



Economic and social aspects of restructuring Polish coal mining: Focusing on Poland and the EU



Anna Manowska, Katarzyna Tobór Osadnik*, Małgorzata Wyganowska

The Silesian University of Technology, The Faculty of Mining and Geology, 2 Akademicka St., 44-100, Gliwice, Poland

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ABSTRACT

The current policies of both the EU and the Polish government, as far as developing a strategy of energy security is concerned, focus on searching for methods of diversification of independent energy sources. At the same time, the world faces a challenge of providing sustainable development. Eurostat data from 2013 clearly indicate that EU countries are dependent on energy and its resources are imported at a rate of up to 53.2%. However, Poland does not rate unsatisfactorily, and with a dependency level of 25.8%, is among the least dependent countries.

This independence is guaranteed by black and brown coal deposits. In such a political environment, the Polish hard-coal mining industry needs to create a new policy of restructuring within the industry and to aid further development. The present article is an answer to the search for methods of forecasting mining production taking into account both the social and economic aspects of Polish mines. Therefore, this paper presents two elements of rationalisation in terms of the production efficiency of mining companies – human resources capital and the volume of black coal sales. The applied forecasting methods may help/determine the future number of employees working underground in Polish mining companies, on the basis of the proposed forecasting methods of the sale of black coal. On the basis of the presented research, the Authors wish to draw attention to the search for restructuring solutions in Polish coal mining companies, in areas other than human capital.

1. Introduction

Two types of energy are currently a *sine qua non* condition for world economies, including Poland. One of them is solar energy provided by nature, the other is produced energy, including electrical energy. The constant flow of electrical energy forms a basis for a stable economy. Therefore, achieving a certain level of energy security is a crucial issue. Poland, as a country in possession of its own energy resources, has one of the lowest energy dependency rates in the EU (Eurostat, 2015).

This state is ensured by deposits of black and brown coal. Therefore, in the present situation it is increasingly important to develop effective methods of forecasting the production of these resources on the basis of the internal and external factors of this sector. External factors include existing global problems, especially considering the economic conditions within the EU. Internal factors include economic and social factors both on a micro and macro-environmental scale. Taking into account these areas, the Authors propose a method of forecasting selected factors of black coal production, supporting the planning of an energy policy in Poland.

2. Black coal as an element of the energy policy in Poland and the EU

In order to demonstrate clearly the external factors affecting Poland's energy policy, in this chapter the Authors concentrate on circumstances necessary to maintain Poland's energy independence based on hard and brown coal. The assumptions made for the model presented in the next chapters and further conclusions result from this analysis of the economic environment including the energy policy in the EU and Poland.

Thus, the role of coal as an energy carrier is essential for energy security in the EU as the prices of primary energy carriers, especially crude oil and natural gas, remain on a high level. The consumption of primary energy in the European Union, in 2012, was at a level of 2,4 billion tonnes of standard fuel units, of which Gawlikowska-Fyk and Nowak (2014) (Fig. 1):

- 33% primary energy came from crude oil,
- 23% from natural gas,
- 17% from (black and brown) coal,

* Corresponding author.

E-mail addresses: anna.manowska@polsl.pl (A. Manowska), katarzyna.tobor@polsl.pl (K.T. Osadnik), malgorzata.wyganowska@polsl.pl (M. Wyganowska).

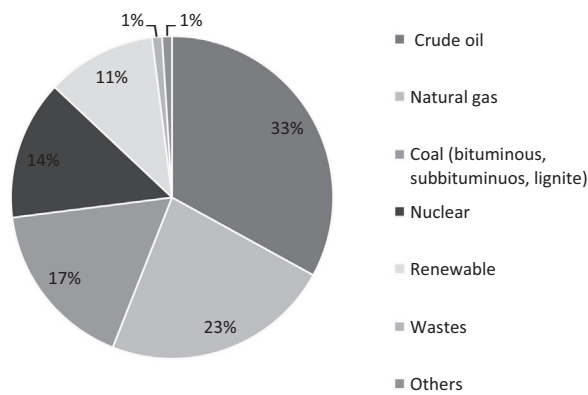


Fig. 1. Primary energy consumption in the EU, in 2012. Source: Gawlikowska-Fyk and Nowak (2014).

- 14% from nuclear energy,
- 11% from renewable energy sources,
- 1% from waste,
- 1% others.

As black coal is in third place among energy sources in the EU, it is worth considering how to use it despite the environmental problems it creates. There are studies regarding new effective combustion technologies, new technologies of processing coal into liquid fuels, as well as the production of ecological size-grades of high quality coal (Frączek, 2013; Traubman, 2013). Taking into consideration all the above facts, coal should be perceived differently than before, i.e. not only as a fuel contaminating the environment and solely used for burning (Arabia et al., 2014).

