



POLAND

NATIONAL POSITION PAPER

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1. NATIONAL ENERGY POLICY

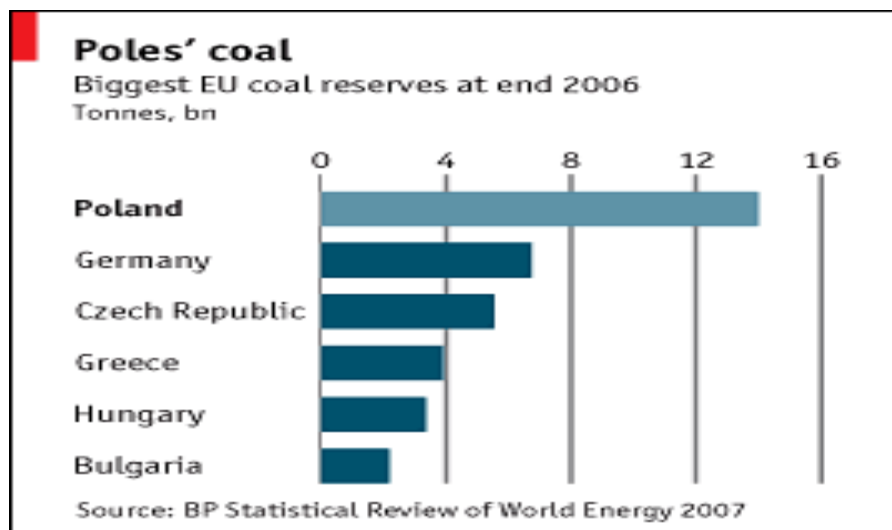
a) PRIMARY RESOURCES

1. COAL

In 1998 coal had provided around 70 % of Poland's primary energy supply. 2007 coal remains the dominant fuel for Poland, accounting for 61,8% of primary energy demand, followed by oil at 24.4%, and gas at 13%.

The country has the biggest coal reserves in the European Union, but not only that, Poland is one of the richest world countries in hard coal as well as lignite. The documented resources, taking into account modern exploitation technologies such as underground gasification, will supply primary energy for number of years. Due to this fact, more than 95% of power generation in Poland is based on coal.

A new European policy aiming at significant reduction of CO2 emission (by 20%) makes severe threats to Polish energy sector and other heavy industries.



The solution to this problem might be in producing of clean coal. "Clean coal" is a term coined by industry and government to describe as yet proven methods of burning coal for producing energy with reduced carbon emissions. The term is actually misleading as burning coal for energy will never result in zero emissions. The capture and storage of carbon emissions underground is another possibility, but has yet to be used on any scale. And it could send the cost of coal soaring.

2. GAS

In 2006 total gas consumption in Poland reached 13,9 bcm, including 30,8% from national sources. Comparing to 2005 the total gas consumption grew by 0,9%, import grew by 3,5% and national production decreased by 1%. Like in the previous years the rest of the gas supplies derived from imports, mainly from Russia, countries of Central Asia, Norway and Germany.

The main direction of gas supplies is the import from Russia. However the necessity to diversify the directions of supplies was commonly recognized. It became obvious that assurance of long term security and continuity of gas supplies is closely connected with intensive activities of the state on diversification of gas supplies. Simultaneous development of new technologies requires the construction of proper technical infrastructure, working on import of LNG, also by sea, from sources not accessible by land pipelines.

The LNG (liquefied natural gas) is natural gas that has been converted to liquid form for ease of storage or transport. Natural gas can be considered as the most environmentally friendly of the fossil fuels, because it has the lowest CO₂ emissions per unit of energy and because it is suitable for use in high efficiency combined cycle power stations. In its liquid state, LNG is not explosive. LNG is shipped around the world in specially constructed seaborne vessels. The trade of LNG is completed by signing a sale and purchase agreement (SPA) between a supplier and receiving terminal, and by signing a gas sale agreement (GSA) between a receiving terminal and end-users. LNG is principally used for transporting natural gas to markets, where it is regasified and distributed as pipeline natural gas.

On 7 December 2007 EC approved an operational programme in Poland for the period 2007-2013, entitled the "Infrastructure and Environment Operational Programme". This programme involves Community support for Poland with the total budget of over € 1 billion for security of supply projects in energy sector, including gas. Support refers to the gas transmission pipelines as well as to gas storage facilities and an LNG terminal.

POGC (the Polish Oil and Gas Company who dominate with Polish gas market) set up a company – PLNG - to build the LNG terminal in Świnoujście. The first deliveries of LNG to the terminal are planned for the year 2011 with regasification capacity of 2.5 billion cu. m of gas per annum. Very important activity is expansion of storage capacity. POGC has six underground gas storage facilities co-operating with transmission system, with total working capacity of 1. 660 bcm. Company is implementing a programme to increase the capacity up to 2.6 bcm by 2012, so that it corresponds to approx. 17% of the domestic gas consumption. The task covers enlargement of 3 underground gas storage facilities.

The volume of proven and probable gas reserves in Poland at the end of 2006 was 110 Bcm. This corresponds to 0.2 % of the European proven and probable gas reserves. Nearly 70% of the gas deposits are located in the lowland in the north-west Poland.

Another project that will have a positive impact on the diversification of the structure of the gas supply to Poland concerns the efforts aimed at establishing a connection with the North Sea fields (connection with a Scandinavian system). In 2006, POGC started negotiations aimed at the acquisition of 15% interests in exploration and production licences in Skarv and Snadd fields in the Norwegian Continental Shelf. The relevant conditional agreement was signed on 28 February 2007. The first oil and gas production from these fields is expected in mid 2011.

