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COMPETITION FOR ACCESS TO ENERGY RESOURCES: THE CASE OF WORLD COAL MARKET

Abstract

The paper analyzes the main trends of the world coal market. International vertical and horizontal integration is viewed as a form of global access to coal.

Key words:

World coal market, horizontal integration, vertical integration, international competition for access to energy resources.

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Introduction and Problem Statement. The world market of energy resource is one of the most important for the economies of many countries. Few countries are well off for energy. Therefore, governments and business entities, particularly in oil, energy and steel sectors face the problem of sustainable energy resources for their activities, which are extracted on the territory of other countries.

Although global energy shortage still does not exist, but the competition for access to energy resources in the twenty-first century significantly increased. First of all, the trend is manifested in the world coal market in the segment of power generating coal, primarily of coking coal. For Ukraine, this problem is also relevant, since domestic coal is expensive [9] (despite the fact that domestic coal consumption is less than its production). Thus, it is expedient to replicate practice of other countries in providing access to this type of energy resources on world markets.

The purpose of ths paper is to analyze the current situation regarding trend development in the market of coal and practice of major subjects of consumption and raw provision of their activities under increased international competition for access to this type of energy resources.

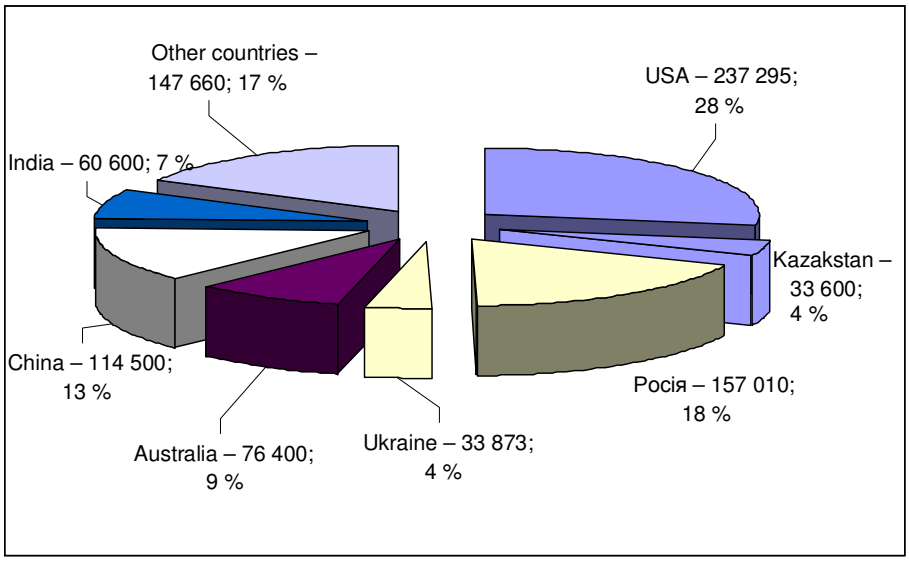
Review of recent publications. The practice of foreign companies in providing access to coal mining was studied by A. Amosha, D. Cherevatskyi [1], and O. Zavhorodnia [3]. However, the above mentioned scientists, like other experts paid no relevant attention to the competitive situation and trends in supply on the world coal market.

Coal is the second after the oil energy source serving energy provision for modern civilization [9]. If we analyze the correlation between consumption and production of coal by countries, it should be noted that out of large economies only the United States provide themselves with this type of a resource. They are the main exporter in the Americas region. Economies of most countries in Europe work on imported coal. Japan and South Korea also fully develop powerful metallurgical production solely on imported coal [10]. Global access to this type of natural resources for the mentioned countries is too critical. Therefore there is need for studying the ways in which some of the economies and companies ensure reliability and stability of access to coal when they are lacking or are short of domestic reserves.

The main material. Although coal deposits are in many countries, but its main reserves are located in seven countries (Fig. 1).

