. Summary**

The changes taking place in the last decade in the Polish power generation sector to a large extent result directly from the necessity to make up for delays which originated in the command economy era, and are a part of a deep reform of the entire Polish economy. Nevertheless, transposition to Polish legislation of the Community law and regulations applicable in the power generation sector of the European Union is a relevant part of this process. The solutions applicable to the Polish energy market are currently almost identical with those used in the European Union.

In the power generation sector, implementation of provisions of the European law to the Polish legislation is of crucial significance for successful integration with the EU structures. The EU law (*acquis*) formulates very precisely the principles of operation of the European energy market and requires uniform solutions to be adopted in this field by all Member States. Otherwise, operation of Polish electricity distribution companies within the framework of the common market would not be possible. In terms of adjustment of legal provisions the Polish power generation sector has been well prepared for integration with the European Union. The new „Energy Law”, which has been effective in Poland since December 1997, has been drafted on such a way to make it fully compatible with major legal acts regulating the power generation sector in the European Union. Consequently, the necessary law adjustments are only limited to minor technical issues, while the framework for the power generation sector operation in Poland is the same as in the European Union.

However, adjustments to integration are not confined to more legislative amendments. Another area of adjustments consists of institution building, without which the energy market would not be able to function properly. In this context one should mention, first of all, the already operational Polish Power Exchange, which marks the beginning of a free energy market in Poland. The Independent Operator entrusted with energy transmission from providers to receivers and power grid management is another major element of this system. In the European Commission’s opinion, Polskie Sieci Elektroenergetyczne S.A. are well prepared to perform that function. The Energy Regulatory Authority, established in 1998 by virtue of the „Energy Law” is another institution supervising the entire power generation sector.

Apart from changes resulting from new legal regulations, activities towards improvement of enterprise competitiveness are also required. This refers, in the first place, to operation efficiency improvement, cost cutting and restructuring. Profitability of the power generation sector has been declining for several years, which is partly due to the investment process and changes in energy pricing. Additionally enterprises will definitely have to incur costs of environmental protection investments. This is why fast restructuring and privatisation of enterprises is so vital for production efficiency improvement. Despite overemployment, the Polish power generation sector is competitive compared to its European counterparts. Labour force in Poland is cheaper than in Europe, and accessibility of raw materials is also relatively good. If in the coming years Polish enterprises manage to complete their restructuring, and first of all privatisation, they should not encounter serious problems with competing on the common European Union market. Integration with the European Union will also involve Poland’s access to appropriated funds, a part of which will be spent on further modernisation of the power generation sector.

Integration with the European Union requires solving three major problems faced by the sector. The first of them is the much more substantial depreciation of companies equipment than is the case in Western Europe. This means that Polish power plants are old. The newest one was put into operation in Opole in 1977. Despite a considerable modernisation effort made in the 1990s, old power plants remain less modern than the new facilities constructed in Europe. Another, much more serious problem, is overemployment in the Polish power generation sector. At present, more than 150,000 are employed in the sector. It is estimated that cuts in



employment to the level of some 40,000-50,000 are required to reach a level similar to the European average (in terms of the level of production and the installed capacity). However, in the coming years this will not be possible, given the social reasons and strong position of trade unions in the sector, which will probably make its privatisation impossible without future investors making commitments to protect jobs. The third and most significant problem, which still remains unsolved, is that of long-term contracts which effectively prevents introduction of market mechanisms to the Polish power generation sector. Various concepts such as the Compensation Payment System (CPS), have not won much approval so far. Considerable hopes are associated with horizontal consolidation of the sector and long-term contracts restructuring through taking over obligations resulting from them by specially established companies.

The effect of integration in the power generation sector will not be as apparent as in the case of some other sectors of the economy. No radical change in the number of electricity distribution companies in Poland is anticipated. The sector's structure will not change, either. The processes of enterprise privatisation and consolidation will continue, but not directly as a result of integration with the EU market. It will be a continuation of the already on-going processes, aimed at improvement of the sector's functioning. The obvious effect of integration will be a gradual fall in electricity prices, not only in Poland, but also in the whole Europe. This phenomenon is already recorded in the countries implementing competitive principles of energy market operation, such as the United Kingdom or the Benelux countries. This will be the consequence of increasingly effective operation of power generation sector companies, and from elimination of ineffective monopolies in the states constituting the common energy market.

Complete opening up of Polish energy market to the European Union Member States' competition will follow in 2005. Until then, domestic enterprises have time to get well prepared for competing with foreign electricity suppliers. Furthermore, full opening up of the energy market requires building an appropriate transmission infrastructure – cables connecting power system of particular countries, or measuring apparatus. Such an infrastructure is only just being provided both in Poland and in Europe. In case of electricity sales, the buyers being accustomed to a specific supplier also play a major role. Therefore, foreign operators will have to make a serious marketing effort if they want to sell electricity in Poland. This does not mean, of course, that electrical energy from other will not be sold here. After integration the foreign competition pressure will definitely rise. Over time and with subsequent adjustments of new mechanisms governing the European energy market, the share of electricity imported to Poland may rise, as may increase exports of Polish energy to other countries if Polish suppliers attain an appropriate level of competitiveness. It does not seem, however, that in the early post-accession years Poland's imports and exports of electricity should grow faster than at present.