One problem occurred with gas pipelines, building North European Gas Pipeline (Nord Stream) from Russia to Germany. Construction of the Russian overland part began on 9 December 2005 and is estimated to be completed in 2010. The subsea pipeline would be under Baltic Sea which has drawn criticism, most strongly from Poland, Sweden, the Baltic countries and USA. Some transit countries are concerned that a long-term plan of the Kremlin is to attempt to exert political influence on them by threatening their gas supply (Political aspect). Environmental concerns raised are that the construction of the pipeline would disturb the sea bed, dislodging World War II-era naval mines and toxic materials including chemical munitions and other items dumped in the Baltic Sea in the past decades, and thereby damaging the Baltic's particularly sensitive ecosystem (Environmental aspect).

We think that alternative route would be more appropriate. On 11 January 2007, the Ministry of Trade and Industry of Finland made an statement on the environmental impact assessment programme of the Russia-Germany natural gas pipeline, in which mentioned, that alternative routes via the Baltic States, Kaliningrad and/or Poland might theoretically be shorter than the route across the Baltic Sea, would be easier to flexibly increase the capacity of the pipeline, and might have better financial results. Poland has proposed the construction of a second line of the Yamal-Europe pipeline, as well as the Amber pipeline through the Baltic states and Poland as land based alternatives to the offshore pipeline. Proponents claimed that the Amber pipeline would cost half as much as an underwater pipeline, would be shorter, and would have less environmental impact.

3. OIL

Oil industry is considered a sector of strategic importance for the Polish economy. It generates 8.5% of Poland's GDP and contributes the biggest amount of taxes (10% of budget revenues). It employs almost 20 000 people directly and several tens of thousand people indirectly (PAIZ). Oil accounted for 20, 9% of total primary energy supplies in 1998, and it constantly grows (2007 – 24,4% of total primary energy supplies). Total consumption averaged 40,000 barrels per day, so the rest had to be imported. In the beginning of 1990s, Poland tried to diversify its oil sources and to reduce its dependence on Russian supply. However, Russian oil has remained relatively inexpensive, resulting in even increased imports of Russian oil. Other oil suppliers include United Kingdom, Iran, and Norway, while discussions on beginning imports from Saudi Arabia and increasing imports from Norway carried on.

Moving towards privatisation, Poland is expected to look for strategic investors, as refineries that are built in the 1960s - 70s, need modernization in order to meet the growing demand. Oil demand is expected to increase by 50% by 2020. (Energy Information Administration; U.S. Department of Energy) The petroleum sector is close to complete a 5-year reorganization and privatisation process, assisted by the State and foreign investors. The first foreign company entered the Polish oil industry in 1995.

4. NUCLEAR ENERGY

Considering the latest situation development in the world energy market, Polish government considers a discussion on the use of nuclear energy crucial for further agreement on common energy policy of the EU.

The necessity of atmosphere pollution decrease imposes a problem of compensation for energy loss due to termination of a large number of Polish coal burning power plants. The 7.5 % index for electricity consumption from renewable sources till 2010 isn't sufficient to compensate for the energy loss Poland would sustain if it was to meet the demands set in Accession Treaty relating to emission requirements till 2012. Therefore, the Treaty variant was replaced by KPRE- National Emission Reduction Plan that postponed the deadline till 2020. The research on energy use in Poland indicated that the national energy consumption will increase by 48-55 % for the final energy and 80-93% for electric energy till 2025. At the same time, the emissions are expected to be down by 20-30% by 2020 and 60% by 2050. It is hard to imagine a coal based energy sector that could achieve those results, but it is even harder to imagine a country which would reduce the production in coal-based energy sector to meet the emission reduction goals, yet expect an economic growth.

Facing disparate goals, decrease of emissions which will lead to termination of power plants and energy loss and, at the same time, necessity of dramatic increase in energy production, Polish government considered an alternative energy resource- nuclear energy.

Partial solution to the energy deficiency problem is found within the treaty signed with Lithuania, Latvia and Estonia to build a new nuclear power plant to replace Ignalina, which operates Chernobyl-style reactors. The new nuclear power plant should be finished by 2015 or 2017 with a capacity up to 3200-3400 megawatts. Poland should receive no fewer than 1200 megawatts from a new power plant which would be a partial solution to the energy deficiency problem and would surely fasten the emission reduction process in Poland. The most important part of our cooperation is an agreement on linking our electricity supply grids which greatly increases the energy security. Such cooperation shows that the use of nuclear energy is probably one of the points that neighbouring countries could agree on seeing such agreements as a solution to the part of their energy supply problems.

The enormously big initial expenses are surely easier to handle if split in few parts which makes nuclear energy accessible to member states with weaker economies. Also, Polish government, in the Energy Policy up to 2025 document, plans to have the first country's nuclear power plant functioning by 2021 or 2022. The advantage will be given to the private investments by 2010, if nobody invests until then, the government may consider allocating public funds.

One of the most controversial issues when it comes to nuclear energy is definitely the possibility of catastrophic accidents resulting in a large number of victims and long-term radiation contamination. Polish government gave thought to this problem for a very long period of time. As it is well known, the first attempt of construction of nuclear power plant in Zarnowiec in the eighties was suspended because of the fear of a possible catastrophe and mass demonstrations against nuclear energy, in spite of 1.5 billion dollars that were already invested in its construction. Today, tight energy supply closely connected with the problem of

more and more expensive fossil fuels and the global warming were indications that Poland must reconsider the decision made in the early nineties.

