HARD COAL A FUEL OF THE FUTURE AND A CHANCE FOR KOMPANIA WĘGLOWA S.A.

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Abstract: The paper discusses the role of hard coal as one of the basic fuels for power generation, especially electricity. The energy is seen as a factor of economic and social development. Coal is a most abundant fossil fuel in the World and its share in electric power generation is almost 40%. Improvement of coal combustion technologies is underway in order to minimise emissions of pollutants into the air. The future position of coal in power generation in European Union will be decided by security of energy sources supply, economic effectiveness of coal and the impact of cola utilisation upon the environment, The European Union should protect its strategic coal reserves to utilise them in case of political disturbances endangering the imports.
Keywords: energy resources, coal as a fuel, economic effectiveness of coal, coal producers.

1. INTRODUCTION

Energy is a basic driver of economic development and a factor improving the quality of life. Reliable access to energy is a key element of economic and social development. Coal satisfies at present about 23, 5% of energy needs in the global scale and electric energy generation bases on coal in 38%.

Coal is most abundant fossil fuel occurring in the World. Its share in electric generation amounts almost to 40%, anyhow combustion of coal in power generation causes the origination of emission of pollutants into atmosphere and production of a large volume of solid by products. Combustion technologies are constantly being developed. This fact together with improvement of coal quality prior to its combustion are more and more commonly applied methods of fumes purification and lad to the situation that negative outcomes of coal combustion are less and less burdensome for the natural environment.

The countries of the European Union use more and more energy. With the lack of indigenous energy resources ever greater and greater part of them will be imported by the European Union and it will start to become of the largest importers of those resources in the World market, making itself very seriously dependent of external supplies. At present import of raw minerals covers about 50% of the energy needs of the Union; this volume is to increases to more than 70% after 20-30 years.
Dynamically growing energy dependence of the states of European Community, including Poland, cannot be left without reaction.

The future position of coal in the energy sector of the European Union will be decided by: security of energy raw minerals supply, economic effectiveness of coal and the impact of coal utilisation upon the natural environment. On international energy market coal is the most accessible fossil fuel. Its reserves will be available for longer time than those of oil or natural gas. The European Union should, thus, protect its strategic coal reserves to be utilised in case of political disturbances endangering the imports.

2. POSITION OF COAL IN A GLOBAL ENERGY BALANCE

Hard coal, from the very beginning of industrial civilisation, constitutes a basic source of primary energy in the energy economy of the World. It is an obvious thing that in many countries it is just coal that is the basis of their economic development.
Analysing the chances of hard coal as an energy fuel in a global dimension one must distinguish regional conditions and resulting from them particular situation in various geographical zones of the World.

These conditions can be especially explicitly seen with regard to Europe. The phenomenon of systematic departing from dominating role of coal in fuel -energy economy for the sake of natural gas can be observed. It is obvious that this policy worsens the dependency of these countries on imported energy carries what, undoubtedly, constitutes a hazard for their future energy security. In the new structure of the European Union Poland has become the largest hard coal producer, extraction more coal than all the other countries of the EU.
Quite a different situation occurs in other regions o the World, especially in the countries of South-East

Asia such as: China, India, Indonesia or Vietnam. In this region we can observes a dynamic development of hard coal industry and a systematic increase of the role of coal in securing the increasing energy needs and besides one can observe also the increasing coal export here. Also in the highly developed countries such as the United Sates, the Republic of South Africa, Australia that is in the countries being the leading coal producers as well as exporters of hard coal in the World. We can also observe high level of coal share in the energy balance of the countries of South America as: Columbia and Venezuela which show a systematic development of hard coal industry and increasing export in global scale.

