



WŁODZIMIERZ EHRENHALT

ASSUMPTIONS FOR DEVELOPMENT OF AN ENERGY STRATEGY IN POLAND



RDS RADA
DIALOGU
SPOŁECZNEGO

JUNE 2019

CONTENT

1. SPIS TREŚCI.....	2
1. POLISH ENERGY DOCTRINE.....	3
2. THE DEVELOPMENT OF PROFESSIONAL POWER ENGINEERING IN POLAND AND THE PROSPECTS OF COOPERATION OF STATE ENERGY WITH MARKET-DRIVEN ENERGY.....	5
3. ENERGY SECURITY	6
4. INITIATIVES TO GRADUALLY ENHANCE MARKET-ORIENTED TRENDS IN THE POLISH POWER INDUSTRY BASED ON THE ENERGY DOCTRINE	8
5. CONCLUSIONS AND RECOMMENDATIONS FOR THE POLISH ENERGY SECTOR	10
6. SUMMARY.....	11

1. POLISH ENERGY DOCTRINE

The Polish energy doctrine should assume systematic reversal of the roles of individual energy generation sources and the takeover of basic work by distributed sources, while conventional coal power industry should under Polish conditions gradually assume the role of a guarantor of electricity supply.

- the largest and newly built coal blocks, which are basically non-regulatory, should work within the base energy for many years and remain in the hands of the state; however, their output should constitute **30-40%** of the highest national demand (which amounts to 27 thousand MW), i.e. this basic **capacity of coal-fired power plants for black coal and lignite should amount to a volume between 12,000 and 14,000 MW, with the reservation that lignite-fired power plants should be gradually replaced with gas sources.**
- the 400 kV and 220 kV transmission lines will remain in the hands of the state for many years, as they guarantee security of transmission and control over it.
- the remaining part of energy generation sources and transmission lines, i.e. revitalised 200 MW blocks, wind energy, gas energy, waste energy, photovoltaic power, **civic energy and 110 kV lines, medium- and low-voltage lines should be privatised and subject to market free mechanisms.**
- smart use of coal resources and extension of prospects for their extraction in line with economic logic; **limiting the extraction only to profitable deposits, taking into account the necessary mining investments.**
- development of renewable energy sources as part of a nationwide policy for the development of distributed sources.
- **strategic energy generation sources and strategic transmission lines may remain in the hands of the state as a guarantor of the country's energy security and do not have to be subject to market mechanisms.**

In order to implement such a doctrine, it is necessary to create a document that would serve as an Energy Constitution that would be resistant to all political changes taking place in our country. Without such a guarantee, it will be impossible to restore the confidence of major non-speculative investors. In case of investments of such magnitude, obtaining funds is possible only from investors within the industry or large financial institutions and it also is subject to multiple state safeguards and guarantees.

Due to the fact that Poland has its own coal deposits and taking the existing coal-fired power plants into consideration, in the foreseeable period of time, it is not possible to fully replace these sources with renewable, gas or nuclear energy.

In the first phase of development, Poland's distributed energy should constitute a significant element improving the energy security of the state, impacting the level of energy and heat prices and stimulating the development of the country's selected regions.

POLISH ENERGY DOCTRINE

Ultimately, distributed energy should become the dominant source of energy generation in Poland and ought to start creating added value for the Polish industry, as there is a niche in the field of such energy generation that we should take advantage of.

2. THE DEVELOPMENT OF PROFESSIONAL POWER ENGINEERING IN POLAND AND THE PROSPECTS OF COOPERATION OF STATE ENERGY WITH MARKET-DRIVEN ENERGY

The specificity of the Polish energy industry lies therein that **it is concentrated in the hands of the state and in principle is not subject to any market pressure. Even the areas of existing private installations remain entirely dependent on state transmission companies**, which consequently forces them to be subject to the rules imposed by the state sector. The degree of complexity in obtaining connection conditions by investors from outside the state sector in many cases makes it difficult, and often completely impossible, to execute investments.

The concentration of the majority of generation sources in the hands of the state through repurchase from foreign energy concerns of most installations, e.g. the power plant in Połaniec repurchased from Engie, a French corporation, or the Polish assets of the EDF concern, only strengthens the trend of moving away from market conditions in the Polish power industry.