Uranium is an abundant and inexpensive fuel, 4.7 million tonnes of uranium ore reserves are economically viable, 35 million classed as mineral resources. Japanese scientist have proved in the eighties that uranium can be found in the sea and extracted using the ion exchangers, so the amount of it in the sea is estimated to 4.6 billion tonnes. The data indicates that it is perhaps wise to regard uranium as the most perspective energy resource in the future.

It is also very important to pay attention to the nuclear waste issue that surely arises from building the nuclear power plant. Nuclear waste, extremely dangerous because of its radiation, should be disposed in stable geological repositories like granite, salt or clay. Lithuania, in which a new power plant is going to be built, is about to undertake a project of a first low and intermedium radioactive waste repository. The new repository should be situated at the former Stabatiškė village, in the Visaginas Municipality, close to the Ignalina nuclear power plant and some 4 km from the border with neighbouring Belarus. Containers with nuclear waste are going to be deposited in the area of 40 hectares and covered with one metre thick layer of clay, then planted over with a layer of grass which should ensure highest safety standards for at least 300 years. The construction of repository will start in 2012 which ensures that the facility will be functional by the time the new NPP is built. The waste management, due to the direct interest of four countries, will be under a strict control and their governments will ensure effective public information and transparency. It is not to be omitted that Poland already has a National Radioactive Waste Repository in Rozan and has identified several locations for the new ones.

Having in mind all the arguments in favor, Polish government considers nuclear energy a solution to a problem of achieving disparate goals in the energy sector. Currently, our primary concern is emission reduction which cannot be achieved with coal as the base of our energy sector. Shutting down, even if only a few, coal-fired power plants that generate 93% of Polish energy while not ensuring the alternative source of energy would generate an energetic and social crisis with long-term consequences on Polish economy. Observing the will of 61% of our citizens approving of nuclear energy and the irrefutable arguments in its favor, Polish government must conclude that nuclear energy is crucial for Poland's future development and therefore a serious issue to be debated when creating a common energy policy.

5. RENEWABLE ENERGY

Reasonable and increased utilisation of renewable energy sources is one of the main components of the sustainable and environment-friendly development of the national and European energy system. It is crucial both for Poland and the EU to keep up with the world's progress in development of the renewable energy sources, which is fast growing, but yet not that satisfying that can completely replace the amount of energy given by fossil fuels and oils. The European Union has set up some minimum standards necessary for the satisfying comparison with the world's development. When talking about renewable energy sources (RES) one should have in mind biomass, wind, water and sun as primary (due to the

Commission's proposal), so that is the way we will present them anticipated by a short overview of general situation and aims in Poland.

First, we should note some major advantages of this kind of energy sources.

- 1) The first, and the most evident one, is that they are renewable which means that increased utilisation of RES partially solves the problem of the constant reduction of energy sources (mainly fossils and oil)
- 2) They aren't restricted to natural sources *stricto sensu* because their production area is much wider (sun, wind, water, fertile areas,...)
- 3) As they can be «more easily produced» they are not dependent of external import and transportation
- 4) Considering that they produce green energy, there is less preoccupation with the waste, especially the toxic one, which leads us to the next advantage;
- 5) They are environment-friendly, especially in respect to the reduced emission of CO₂ which is in accordance with the EU CO₂ emission reduction plan (polish Minister of Environment prepared the «*Development Strategy of RES*» according to which reduction could decrease up to 24 million tonnes of CO₂)
- 6) These sources of energy may improve energy security in the region and, in particular, secure energy supplies to areas with poor energy infrastructure
- 7) The last, but definitely not the least, is the opening of the new jobs (according to the polish «Strategy» up to 40 000 jobs annually)

Considering all advantages, it is evident that it's a Polish interest to develop renewable sources at the largest scale possible.

Next, we will note some main targets of the EU considering RES and compare them with the situation in Poland. The European Commission's *White Paper for a Community Strategy* sets out a strategy to increase the share of renewable energies in gross domestic energy consumption in the European Union by 2010 to 12 %, and to 20 % by 2020. Poland, on the other hand, sets her strategy to 7.5 % of RES in the gross domestic consumption till 2010., and 15 % till 2020. The share of RES electricity in Poland's total electricity consumption has increased from 2000 (1.68% in 2000., 2.00% in 2001., 2.02 % in 2002., 1.59% in 2003., 2.00% in 2004.) however not evenly during the five years. In 2003, less RES electricity was produced than during the other years, in spite of the increased installed capacity. The reason was meteorological conditions, causing a decrease in electricity production at hydropower plants. However the expert appraisal in «*Economic and Legal Aspects of the Utilisation of Renewable Sources in Poland*» prepared by the EC Baltic Renewable Energy Centre (EC BREC 2000), states that the actual technical potential of renewable energy sources in Poland is around 2,514 PJ/year, this being almost 60% of the domestic primary energy requirement.

The renewable energies share of primary energy consumption in the countries of the European Union in 2005. is estimated at 6.38%, whereas in Poland, in the same year, the share was 5.42 %, a bit less than the EU percentage.