Figure 1

Geographical disposition of coal reserves



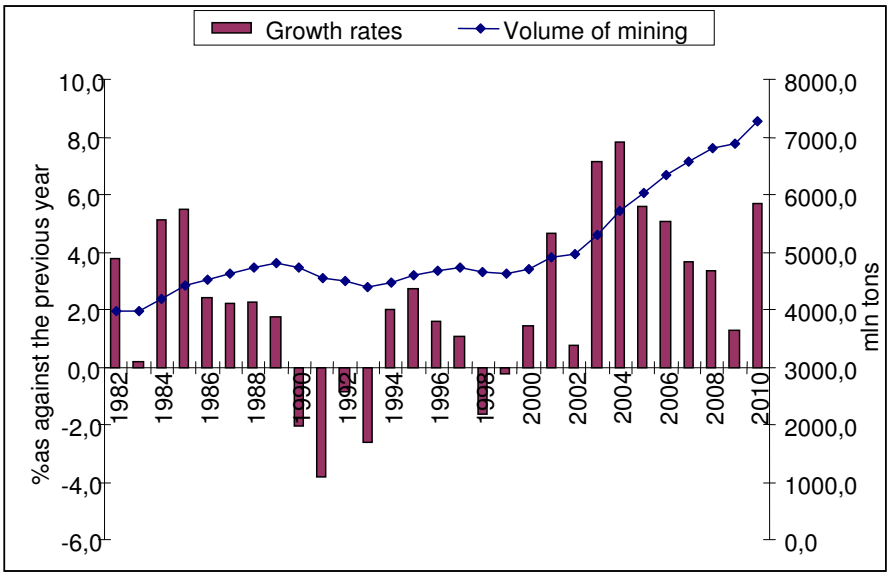
Source: calculated and constructed by the author according to [10].

As can be seen from Fig. 1, about 83% of coal world reserves is concentrated in seven countries but the geographic distribution of this type of natural resources is characterized by significant irregularity. However, coal is widely used in many areas, particularly in steel and energy industries. Although in general experts are right pointing out that the role of coal as an energy resource in future will diminish due to its substitution with natural gas as an environmentally friendly fuel [8], but in the medium perspective, and in the more distant future, coal will remain one of major energies. Trends in world production of this natural resource indicate that in any single year in the twentieth century there was no reduction in its gross output (Fig. 2).

The results of growth rate calculations, shown in Fig. 2, indicate a significant acceleration of the volume of world production of coal in the 21st century compared to recent decades of the 20th century. It should be noted that in 2008–2009 crisis the rate of growth of coal production remained positive, albeit reduced. This indicates the importance of this resource in the provision of global economy with energy.

Figure 2

Dynamics of world coal production



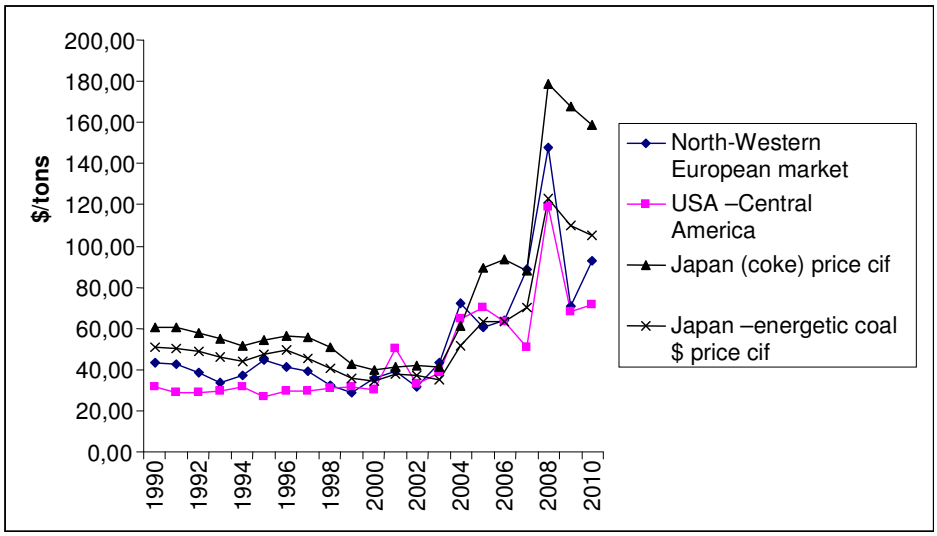
Source: calculated and constructed by the author according to [9].

Coal in the 21st century is a globally relocatable type of natural resources. However, the global market consists of several regional segments, namely: European, Asian-Pacific and American markets. The AP is the largest segment with the following major importers in this segment: Japanese, Korean, Indian and Taiwanese corporations [10]. The exporters in the region are Australia, Canada, Russia, to a lesser extent South Africa [10]. In the European segment the demand is formed by the corporations from Germany, Great Britain, Czech Republic, France and Italy. The provision of these countries with their own coal considerably lags behind its consumption.

Major exporters in this sector are the South Africa, Colombia, Venezuela, USA, and Australia to a lesser extent [10]. In the American segment the demand is minor and is met mainly by the United States and Colombia. The main segment of the world coal market is the APR. Turnovers on it are twice as higher as in the European segment. The value of the APR segment in the world market further increased with the change of status in the international trade in China coal, which in 2007 turned from the exporter to net importer. Accordingly, prices in major segments, although correlate with each other, but in the APR segment are the highest (Fig. 3).