Turmoil in Ukraine made it clear to European decision-makers exactly how important domestic energy sources are, especially when their import is not dependent on any single body. The Eurostat data from 2013 clearly indicate that EU countries are dependent on imports of energy sources and energy at a rate of up to 53,2%. Compared to other European countries, Poland does not come out poorly and with a dependency level of 25,8% places among the least dependent countries. The largest economies in the EU have a high degree of energy dependency and among them are countries such as: Germany (62,7%), France (47,9%) and Great Britain (46,4%) (Eurostat, 2015).

There are also countries which are almost entirely dependent on imported energy resources, such as: Luxembourg (96,9%), Belgium (77,5%), Spain (70,5%), Italy (76,9%) (Eurostat 2015). Thus, the main goal of the European energy policy is to use its own energy resources to the greatest extent possible. The development of renewable energy sources have slowed down in many EU countries and one of the reasons is the high cost as well as the instability of renewable energy resources, which are dependent on weather conditions. It was once believed that nuclear power stations were be a panacea for all ills, but the events following the tsunami disaster in Japan, put this idea to rest. This is why nuclear energy will cause many social controversies and its development may turn out to be difficult, if not impossible (Kaliski and Frączek, 2012).

EU policy needs to consider the variety of resources of its member countries. This is required in article 194 of the Treaty on the Functioning of the European Union (Braun, 2011). However, on the one hand, each country has the right to determine the conditions as to how these resources are used; on the other hand they are obliged by Article 194 to adopt a joint stand on energy issues. Therefore, member countries are obliged to adopt the main principles of the EU energy policy and to adapt their domestic policies to EU policy. Nevertheless, as it was mentioned earlier, in the face of recent events in Ukraine, the EU policy has begun to focus mainly on energy security based on its own resources and independence from external sources, especially

Table 1
Distribution of black coal in Poland in 2000–2013 Source: Industry statistical yearbook, GUS (2014).

Distribution of black coal in Poland in 2000–2013	2000 w tys. ton	2005	2010	2012	2013
	106616	101276	94753	89978	8966
National consumption	8489	078722	82162	77358	77610
Processing into other energy carriers	63942	62140	63501	57925	58708
Including power stations, heat and power stations, heating stations	51628	50903	50475	46005	40080
direct consumption	20948	16582	18661	19433	18902
Gain in reserves	—	1469	—	6839	—
Loss and balance differences	—1519	1716	2626	—1289	1212
Export	23245	19369	9965	7070	10847
Import	1452	3372	13603	10165	10516
Export/import balance	21793	15997	—3638	—3095	331

crude oil and natural gas.

To ensure the EU's independence from crude oil and natural gas suppliers, the European Commission recommends that the EU clearly determines the principles of a diversified energy policy based on the principles of partnership with important international players in the energy field. It recommends creating a pan-European Energy Commonwealth (Green Paper, 2006; Tylec, 2013). It also means that countries like Germany aspire to increase the percentage of renewable energy resources in the energy equation as it will allow Germany to reduce the import of other energy resources, thus ensuring the country's energy security.

The situation in Poland appears to be completely different as we have solid-fuel resources (black and brown coal), which allow us to ensure internal energy stability in Poland while having one of the lowest rates of energy dependency in the EU (Eurostat, 2015). Polish coal is threatened by the increasing cost of extraction and growing imports of this resource into Poland in recent years – from about 1,5 mln tonnes in 2000 to 10,5 mln tonnes in 2013 (including at least 2/3 from Russia) (Table 1) (Stala-Szulagaj, 2013; Okulski, 2013; GUS, October, 2014) (Fig. 2).

Direct consumers also need to be taken into consideration, constituting 21% of distribution in 2013 and assuming that in that particular year, exports almost equalled imports, we may conclude that they constituted about 20% of the black coal market in Poland (Fig. 3). In 2012, as many as 7,5 mln tonnes of black coal were sold to direct consumers in coarse and medium particle size-grades and adding 800 thousand tonnes in coal perks the size grades constituted over 10% of national consumption (IGSPW, 2015). Taking into account

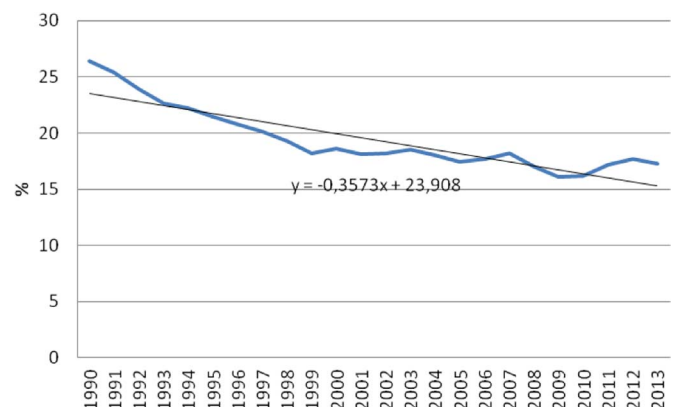


Fig. 2. The percentage of coal as an energy source in Europe from 1990 to 2013. Source: Individual study based on Jonek-Kowalska (2015).

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