We should proceed to the analysis of the individual renewable sources of energy. As mentioned, we will restrict to the four most efficient ones, regarding the Commission's proposal, but also Polish landscape and climate characteristics.

a) HYDROPOWER:

When talking about hydropower in the EU and Poland, we mainly consider small-scale hydroplants (defined by installations with capacities of less than 10 MW) that are ideal for electrification of isolated sites but also provide an extra contribution in case of consumption peaks. Although there is a mutual interest to develop this kind of energy production, there are some barriers set by the EU such as environmental standards for river water, that can have negative consequences on the electricity production of small hydropower plants. Hydropower constitutes about 7.3% of total RES structure in Poland. There are more than 700 hydropower plants working in Poland. Small hydropower (SHP) stations are the most popular in the moment; in 2002, there were about 580 of them and their installed capacity was 185 MW.

The possibilities of hydropower production in Poland are not evenly distributed in Poland. Most of it (about 68%) is present in the River Vistula basin. The rivers with high energetic potential are: Wisla (Vistula), Dunajec, San, Bug, and also Odra (Oder), Bóbr, and Warta. The highest concentration of existing medium size and large hydropower stations is in the western and southern parts of the country. The lowest concentration is in central Poland and in the eastern part they are practically absent. Potential of Polish rivers in terms of energy production exceeds 23000 GWh/year - it is used at 52%. In 2003 hydropower constituted 2.6% of total electricity production. However, electricity production from RES in 2003 was lower than in preceding years due to the fact that precipitation was low and unevenly distributed over the year. In 2004, electricity production at hydropower plants was 20% higher than in 2003. The electricity production in GWh from 2000.-2004. is as follows (which is cca. 78%- 85% of total RES electricity production): 2000.-2 105, 2001.-2 325, 2002.-2 279, 2003.-1 672, 2004.- 2 081. Total small hydraulic capacity installed in the European Union grew from 2004. to 2005. for 3 %, while in Poland for 11.6 %. Small hydraulic electricity production decreased in the the same period in the European Union countries for 3.4%, while in Poland it increased for 20.2 % .

Alltogether, we shall conclude that hydropower, being the RES with the longest tradition in Poland, is well developed and still developing even faster than the EU average. We definitely encourage this development, although with less emphasis than upon other less developed renewable sources.

b) BIOMASS:

Biomass is the most promising renewable source of energy in Poland (in the structure of RES sector in Poland, 2002 biomass constituted 92%). Biomass may be utilised in direct combustion processes in a solid (wood, straw) and gaseous form (biogas) as well as processed into liquid fuels (oil, alcohol). Technical potential of biomass amount to 755 PJ/year. The utilisation of solid biofuels is the fastest growing branch of the renewable energy sector in Poland. The development usually advances in market conditions, without any significant support from the state, and is usually based on technologies available within Poland. The greater opportunities for biomass technology implementation has been recognised in forestry, wood processing and agriculture sectors. However, it should be noted that forest biomass is primarily intended for use in the wood industry, the pulp and paper industry and the wood panel industry. In view of this, mechanisms are being developed to promote the use of

biomass from energy crops, as well as from waste and residues from agriculture and industrial agro-processing.

604 GWh of electricity was produced from biomass in 2004. This was 414 GWh more than in 2000, i.e. an increase of around 200%. Over the next few years, electricity production from biomass, including the co-firing of biomass and other fuels, is expected to continue to grow. Primary energy production of solid biomass grew for 5.8% in the EU from 2004.-2005., and in Poland for 5.7% from which we can conclude that Poland is successfully keeping up with the EU's average.

At present, there is a real political will in the EU to develop biogas production due to the continuing increase in the price of petrol. Biogas offers a double advantage in associating the eliminate of waste with the valorisation of energy. The Polish attitude is that the disposal of biogas by combustion is absolutely necessary to protect the environment, in particular to protect the atmosphere against emissions of unburned methane contained in biogas. Biogas can be used in gas-powered electricity generators, gas boilers and CHP systems. A gradual increase in the use of biogas, particularly landfill gas is beginning. Construction of plants using agricultural biogas, as well as biogas from sewage treatment plants, started in 2003. However, the installed capacity of those plants is still low. Electricity production from biogas increased more than twofold, from 31 GWh to 66 GWh, during 2000–2004. Since biogas has a relatively great potential, a further increase is expected.

We shall also mention that considering biodiesel production Poland (100000 tons) has emerged among the big European Union producer countries and since January 2007, biocomponents for liquid fuels and liquid biofuels have been exempt from excise duty.

The conclusion is that biomass, biogas and biofuel is increasingly used in Poland and is still developing as planned.

c) WIND:

Wind energy is playing a critical role in EU attempts to generate 22 percent of the region's electricity from renewables and to reduce carbon emissions by 2020. EWEA expects installed wind capacity in the EU to reach 75,000 MW by 2010.

Wind power only began to develop in Poland at the beginning of the 1990's, mainly on the Baltic seaside. There is 30% of the land surface which is economically suitable for wind turbine applications, 5% very favorable.

Statistics¹ show that there is potential for the development of wind power generation in Poland and that prospects for investors are encouraging. Both, private investors and power corporations, which are obligated to meet specific renewable electricity targets, are investing

¹ During 2001–2004, electricity production at wind power plants increased by 136 GWh compared with 2000. In 2004, wind power plants generated 142 GWh, which corresponded to 4.9% of the electricity produced from RES, and 0.1% of the country's gross electricity consumption. Analyses indicate a continued dynamic growth of wind power. The building of more wind farms began in 2004-2005, and they will contribute to an increase in installed capacity.

in generating facilities based on wind power. An additional incentive is the green certificate system, which considerably raises the price of renewable electricity for the producer.