Figure 3

Price behavior in world coal market



Source: constructed by the author according to [10].

Significant increase in world prices for this type of natural resource in 2008 is rightly linked to changes in the status of China in the global coal market. In 2004, China exported 102 million tons of coal, and in 2006 it ranked the fifth among the world exporters of coal. However, in 2007 China imported coal in the amount of 38 million tons [1]. This significantly changed the relationship between supply and demand and led to considerable price increase for coal.

So, it should be noted that alongside with the growth of China's economy the competition for access to this type of natural resources increases. Leading corporations, in particular iron and steel industry, consider this fact at the present stage and take appropriate actions.

Growing demand for coal is so great that large international investors begin to study potentially attractive projects of coal that were previously viewed as unprofitable. The mines of Great Britain are well exemplified in literature. Once they were considered ineffective and were closed (at the beginning of the 21st century there were nine operating mines throughout the UK, owned by UK Mining). In Wales the mine «Unity», that was closed 14 years ago, at present has been restored. Also the rest facilities in the country are being revived [1].

Competition for access to coal is very acute. It is worth noting two types of situations with respect to threat to access to coal in the world countries.

1. The industry's coal consumption much exceeds its production on the country's own territory, but mining provides the overwhelming share of needs.

2. Coal consumption is a quite substantial value under almost complete lack of domestic reserves.

The countries for which access to coal is critical, are presented in Table 1.

Table 1

Balance of consumption and production in the countries with the largest coal shortage in 2010

Country	Consumption, мtoe (мillion tonnes oil equivalent)	Production, мtoe	Provision with own resources	
			мtoe	%
Japan	123,71	0,51	–123,21	0,4
South Korea	76,01	0,94	–75,07	1,2
Taiwan	40,28	0,00	–40,28	0
India	277,58	216,09	–61,49	77,8
Germany	76,53	43,71	–32,82	57,1
Great Britain	31,16	11,04	–20,11	35,45

Source: calculated and constructed by the author according to [10].

Large (in world terms) countries – importers of coal are divided into two groups. The first group includes those with weighty share of coal consumption is satisfied with domestic production (India, Germany, United Kingdom). The second group of coal importing countries includes these where their own resources are almost absent. The largest consumers of coal in this group are Japan, South Korea and Taiwan.

The first group of the countries is expected to have China entered; whose demand is the determining factor for growth in global demand for coal. Though the demand for this energy resource is reduced in developed countries (in OECD countries coal consumption is expected to reduce by an average of 1.2% per year within 2010–2030 years [8]), but this decline will be compensated by its growth in the countries outside the OECD (2% per year). In 2010 China accounted for 47% of global coal consumption, and by 2030 this figure is projected to increase up to 53%. The contribution of China's growing of global demand for coal in the years of

1990–2010 made 80% [11]. By 2030, China and India will provide 56% increase in world consumption of coal (China – 40%, India – 16% [11]).

On the other hand, there are factors that contribute to reducing the demand for coal in the industrial countries, and to a lesser extent, in China. This is the government's awareness that their countries need to get free from the dependence on coal. Environmental constraints (air pollution), and increase of domestic coal resources cost are expected to restrain the growth in coal consumption in China [8]. Although the increased cost of production of domestic coal can act not so much towards reducing its consumption as towards cheaper import substitution, which will increase pressure on world coal market demand respectively, and exacerbate competition for access to this type of energy.

In general, according to analysts, the temporal aspects of the Chinese economic transition to lower coal- intensive GDP and economic growth have not yet been determined. According to the forecast of British Petroleum, coal consumption in the country will stabilize by 2030, and the global consumption of coal on average will make only 0.3% per year in 2020–2030 [11]. So, at least for another two decades the competition between the leading countries for access to coal increases will be increasing.

We will consider how the issue is settled of access to strategically important resource, which is the coal in national economies of several countries. Under the conditions of intensification of global competition on the world market, which has shifted from competition in the market of produced coal to the competition for access to its production [1].

Having analyzed the data presented in Table 2, it should be noted that the largest coal mining companies are located in India, USA, China and Australia.

In the coal market there prevails horizontal integration.

Cases of integration of energy-generating and mining companies are also recorded, at that the integration initiative comes from coal mining companies seeking to invest their capital in electricity generation production [3, p 62]. However, in the segment of power generating coal the horizontal integration is widespread

For example, the largest private integrated coal company «P.body Energy Corporation» (headquartered in St. Louis, Missouri, USA) is a powerful horizontally integrated Trans-national Company that integrates coal mining assets in the U.S., Australia and Chile. Deliveries of this company are not limited to the USA, it serves customers in 21 countries on six continents, at that, supply for power generation is mostly based on long-term contracts. The coal produced by this company generates approximately 10% of electricity in the U.S. and about 3% – worldwide [6].