## Annex 1: Key electric energy companies in Poland in 2002.

No.	Rank on the "Top 500 List"	Company	Property <sup>1)</sup>	Revenue (PLN million)	Gross profit (PLN million)	Number of employed persons
1	3	Polskie Sieci Elektroenergetyczne SA Warszawa	State	15 576,1	48,3	516
2	22	Południowy Koncern Energetyczny SA Katowice	State, private	3 787,8	117,6	6 723
3	30	Elektrownia Bełchatów SA Rogowiec	State	3 113,7	-18,7	4 992
4	39	Górnośląski Zakład Elektroenergetyczny SA Katowice	State	2 566,6	32,7	483
5	63	ZE Pątnów-Adamów-Konin SA Konin	State, private	1 640,8	15,6	1 938
6	65	Energetyka Poznańska SA	State	1 596,5	24,8	1 675
7	67	Elektrownia Opole SA	State	1 572,3	33,1	1 490
8	68	STOEN SA Warszawa	Foreign, private	1 570,8	-	1 702
9	69	Elektrownia Turów SA Bogatynia	State	1 564,9	0,8	1 900
10	70	Elektrownia Kozienice SA Świerże Górne	State	1 540,0	73,3	2 657
11	72	Elektrociepłownie Warszawskie SA	Foreign, state, private	1 487,4	99,6	1 997
12	83	Elektrownia Rybnik SA	Foreign, state, private	1 301,6	110,2	1 452
13	101	ZEDO SA Nowe Czarnowo	State	1 166,3	32,2	2 788
14	103	Elektrownia im. T. Kościuszki SA Połaniec	State, foreign, private	1 140,0	-40,9	1 616
15	112	Zakład Energetyczny Łódź - Teren SA	State	1 050,9	15,5	1 541
16	116	Energa Gdańska Kompania Energetyczna SA	State	1 012,9	-23,1	1 582
17	117	Rzeszowski Zakład Energetyczny SA	State	1 012,0	16,8	2 179
18	138	Zakład Energetyczny Bydgoszcz SA	State	854,1	20,3	1 456
19	139	Łódzki Zakład Energetyczny SA	State	854,0	-11,7	1 628
20	142	Energetyka Kaliska SA	State	838,8	8,8	1 461

<b>21</b>	148	Zakład Energetyczny Białystok SA	State	791,4	31,0	1 671
<b>22</b>	156	Zespół Elektrociepłowni w Łodzi SA	State	758,8	22,6	2 744
<b>23</b>	166	Zakład Energetyczny Legnica SA	State	715,2	5,4	1 047
<b>24</b>	170	Enea Szczecin SA	State	696,9	-6,8	1 322
<b>25</b>	176	Zakład Energetyczny Opole SA	State	672,7	-7,6	1 681
<b>26</b>	185	Zakład Energetyczny Częstochowa SA	State	614,8	-37,3	1 370
<b>27</b>	203	Zakład Energetyczny Płock SA	State	543,8	2,5	150
<b>28</b>	206	Zamojska Korporacja Energetyczna SA	State	525,1	-17,4	1 612
<b>29</b>	219	Zielonogórskie Zakłady Energetyczne SA	State	481,5	-5,7	879
<b>30</b>	221	Elektrociepłownie Wybrzeże SA Gdańsk	Foreign, state, private	473,2	28,8	1 613
<b>31</b>	225	Zakład Energetyczny Olsztyn SA	State	462,7	25,8	965
<b>32</b>	234	Zakład Energetyczny Tarnów SA	State	438,2	-19,5	1 014
<b>33</b>	244	Elektrociepłownia Kraków SA	Foreign, state, private	414,3	43,2	667
<b>34</b>	249	Zakład Energetyczny Wałbrzych SA	State	396,6	5,5	890
<b>35</b>	256	Kogeneracja SA Wrocław	Private, state, foreign	381,5	-13,5	984
<b>36</b>	263	Zakład Energetyczny Jelenia Góra SA	State	365,5	7,3	920
<b>37</b>	270	Elbąskie Zakłady Energetyczne SA	State	348,9	1,9	777
<b>38</b>	271	MPEC SA Kraków	State	347,9	8,0	806
<b>39</b>	275	Elektrownia Skawina SA	Foreign, state	344,8	-17,2	694
<b>40</b>	279	Zespół Elektrociepłowni Poznańskich SA	State	340,1	-10,9	922
<b>41</b>	287	Elektrociepłownia Lublin-Wrotków sp. z o.o.	State	327,9	16,0	406
<b>42</b>	310	MPEC Wrocław SA	State, private, foreign	293,6	1,9	262
<b>43</b>	367	KPEC sp. z o.o. Bydgoszcz	State	233,9	22,2	532
<b>44</b>	416	Elektrociepłownia Białystok SA	Foreign, private	174,6	11,2	164
<b>45</b>	424	MPEC sp. z o.o. Białystok	State	167,6	3,2	650
<b>46</b>	490	Elektrociepłownia Będzin SA*	Foreign, state, private	120,2	5,0	-

1) In case of a mixed ownership status, the first word specifies the dominant form.

Source: Lista 500, Gazeta Bankowa, April 22, 2003.