However, there are many obstacles to the development of wind power generation. The most important one is that access to the grid is poor. Additionally, administrative procedures related to wind power generation are complicated, while the best sites in terms of wind conditions are located in areas with nature reserve status protected under the EU's Natura 2000 environmental program, which occupy 18 percent of the country's total area and where investors find it difficult to obtain construction permits.

Overall, wind power technology will continue to develop in Poland, although it is more expensive than most other power generation technologies. By 2020 Poland's total installed wind power capacity may reach around 10,000 MW. Funds available under the EU's Infrastructure and Environment operational program may prove to be an additional incentive for investors².

Also it is important to mention three necessary elements for successful use of wind power: implementation of attractive support system, removal of administrative barriers and guarantee of fair grid access.

d) SUN:

Poland has a very uneven distribution of solar radiation throughout the year, with around 80% of the total annual insolation falling within six months in spring and summer. The distribution of density of a solar radiation flux and its structure show that opportunities of its utilisation are somewhat limited, especially in winter. Air collectors are most frequently used at farms for crop drying. The total number of air collectors is estimated at 50-60 units, and their surface area at 6,000 m². They are operated for 300-600 hours per year on average. Liquid solar collectors are mainly used for heating water in homes, camping and summer cottages, sports and recreation facilities, livestock buildings and fodder stores. Also, liquid solar collectors heat up water in tanks and swimming pools as well as process water in small industrial plants. To date, around 4,000 solar installations for the heating of usable water have been installed in Poland. The work is carried out to introduce solar thermal applications for space heating. PV technology it is relatively new and not wide spread in Poland. To the year 2002 about 240 PV applications were installed in Poland with total installed capacity amounts to about 77 kW. Most of the applications can be defined as off-grid non-domestic (applications for traffic light, maritime navigation signs, yachts). There are also several demonstration projects with PV applications installed on the roofs or walls of buildings.

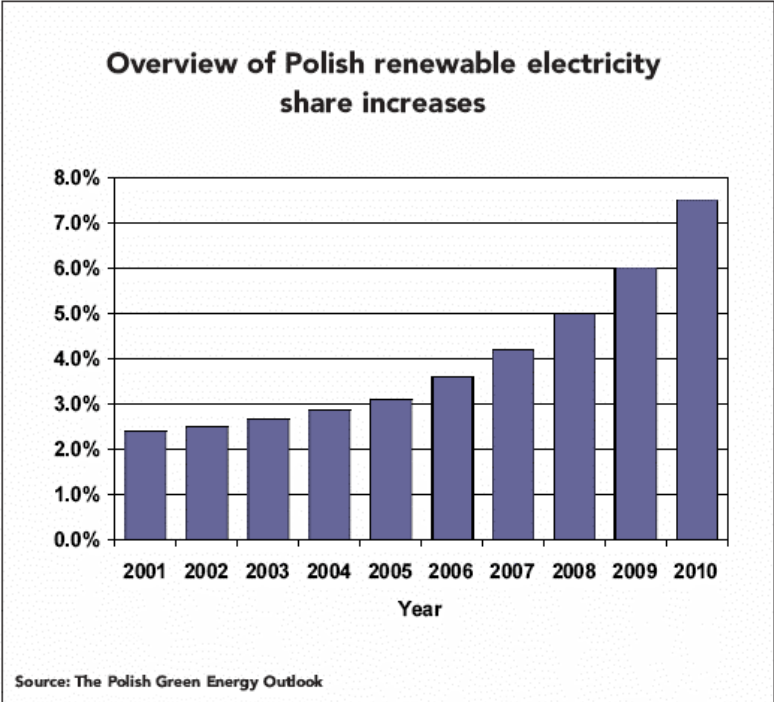
Good example: Project "PV ENLARGEMENT in Poland"

Within the activities of the project grid-connected photovoltaic systems have been completed at technical universities, academies and other public bodies. The systems are either

² Around 350 million euros have been set aside under the program's Measure 9.4 (Energy Generation From Renewable Sources) for projects related to electricity or heat generation from renewable sources. The maximum possible funding is capped at 20 percent of the total cost of a project. The development of wind power generation will also be supported indirectly by Measure 9.6 (Networks Facilitating the Reception of Energy From Renewable Sources) with EU funding set at 47 million euros, and Measure 10.3 (The Development of Industry for Renewable Energy Sources) with EU funding set at 27 million euros and the maximum level of funding capped at 30 percent of the project's cost.

cost-effective or very innovative and are set up in very visible places, often being the largest such installation of the country. An important goal of the project is to make a standardised comparison of the PV installations to the 10 European countries involved. In this framework a photovoltaic system of 21 kW has been installed at Warsaw University of Technology including multi-crystalline silicon technology and amorphous silicon as well.