A situation like this is extremely irrational and dangerous for the entire Polish economy. The monopolisation of the Polish energy sector, and moreover, basing it on the production of energy from coal is currently on a collision course with energy transformation that is taking place dynamically both in Europe and on a global scale.

Bearing in mind that Poland is still incurring significant costs as a result of policies conducted in socialist times, the continuation of basically the same trend over the next decades will inhibit the country's development irreversibly.

In terms of energy resources, Poland is probably the only European Union member state that has the capacity to independently secure its energy needs in the area of electricity and heat generation. The country's own resources of coal and lignite, natural gas, smartly supported by renewable sources, such as wind energy, hydropower, photovoltaics as well as a reasonable use of biomass, should make us independent from energy imports, **which does not translate into not importing energy if it proves to be economically justified.**

The problem, however, is the low level of utilisation of this potential due to a centralised and obsolete production and transmission system.

3. ENERGY SECURITY

The demand for the execution of investments in distributed energy also results from the necessity to ensure energy security in the country. Energy security is a state of affairs in the economy of a given country, in which the constantly changing, usually growing, demand for energy is covered. This issue has a broad context and includes both economic aspects as well as political and environmental ones.

The development of local energy markets that make use of energy resources located close to the recipient is a source of economic and social advantages. Among these advantages are, among others, savings resulting from a reduced distance of energy transmission and distribution from generators to customers, and thus lower expenditures on network infrastructure, the possibility of minimising costs and expenses for energy carriers, achieving marginal costs close to zero (this applies to electricity from photovoltaic, wind and small hydropower plants), the possibility of implementing a bioenergy cycle in a given area, diversification of energy sources in favour of the independence of the recipient from conventional energy sources as well as transmission and distribution infrastructure. Furthermore, according to the laws ruling economics, the development of distributed energy sources, through the creation of sources substitutional to large-scale power industry, increases the price elasticity of electricity demand. In turn, from the point of environmental analysis, the development of renewable energy sources contributes to the reduction of CO₂ emissions at the stage of energy and heat production. This is accompanied by the creation and development of a new sector of the economy: “green industry”, which contributes to the achievement of extensive economic growth, i.e. based on innovative technologies.

In part, issues related to energy security remain the responsibility of state authorities, primarily in the field of diversification of supply and independence from one supplier and energy carrier. However, an increasingly important role is being played by distributed generation, i.e. not only renewable energy sources and prosumers, but also cogeneration, which reduces the risk of a blackout and potential negative effects of dependence on large-scale conventional energy. **However, a proper regulatory environment as well as predictable and favourable conditions for the investment’s execution are necessary for the development of distributed energy.** The issue of energy efficiency is also important. On the one hand, it is a necessity imposed by legislators, while on the other hand, it is an opportunity to rationally manage energy, potentially leading to savings in terms of finances, and in the case of companies – to greater competitiveness. The broad development of renewable energy sources has a positive impact on the competitiveness of enterprises on both the local market and national or European markets. The need to optimise and increase energy efficiency, with the simultaneous risk of further increases in energy prices, make RES investments increasingly common and desirable. Reduction of the costs associated with consumed electricity or heat makes it possible to reduce the prices of products or services offered, and the funds saved can be used for further investment and business development.

ENERGY SECURITY

Domestic households also have a strong influence on the security of the Polish Power System. This correlation is well illustrated by the comparison of the load profile of the household sector with the PPS load profile in the winter and summer summits. In the hours of peak demand for electricity is the highest probability of a power shortage and undermining the security of the energy system. Also prices on the wholesale market then increase, consequently the reduction in demand (DR) has the greatest added value for the system.

Domestic households also have a significant impact on the security of the Polish Power System. This correlation is well illustrated by the comparison of the load profile of the household sector with the PPS load profile during the winter and summer peaks. In the hours of peak demand for electricity, the probability of a power shortage and undermining the security of the energy system is highest. Also prices on the wholesale market then increase, and thus, demand reduction (DR) has the greatest added value for the system.