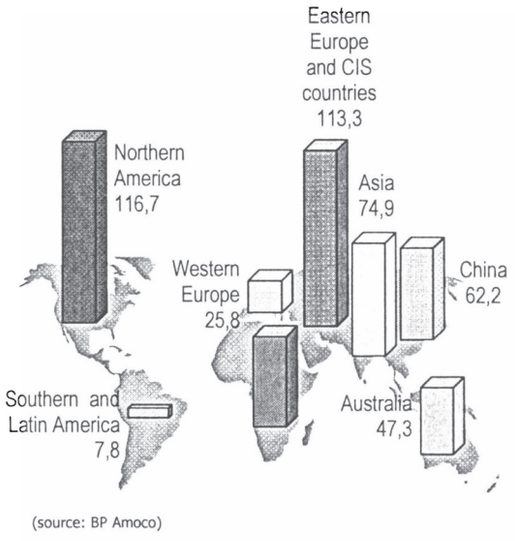

Fig. 1 Documented distribution of coal reserves in the World [bln tons]

The above presented coal reserves provided an exceptionally favourable position of this energy carrier as against other main energy fossil fuels, i.e., oil and natural gas. Their forecasted durability is at present much lower than coal which is illustrated by the World date presented in fig. 2.

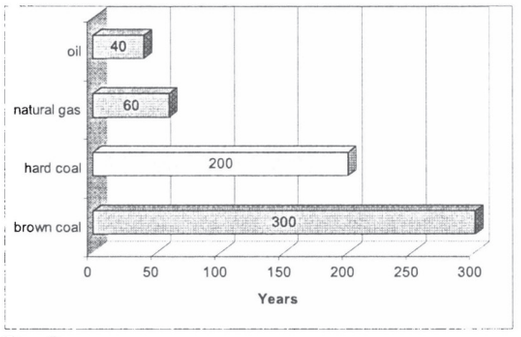

Fig. 2.
Forecasted durability of World reserves of basic primary energy carriers

3. ECONOMIC EFFECTIVENESS OF COAL

Hard geological and mining conditions prevailing in European hard coal basins and systematically increasing labour costs resulted in the situation that exploitation of European coal become, in most cases, uneconomic. Almost three fourth of the needs for energy raw minerals is covered in the European Union by oil and natural gas. The statistic presenting the usage of primary energy sources in the time limit till 2100 forecast that in the mid of the XXI century latest the share of oil and natural gas will dramatically drop and the share of coal will increase.

Today coal is an important element in electric energy generation in many European countries. Open European energy market must provide the customers the electricity at reasonable prices. In the sphere coal has its meaningful share. Coal is not expensive, available in large quantities, easy to be stored, without a risk during transportation. Converted into electricity is commonly available; modern generation plants are competitive and more environment friendly.

An interesting assessment of economically efficient production of energy in Central Europe is provided by the analysis of cost of production 1GJ of energy in Poland in 2000 (in USD). Then the cost of 1 GJ obtained with the use of different fuels was compared, It results from those comparisons that hard coal and brown cow are the cheapest sources of energy in Poland (respectively; 2,0-3,3 USD/GJ and 1,2 USD/GJ). On the other hand oil and natural gas are much more expensive (3,3-6,1 gas ands 4,0-14,9 oil) As it results from this comparison the energy obtained in Poland from brown coal is 3-12 times cheaper than from natural gas or oil and from coal 2-5 times cheaper.

Although the transfer of coal into electric energy requires costly investments, the further operation costs are low. Generation of electric energy from oil and natural gas requires less costly investments nevertheless high and changing cost of these fuels brings about a considerable risk. Competitive, stable process of coal liberate the electric energy generation from those prices fluctuations. In recent years the European coal improved its competitiveness on international market and in 2006 will still take advantage from high prices on World market.

Soon, in the period of 2010-2020 many of the existing power plants will reach the termination of their operation and will have to replaced. Together with the development of energy needs coal should achieve a strong competition position representing comparatively small financial and technological risk .Power plants constructed at present in Europe achieving the effectiveness of over 43% a in case of brown coal and 46-47% in case of hard coal, It is more than one third higher as compared to presently