The potential of solar energy in the country is estimated as 370 PJ/yr. The technical potential for solar energy according to the EC BREC's studies of the year 2000 give an annual technical potential energy as 1,340 PJ/yr. This number varies greatly in different studies. It is obvious that a country wide extensive research on the technical and economical feasibility of solar energy is needed.



b) SECONDARY ENERGY SOURCES

1. ELECTRICITY

Electric energy in Poland is based almost exclusively on domestic coal. The share of coal in electricity generation (92% in 2004) is the highest among the EU Member States. The share of natural gas in electric energy has been increasing, although is still very low. Small percentage of it also comes from oil and RES. Electric energy has been increasing in recent years. Electricity consumption in Poland has stayed stable over the 1990s, but is expected to grow by over 50% by 2020 as it is still lower than in the EU countries. In 2001, it was 2.5 MWh/Ma per capita, which was 705 kWh/Ma less than in the EU (PAIZ).

The combined length of Poland's power network exceeds 713'000 km. There are 17 power plants and 19 combined heat and power plants, producing annually over 135 billion kWh, of which 63% goes to the industrial sector (including the energy industries) and 15% to households. The combined installed capacity of the Polish power plants exceeds 33GW. In 2001, the production of electrical energy reached 144.6 TWh or 2677 kWh in per capita terms..

POLISH POWER GRID COMPANY (PSE S.A.)

Maintains the high – voltage network and controls central and regional dispatch. Company is owned by the State Treasury and is under the supervision of the Ministry of the Economy. PSE – buys and sells electricity on the wholesale market, and provides electricity to regional utilities and directly to large industrial customers.

On the regional level – 33 regional el. utilities (to be merged into 7 companies) mostly undergoing or preparing the process of privatisation regional utilities operate distribution networks of 110 kV and below and are responsible for modernisation and development of local power systems.

ELECTRIC PRODUCTION BY SOURCES IN 2001

- 1) Thermal public power plants fired
by other conventional fuels (gas and oil) – 0.54%
- 2) Hydro power plants (inc.pump. storage)- 2.90%
- 3) Biogas and biomass plants - 0.03%
- 4) Windmills - 0.01%
- 5) Autor producing plants - 5.30%
- 6) Thermal public power plants fired
by hard coal - 56.50%
- 7) Thermal public power plants fired
by lignite - 34.72%

RENEWABLE ENERGY SOURCES IN ELECTRICITY

RES-e Twh in 1999 2.35%

Minimum share of RES-e (quotas):

2003 – 2.65%, 2004 – 2.85%, 2006 – 3.6%, 2008 – 5.0%, 2010 – 7.5%

Ministry of Finance 2002 exempts RES electricity as well as electricity produced from storage – pump hydropower plants from the excise tax. Most of Poland's energy is produced from fossil fuels (especially coal), example of tax is a form of aid for RES energy producers, because costs of black energy are much higher than the ones of green energy.

Process of liberalization and privatization of electric energy sector, seems to be quite a complicated process. Many power plants and other elements of the grid systems (low voltage transmission especially) need refurbishment and upgrading.

Today electricity has already become more expensive especially in the rural regions (long distance from generation – reflected on the final price). Regional electricity utilities in less urbanised regions will be more interested in purchasing / producing electricity from locally available renewable energy sources, including biogas, landfill gas and other biofuels . With the EU integration, prices of electricity in Poland are expected to grow to reach average price levels in neighbouring EU countries.

The Polish electricity industry has been reorganized into three sub-sectors: generation (50% of the assets), transmission (10% - Polish Power Grid Company) and distribution (40% - 33 distributing companies). Most producers and distributors of electrical power are treasury-owned firms. As of July 2002, only three power plants, eight CHP plants and one distribution company had been privatised (CEEBIC). The delayed privatisation process will gain momentum in the near future, as strategic investments are desperately needed to modernize the outdated generation facilities. Renovation of the whole sector is evaluated to cost about USD 15 billion by 2010. In addition to the future owners, multilateral lending institutions like the World Bank and the European Bank for Reconstruction and Development are expected to contribute to this large cost (Energy Information Administration, US Department of Energy).

In April 1997, the Polish government passed a new Energy Act, which required the Government Economic Committee to pass "Guidelines on Poland's Energy Policy Through 2020." The document spells out long-term energy forecasts and action plans for the Polish government. The key objectives include: increased security of energy supplies, (including diversification of sources); increased competitiveness for Polish energy sources in domestic and international markets; environmental protection; improving energy efficiency; and reducing energy-related carbon emissions.

Poland strongly supports regional integration in trading with electric energy especially taking into account positive effects it has on energy efficiency. Example to be followed is a trilateral market coupling (TLC) of the Belgian, Dutch and French spot markets which exists since November 2006, and brings together 3 major electricity markets. It has led to dramatic improvements in maximising trade and utilisation of cross-border capacity. Since Poland already is a net exporter of electricity within its good geographical location and the transmission operator PSE operates interconnections within CENTREL with Germany,

Sweden, the Czech and Slovak republics, Belarus and Ukraine, further integration is a step forward rather than a blank start-point.

What also must be taken into account is a problem of generation capacity construction in Poland that has been inconsistent over the past 30 years, resulting in an aging system that is becoming an increasingly serious issue. More than half of the current capacity was built in the 1970s. Approximately 60% of the system is more than 15 years old, and 40 % is more than 20 years old. More than 1.5 GWe has been in operation for more than 30 years. This problem has been exacerbated by insufficient expenditure on maintenance and modernization projects. PSE has estimated that by 2005, over 20 GWe of capacity will need rehabilitation while almost 3 GWe will need to be retired. Rehabilitation costs, including environmental protection costs, are estimated between \$50 and \$350 per kW of capacity.

Additionally, there are plans in place to expand the existing transmission and distribution networks. Investments in the electricity industry can therefore be covered partly within this enlargement of electricity market and increased efficiency, and partly in the process of privatization.