Table 2

Indicators of leading mining companies production

Companies	2006		2007	
	mln. tons	rank	mln. tons	rank
«Coal India» (India)	324	1	343	1
«P-Body Energy Corporation» (USA)	225	2	232	2
«Shenhua» (China)	178	3	203	3
«Rio-Dough» (Australia)	162	4	154	4
«Arch Coal Incorporated»	139	6	127	5
«AngloCoalAustralia Pl» (Australia)	95	6	98	6
«China Coal» (China)	72	9	91	7
«SUEK» (Russia)	85	8	90	8
«BHP Billitone» (Australia)	87	7	86	9
«Ex strata» (Australia)	70	11	77	10
«Console Energy» (USA)	69	10	67	11

Source: calculated and constructed by the author according to [7].

Reliability of supply and predictable prices in the power generating coal segment is provided by long-term contracts. However, there are examples of access reliability to coal through vertical integration. A good example can serve the Japanese energy corporation J-Power, which for its resources use solely foreign sector. Annually 9 million tons of coal mined in the Australian company Idemitsu Australia Recourses [1], which de facto is a subsidiary of the Japanese company are delivered by maritime transport. As is rightly stated in literature: that «Holding the power stations and foreign fuel assets allows to neutralize the negative effects of understated currency» [1]. In addition to that, sharp price fluctuations are ensured.

In the segment of coking coal the competition for global access to energy resources is more intense. Japan, lacking its own resources, ensures energy security through vertical integration, based on the use of coal assets of other countries.

Although statistically coal delivery from other countries still is import, but in fact it has become a form of self-sufficiency of large national customers, primarily in metallurgic industry. For example, between the Australian raw concern IRR Billiton and the Japanese concern Mitsubishi an alliance has been made marked with the abbreviation of BMA.

Among the partners of the Australian branch of a Swiss corporation Xstrata, (the fifth largest company in the Australian coal production) there are many Japanese companies. Thus, different in size blocks of stocks of Bulga Complex enterprise (open pit mine and mine around the Australian city of Bulha)

are in the ownership of Nippon Steel, Nippon Oil and several other Japanese corporations [1].

Similar practice of building vertical relations with foreign coal-mining enterprises is observed in the Korean steel companies, also to a lesser degree it is in metallurgical corporations of the USA, Russia, South Africa and Europe (Arcelor Mittal concern) [1].

Integrated into international businesses coal mines are foreign affiliates of TNCs. However, under the type of mission they have different targets. Some are created for making profit (which is typical for European affiliates of TNCs), others (Japanese and South Korean) work on resource support to their business groups.

Japanese energy and steel companies have their own peculiarities of vertical integration into foreign coal-mining enterprises, i.e. they prefer a partnership, but the size of their shareholdings is sufficient to have access to resources.

There is certain regularity in the processes of horizontal and vertical integration with participation of mining companies. The most attractive objects for TNCs' acquisition are coal mines with 12–15% profitability of their cost.

Australian coal enterprises are the most profitable, and they require investments**.** If there is a need to upgrade mining equipment, the investment attractive to foreign capital are coal mining enterprises with even greater rate of return (exceeding 7–10% of average) [3, p. 62]. Coal mining industry is capital intensive. Investments in new production capacity and infrastructure of coal mining are relatively small in the past decade. And otherwise, the volume of the required investment is rather big and amounts to several billion euros for some mines (e. g Chinese mine GuQiao of Huainan put into operation in 2006–2007, the annual production capacity is 10 million tons) [2]. Therefore, the investment needs tend the Australian mining companies to partnership with foreign corporations. Thus, the own assets of Xstrata Coal Company in the enterprises of the Australian Queensland range from 55% to 75%, and the rest equity is owned by foreign partners [1]. It is just the foreign investment that is one of the biggest and most important factors of coal production not only in Australia but also in other countries.

In Ukraine, the profitability of coal mining is either negative, or in some cases barely passes zero [4]. In addition, the production capital stocks of Ukrainian mines are pretty deteriorated [7]. Therefore, it is unlikely to have a large-scale of foreign capital attracted to Ukrainian coal mining industry. It should be noted that the Ukrainian corporations to some extent are involved in the integration processes. Thus, a group of «Energy» has «Zarichna» Company in Russian Kuzbass; «Metinvest» Group in 2009 became the owner of the United Coal mining in Appalachia. However, these cases are rare, and the purpose of these business groups is not access to overseas coal assets with the aim of energy safety, but to make profit.