The development of wind energy will naturally force the conversion of a part of the coal sources to gas sources, because gas installations perfectly protect the work of wind farms, while the investment costs are quite low. Gas generation sources are characterised by a short investment period and, consequently, by the possibility of rapid implementation of projects. It is possible to assess today that in Poland there is a need to install gas sources of approximately 5,000 MW capacity operating usually in cogeneration. This does not exclude balancing installations where LCOE (levelised cost of electricity) can be calculated jointly with wind farms. Nevertheless, the development of such a scenario will require a large additional gas import in the range of 4 to 6 billion m³.

4. INITIATIVES TO GRADUALLY ENHANCE MARKET-ORIENTED TRENDS IN THE POLISH POWER INDUSTRY BASED ON THE ENERGY DOCTRINE

The most necessary initiatives required to carry out the process of marketisation of the Polish power industry are presented below:

- Defining domestic black coal resources based on the economic availability of this raw material. Comparison of the national production potential with import possibilities, both in terms of prices, dates and delivery guarantees. Carrying out such a comparison should illustrate the economics of functioning of national energy units as well as outline the necessary investment plan in Polish mining.
- Defining in a given time period the capacity of coal resources to cover the energy balance, while simultaneously taking into account the rapid development of renewables and gas sources, treating national reserves as a guarantee of the state's energy security. This means that the country's stock should be treated as a strategic reserve, understood as guaranteeing energy security of the state. You must not completely exclude coal imports if it turns out to be economically justified.
- Based on resources defined in such a way, investment plans for coal-fired power plants and mining should be developed. It seems that coal mining in the range of 25-30 million tonnes per annum should be a sufficient volume for base operation of currently built coal blocks, as well as for flexible 200 MW units partially working in the base, and partly as renewable energy security guarantee. Understood this way, we treat our own reserves of black coal as a strategic reserve and the work of gas and renewable installations as a basis.
- Development of a realistic transformation program with a timeline attached of lignite-fired power plants in a socially acceptable way. Limiting the operation of lignite-fired units in individual power plants and replacing them with renewable energy sources, gas blocks, and in mining areas as part of the reclamation of these areas – construction of pumped-storage power units. The above point is so important that it is necessary to enter it in the Energy Constitution.
- Presentation of the above program to the European Commission, obtaining its acceptance and negotiating free CO₂ emissions, justifying the necessity of carrying out a comprehensive transformation in the long term, required due to the specificity of the Polish power industry.
- By means of a legislative fast track, ensuring the development of renewable and gas sources of energy and heat. The construction of energy generation systems from distributed sources as well as transmission systems should be a statutory public goal.
- Allowing for the fastest possible development of cross-border connections both with European Union member states and our closest neighbours, which will involve de-ideologizing our energy and exerting pressure on domestic monopolists, bringing as a consequence the desired price effect. The fulfilment of this postulate is the fastest

INITIATIVES TO GRADUALLY ENHANCE MARKET-ORIENTED TRENDS IN THE POLISH POWER INDUSTRY BASED ON THE ENERGY DOCTRINE

possible way to put pressure on the energy monopoly, which will impact significantly the level of energy prices in Poland.

- Making the distributed energy support system more attractive in those areas where it is still necessary and justified. Defining the termination of this support within a specific time frame. Striving to support investment costs rather than tariffs, tariff support disturbs market activities, although it is sometimes necessary. By supporting investment costs, the state can stimulate the development of those production sources that are most desirable.
- Legislative pressure on transmission network operators to oblige them to cooperate with distributed sources and with energy importers.
- Privatising through the stock exchange, while maintaining the state control of distribution companies so as to activate them to force market-oriented activity monopolists. Slow privatisation of those state-owned generation companies that are suitable for such privatisation.
- Enabling market entities unhindered energy trading, both from domestic sources and from import from any direction, for example, from Ukraine.
- Creation of a legal basis for the development of private transmission networks.
- Initiation of any and all legislative activity related to market mechanisms in the field of heat and energy trading.
- Through legislative facilitation, intensive development of public-private partnership in local governments in the area of launching energy and heat generation sources and creation of local transmission networks.
- Intensifying activities related to the creation of a legal basis for the functioning of energy clusters and cooperatives, especially in rural areas and in small towns.
- Intensive development of a small individual energy program through a system of incentives for recipients as well as through preferential investments in this field.
- Intensification of economic contacts with countries importing energy and precise identification of export opportunities in this area.