Polish government is ambitiously committed to adapting "Guidelines on Poland's Energy Policy Through 2020" spells out other long-term energy forecasts and action plans. The key objectives include: increased security of energy supplies, diversification of energy sources, increased competitiveness of the Polish energy sources in domestic and international markets, environmental protection, improvement of energy efficiency and reduction of energy-related emissions.

In the end, Poland also stresses out the importance of promoting electricity from renewable energy sources, which is a quota obligation. Its key idea is to gradually stimulate the demand for RES electricity and at the same time to facilitate the competitiveness among RES energy producers to satisfy the demand. The distribution companies are obliged to provide a certain minimum share of energy produced from RES in their total yearly sale.

For this obligation to be fulfilled, Poland supports activities:

- formal and legal activities facilitating access to renewable energy sources
- economic instruments increasing the feasibility of renewable energy sources utilisation and supporting the development of new systems, e.g. Tradable Green Certificates, that would complement the system of quotas for RES-e for energy utilities;
- educational and promotional activities for renewable energy sources and international co-operation.

c) POLICY AREAS

1. RENEWABLE ENERGY SOURCES

In order to ensure the proper position of renewable energy sources within the power industry, actions should be executed in the following directions:

- 1. Maintaining the stable support mechanisms for the use of renewable energy sources-** It is planned that until 2025 support mechanisms for the development of energy from RES will be used. It is particularly important to ensure the stability, continued monitoring as well as their enhancement, of these mechanisms not only to support development of RES but also to guarantee stable conditions for investment.
- 2. The use of biomass in electricity and heat generation** - In Polish conditions the technologies using biomass will remain the fundamental line of development of RES, but use of biomass for energy purposes should not lead to shortages of timber in wood, cellulose, paper and wood-using industries. Intensive cultivation of energy crops must guarantee that the necessary intensive fertilization will not lead to deterioration of environmental conditions (water, land)
- 3. Intensification of use of small-scale water power** - Conditions will be determined for location and construction of new small-scale hydro-electricity generation facilities, including facilities taking maximum advantage of the existing stages of fall on water courses for energy generation.
- 4. Increased use of wind power** - Significant progress in technologies for the use of wind power observed in recent years among technologies using RES makes wind power one of the fastest-developing branches of industry. Activities are planned to facilitate investment conditions also in this field of renewable energy sources. The necessary solutions are foreseen aiming at the enhancement of co-operation between wind power plants and the national power system.
- 5. Increase of share of bio-components in the liquid fuel market** – Actions in this respect will concentrate first of all on implementation of the Community regulations.
- 6. Development of industry for renewable energy generation-** Development of use of renewable energy sources brings positive effects linked first of all with professional activation in the areas with high unemployment, thus stimulating the development of agricultural production, increase of employment, and development of industry and services for renewable energy.

2. ENERGY SECURITY

The very important issue of energy security in the EU is closely related to energy sources of each state as well as the cooperation and support of the member states in the time of energy crisis.

Poland's standpoint is that national energy reserves are a result of individual solutions for each energy source. Regarding the coal, as the current base of our energy sector, the situation is more than satisfactory if we take in account the fact that Poland is a net exporter of electricity. However, the old infrastructure lessens the efficiency and our obligations

concerning the reduction of CO₂ will lead to a shut-down of many of our coal burning power plants. This could impose a problem of energy security in the near future, so the Polish government considers the **increase of the reserves** as an answer to this problem.

The increase of the reserves when it comes to coal, will perhaps be a solution to a decrease in energy production, but the other problem, and more serious one, is the fact that the energy consumption in Poland is increasing at enormous speed, and is expected to reach 48-55% for the final energy and 80-93% for the electric energy till 2025. The solution to this problem is much harder to find and cannot be reached without the coordination of all national strategic goals in the energy sector in the near future. The part of the solution lies in the renewable energy sources. Poland expects the increase of 7.5 % in the production of electric energy from renewable sources till 2010. Considering the fact that this energy source is the newest and it has a lot of potential to grow and develop, it would be optimistic to expect that its share in Poland's energy profile will increase. However, this expected increase depends on the **technological progress and country's ability to use the ideas to increase exploitation of this energy source** which could take a lot of time. Even if it might be a solution to energy security in the future, it cannot be an only resource to rely on for now.

Polish government considers nuclear energy a solution to the energetic sword of Damocles. The plans on the new nuclear power plant in cooperation with Lithuania, Latvia and Estonia guarantee that the power plant, when built, will be able to compensate for the majority of Poland's energy loss. Following the above mentioned, the plan for the first national nuclear power plant aims not only to fully satisfy the future electricity consumption in Poland but also to secure the reserves which would prevent the possible energy crisis.

Excellent cooperation with neighbouring countries and electricity supply grids connection could set an example for the possible model of future energy security for the EU. The idea of solidarity between the countries in the time of energetic crisis would in this case be more substantial due to the mutual obligations arising from the very fact their electricity grids are bonded.

Taking all above mentioned facts in account, Polish government considers that the energy security issue cannot only be regarded as a national issue but should also be disputed as one of the central issues when creating a common EU energy policy.

3) ENERGY EFFICIENCY

Poland highlights the strong role of EU energy treaty from the ground of energy efficiency as an issue of high importance. It is crucial for the development of more integrated regional energy markets, for it provides a basis to push forward substantial changes through, where necessary, changes in legislation.