Conclusions and prospects for further research. Significant variations of demand lead to a specific global competition for access to coal. In particular,

very popular is the practice of integration of mining companies and companies of other industries. Horizontal integration is more prevalent in the segment of power generating coal and is intended primarily to increase profits at the expense of control over production and expansion of sales markets.

World practice shows that the processes of integrated coal companies creating takes place where the profitability of coal mining is very high (12–15% of cost) or even higher if there is a need to upgrade mining equipment. However, mainly the access to power generating coal is provided by long-term and short-term contracts.

In the segment of coking coal the prospects of integration are much higher compared to the segment of power generating coal. In most cases there is observed the integration with the enterprises of metallurgical industry. The intensity of vertical integration is due to significant and poorly predictand price fluctuations, and volumes of supplies depending on the conjuncture of steel products world market. Therefore, to ensure a reliable supply the powerful steel companies integrate into coal mining companies which are foreign subsidiaries of metallurgic TNCs either the bodies which are controlled by the latter. The purpose of these mining companies is shifted, i. e. from getting profit to energy supply of the parent company (companies).

The practice of inter-sectoral integration of coal mining, metallurgical and power generating industries is also valuable for Ukraine. Integration of Ukrainian coal mining enterprises with foreign steel companies or power generating companies is improbable, because the profitability of coal mining in Ukraine is too low. However, integration of Ukrainian metallurgical and the coal-mining enterprises are possible and feasible with coal production companies of other countries. Consumption limiting of Ukrainian high cost coal will affect the coal industry, but cheaper energy resources will be of not less positive effects in other areas.

Of course, it is inappropriate to eliminate the coal industry. International practice indicates that in order to reduce the cost of energy while ensuring sustainable use of the Ukrainian economy it is necessary to balance the Ukrainian and foreign coal sectors. Scientific developments in this direction are promising for further research.

Bibliography

1. Амоша А. Снег на шляпе моей… [електронний ресурс] / А. Амоша, Д. Череватский // Зеркало недели. – 2011. – № 34. – Режим доступу: http://zn.ua/ECONOMICS/sneg_na_shlyape_moey-88376.html.
2. Вединг М. Тенденции развития международных рынков каменного угля [электронный ресурс] / М. Вединг. – Режим доступу: http://www.rosugol.ru/ news/articles.php?ELEMENT_ID=6058.

3. Завгородняя О. П. Зарубежный опыт интеграции угледобывающих и электрогенерирующих компаний [електронний ресурс] / О. П. Завгородняя // Економіка промисловості. – 2010. – № 50(2). – С. 58–66. – Режим доступу: http://www.nbuv.gov.ua/portal/soc_gum/eprom/2010_50/st50_09.pdf.
4. Інформаційно-аналітичний звіт про розвиток вугільної промисловості України за І півріччя 2009 року [електронний ресурс] – Режим доступу: http://gas-mining.ucoz.ru/news/2009-07-27-31
5. Крупнейшие угледобывающие компании мира по результатам 2007 года [електронний ресурс] – Режим доступу: http://rucoal.ru/index.php?option=cocontent&task=view&id=34&Itemid=38
6. «Пибоди энерджи» – гигант мирового углепрома» [Электронный ресурс] // Шахтер Украины. – 2009. – № 39(489). – Режим доступу: http://shu.prupu.org/post/3699/
7. Стрижиченко Н. О. Стан та проблеми розвитку вугільної галузі України [електронний ресурс] / Н. О. Стрижено. – Режим доступу: http://intkonf.org/ strizhichenko-no-stan-ta-problemi-rozvitku-vugilnoyi-galuzi-ukrayini/
8. Asia/ World energy outlook 2010 [електронний ресурс]. – IEEJ. – 2010. – 100 p. – Режим доступу: http://eneken.ieej.or.jp/data/3489.pdf
9. BP Energy Outlook 2030 [електронний ресурс]. – BP. – 2011. – Режим доступу: http://www.bp.com/energyoutlook2030
10. BP Statistical Review of World Energy – 2011 (June) [електронний ресурс] – режим доступу: http://www.bp.com/assets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2011/ STAGING/local_assets/spreadsheets/statistical_review_of_world_energy_full_ report_2011.xls
11. Komiyama R. Asia energy outlook to 2030: Impacts of energy outlook in China and India on the world [електронний ресурс] / R. Komiyama // IEEJ research paper. – 2010. – режим доступу: http://www.worldenergy.org/documents/p001038.doc

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