It should be noted that all the above ways to make the Polish energy market more market-oriented are long-term activities and must be implemented very systematically over many years. The dominance of the state energy system is inevitable and that is why elements that enforce competitiveness will be so important from the point of view of energy and heat consumers.

Systematic and irreversible change in the proportion of state monopoly and market systems in favour of the latter must lead to the activation of competitiveness mechanisms and, as a result, to a permanent reduction of energy prices for its recipients. The more local distributed market energy there is, the more rational is attitude of monopolists and consequently prices of electricity and heat are lower.

The blockade of market-oriented power development in Poland is purely political in nature and is completely irrational from the point of view of broadly understood economic and political interests of the country.

5. CONCLUSIONS AND RECOMMENDATIONS FOR THE POLISH ENERGY SECTOR

- In every scenario of the development of the energy sector in Poland, the state is responsible for the supply of electricity. Even in case of a purely theoretical privatisation of the entire sector, the state is responsible for the society. The responsibility in the heating sector looks slightly differently, as here it is spread over the state, local government as well as private and commercial institutions. This situation results from the partial marketisation of the heating sector.
- The blockade of market-oriented power development in Poland is purely political in nature and is completely irrational from the point of view of broadly understood economic and political interests of the country.
- In our domestic conditions, the privatisation of the entire sector is not recommended, nor is it possible. The state has to assume responsibility for all mentality-related errors made by all the government after 1990 as well as those originating from the socialist era. These are mistakes resulting from promises of development of the coal sector in the energy sector.
- Minimizing future stranded costs resulting from already committed investment mistakes should be an important component of the Polish Energy Doctrine today. This means that one should find an optimal place for the functioning of large, modern coal blocks, such as, for example, Opole, Jaworzno or Koźienice, both in the field of energy security of the country and in relation to economic logic.
- Protection of these investments by blocking the development of distributed energy is the quickest way to an energy disaster in Poland.
- It is essential to calculate the working time of these units in the long term, e.g. up to 2050, and their operating costs assuming some of their mandatory share of work in the base. By establishing the average LCOE price, one can calculate their profitability in this way assuming, of course, that distributed energy, gas and maybe modern atomic sources will gradually take over their work.
- The decision to build offshore wind farms ought be made as soon as possible, preceded by the creation of a separate legislative path to facilitate these investments.
- One ought to consider the transfer of the Polish nuclear power plant construction to the areas where lignite-fired power plants are being closed down. Those area are certainly best suited for such investments.
- Consistently build competitive markets for electricity, gas and liquid fuels. The total monopolisation of these sectors will only harm the entire economy.
- Inventory of the possibilities of the domestic industrial supply chain for distributed energy and the perspective of creating added value for the industry and related services.
- Analysis of export prospects for Polish industry related to the development of distributed, wind, gas and biogas energy. Production and service perspectives for offshore wind energy will have a very important place in this analysis.

6. SUMMARY

The present state of affairs and development prospects for the Polish power industry in the light of the European Union's energy policy and mega global trends are currently the biggest problem of our country with regard to the competitiveness of the entire economy and may contribute significantly to a deep recession and decline in the Polish people's standard of living. It is necessary to implement rapidly the policy of changing the mix of energy carriers. Gradual reduction of the share of solid fuels, increase in the share of renewable energy sources and a certain increase in the share of gas fuel, mainly as a regulator of renewable sources.

However, one should bear in mind that:

- Polish distributed power industry can cooperate very well with the commercial energy industry.
- There is a permanent place for Polish coal in modern energy.
- With a reasonable investment effort and by making use of its domestic resources, Poland can be the safest country in Europe in terms of energy.

The unabridged version of the report is available for download:
[https://zpp.net.pl/wp-content/uploads/2019/04/Założenia-do-strategii-rozwoju-energetyki-w-Polsce-wersja-elektroniczna.pdf](https://zpp.net.pl/wp-content/uploads/2019/04/Za%C5%82o%C5%BCzenia-do-strategii-rozwoju-energetyki-w-Polsce-wersja-elektroniczna.pdf)



WWW.ZPP.NET.PL

RDS RADA
DIALOGU
SPOŁECZNEGO