From the aspect of efficiency, **ensuring an effective coordination between member states as well as regional and local initiatives** is a priority. These improvements help facilitate the development of effective and integrated regional markets by removing barriers to competition and trade. In this aspect, it is also a step forward to a single market. For all this reasons, Poland stresses out the necessity of further promoting transition from national electricity, oil and gas markets to the internal markets through an interim step of regional energy markets.

Transparency is crucial to the development of more efficient and integrated markets - allowing market players to make commercial decisions based on access to reliable information. The lack of transparency is an issue identified in the European Commission's Sector Inquiry as a major barrier to competition.

Improving energetic efficiency includes **promotion of new technologies and research**: development of new technologies and promotion of research programmes have to contribute to sustainable development and **diversification of energetic sources**.

Although we strongly support and confirm the right of the State, as stated in The Lisbon Treaty, of 13th December 2007, to decide independently which energy sources to exploit, Poland finds it crucial that long-term reforms should include extensive approach to energy resources. In this aspect the importance of renewable resources (that are on the level of 5% at the moment) should also be stressed out.

Coordination and cooperation are especially important for effective production of atomic energy which necessary expenses to invest exceed the possibilities of each State.

Energy efficiency can also be improved through the promotion of **specific actions in sectors where there is a major waste of energy**, therefore:

- transports: promoting the less polluting vehicles
- production: a variable waste of energy can be encountered depending on the technology used; therefore we encourage the use of new technologies producing more by wasting less energy
- construction: encouraging the use of technological innovations allowing to save more energy.

Poland also stresses out the need for EU to develop efficient reserve and solidarity mechanisms to avoid crisis of energy supplying.

2. NATIONAL POSITION REGARDING THE POSSIBILITY TO CREATE AN EUROPEAN TREATY ON ENERGY

- 1) accordance with the EU *aquis communautaire* which embraces the common market as one of basic components of creation and development of the EU, Poland considers creating a common treaty on energy necessary. With such treaty, further promotion of four basic European freedoms (free movement of goods, services, capital and labour) will be accomplished. Besides latter, fulfillment of treaty will encourage achievement of some other goals such as safety of environment, health and security of population and naturally, security in energy supplies. Specifically in Poland, which has communist heritage, accession to such treaty will bring positive effects in industry, development of technologies, privatisation, increase of employment and generally saying, it will contribute to prosperity in economy.

- 2) Regarding competences and powers of treaty proposed, they should be overviewed through several aspects.
 - a) SOLIDARITY: „ The Member States shall work together to enhance and develop their mutual political solidarity. They shall refrain from any action which is contrary to the interests of the Union or likely to impair its effectiveness as a cohesive force in international relations.“³ Solidarity means not only mutual political cooperation, but also sustaining from actions contrary to interests of each country. Emphasis should be on special measures that need to be taken in situations such as major natural disasters and political or economical crises.

 - b) NEGATIVE INTEGRATION: Opening of new integration field in the EU comprises elementary postulates that are set in the EC Treaty. One of such elements is negative integration which declares elimination of barriers that could restrict movement of energy and energy sources. Rules should be set for some exemptions such as interests of environment, public security and public policy.

 - c) PRIVATISATION: Polish energy sector, at the time being, is mainly owned by the state which is a heritage of the past communist regime. This seems particularly problematic when speaking of free market and competitive energy sector. The way

³ Article 11, EC Treaty from Nice

in which our government plans to attend to this problem is closely connected to the process of privatisation in Poland. The subject of privatisation of energy sector, today more than ever, brings up vehement discussions not only on the topic whether to privatise or not but also which model to use. We feel that the best way to approach the issue is to gradually privatise the companies that are currently owned by the state. This appears to be a slow and arduous process that takes time. Our standpoint is that Poland will need at least twenty years to privatise the energy sector because there is no final answer to what is the best privatisation model. Speaking of new power plants or new companies on the energy market, Polish government considers that the easiest and optimal solution is simply to allow the private capital to invest and operate according to the rules of the free market. These two approaches would, in due time, lead to an increase in private investments for new infrastructure while, at the same time, restoring and improving the old one.

- d) **LIMITATIONS FOR THE ENERGY SOURCES:** When negotiating the common energy policy, one issue, in particular, must be taken under consideration. The possibility of future limitations set for the energy sources. Poland is decisive in its standpoint that such decisions should not be possible without the revision of the treaty. When creating the common energy treaty such clause is necessary because it ensures that a single country relying on a certain energy source won't be subjected to a limitation that would worsen its position on the common energy market or cut its energy supplies without the revision of a whole common policy.

- e) **INSTITUTIONS:** Considering the creation of the new energy treaty, it is essential to ensure control and execution of the common policy. We feel that an implementation should be secured on three levels- legislative, executive and judicial. Taking in account that such institutions already exist in EU, and fact that we strive to the expense minimalisation, no new institution which will control the functioning of the new European Energy Community Treaty is necessary. The executive part will be taken over by The Council - the EU's main decision-making body. The Council Community for Transport, Telecommunications and Energy already exists and it shouldn't impose a problem to entrust it with this obligation. All decision making in Council, except for the ones affecting primary national interests, should be voted by qualified majority voting. The ones affecting primary national interests should be reached unanimously. It is also our position that the jurisdiction of the Court, which will eventually be established, should extend only to monitoring compliance with primary treaty law and should not include jurisdiction to review secondary legislation, under the treaty.

