

UKRAINIAN FUEL AND ENERGY SECTOR: DISTINCTIVE FEATURES

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Abstract

The paper is devoted to the analysis of Ukrainian fuel and energy sector (FES). The number of risks that threaten the stable supply of energy sources is growing. A high proportion of the energy intensity of developing economies in conjunction with their growing GDP leads to increased competition on world primary energy markets and causes significant fluctuations in energy prices, which negatively affect the global economy. There is also an important issue for world energy - limited use of non-renewable energy resources. Considering the prospects of development of Ukrainian FES, it is important to pay attention to patterns and trends of the global and national power. We have studied the basic trends of Ukrainian FES. It is the most important sector of the economy, and therefore its reform for market economy creation, price liberalization is a very important process. The current task of the energy sector of Ukraine is to be able to consistently produce and use energy to promote economic growth and improve quality of life.

Keywords

economy; crisis; energy; fuel and energy sector; Ukraine

JEL Classification

F43; F50; F62; Q43

Introduction

Nowadays global energy market operates and develops in contradictions and transformations. The number of risks that threaten the stable supply of energy sources is growing. In the twentieth century, industrialized countries face stiff competition from developing countries, especially Asian countries. A high proportion of the energy intensity of developing economies in conjunction with their growing GDP leads to increased competition on world primary energy markets and causes significant fluctuations in energy prices, which negatively affect the global economy. There is also an important issue for world energy - limited use of non-renewable energy resources. Energy problems also include the necessity to preserve the environment. Increasing the scale of energy consumption of all kinds, strengthening their impact on the environment significantly affect the dynamics of the global energy market and generate contradictions of its functioning. That is why the study of the global energy market, determining the characteristics of its operations and transformations in the conditions of modern economic paradigm, identifying ways of its improvement is timely and relevant. Considering the prospects of development of Ukrainian fuel and energy sector (FES), it is important to pay attention to patterns and trends of the global and national power.

The issues of energy sector in the context of economic attractiveness and opportunities for transition to a new energy level and in the context of energy security need more detailed study of the fuel industry in the country.

Brief literature review

In recent decades, the problems of the world energy resources market, the formation of energy security, development and implementation of innovative projects in the field of renewable energy were and are the focus of the scientific community. These issues were developed in the works of R. Robertson (1987), E. Giddens (1990), N. Apergis and J. Payne (2009), B. Levy (1982), J. Mitchell (1996), etc.

In his work "EU energy policies towards the 21-st Century" P. Lyon (1990) conducts a comprehensive analysis of the current EU energy strategy and suggests scenarios in the global energy sector at the beginning of the XXI century. Much attention in this work is paid to renewable energy sources, which in a few decades will have to completely replace hydrocarbon fuels.

The issues of the global and Ukrainian energy markets and Ukraine are analyzed in the work of V. Kostyeyev (2002), which deals with ways to diversify sources of energy supply and factors that determine them.

Purpose

The main objectives of the article is to examine the state of the fuel and energy sector of Ukraine in the recent years, the study of energy sector of Ukraine economic equilibrium between producers and consumers.

Results

Energy sector has a key position in the Ukrainian economy and has the necessary potential to meet its own needs for energy transit and export of electricity, coal and oil products to European countries.

The basis of the electricity industry is a united power system (UPS), which provides electricity to domestic consumers and carries out its exports and imports. UPS has eight regional electric power systems connected by backbone power lines, and have interstate power lines. The total installed capacity of power plants at the beginning of 2014 amounted to almost 54.4 million kW; capacity in thermal power plants (TPP) accounted for 27.6 million. kW (or 50.7%), nuclear power plants (NPP) - 13.8 mil kWh (25.3%), hydropower plants (HPP) - about 5 4 mil kW (9.9%), wind power plants (WPP) - 9 ths kW (1.65%).

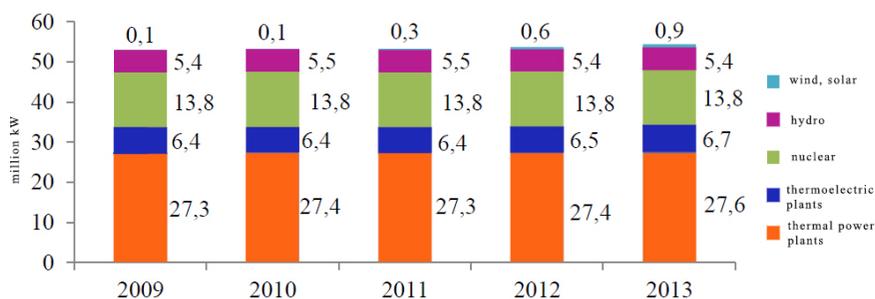


Figure 1 Electricity installed capacity

Source: Information and analytical report "Status of oil and gas production activities" (2014), available at <http://mpe.kmu.gov.ua/fuel/doccatalog/document?id=239090> (in Ukr.)

As we can see, the trend remains unchanged, i.e. the leading role in the electricity industry play thermal power plants, this is due to relatively free location, half the price of capital cost compared to other power plants.

We can note that electricity crisis in Ukraine is characterized by negative trend of installed capacity rate ratio (up to 32.5% in 2013), and by lack of energy strategic project (development of more effective methods of power generation based on resource, territorial, environmental and other factors).

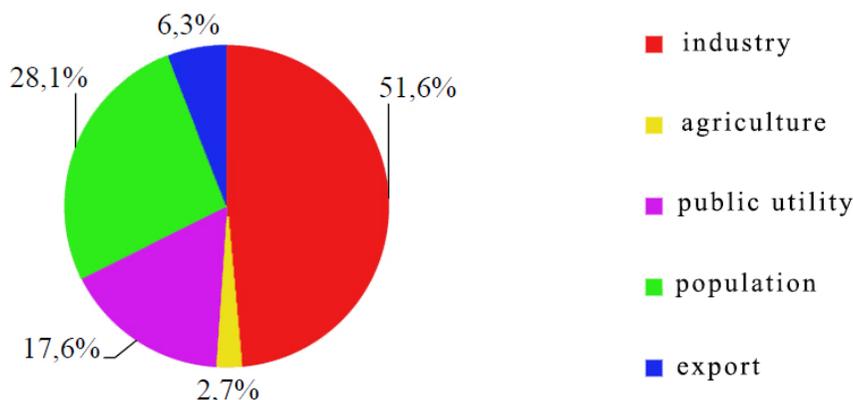


Figure 2 Electricity consumption in 2013

Source: Yaskovets, V. (2010) Development of fuel and energy complex of Ukraine in the context of globalization, available at http://archive.nbu.gov.ua/portal/soc_gum/knp/2010_196_1/knp_236-240.pdf (in Ukr.)

Considering the power consumption as a quantitative indicator, we may note that its structure describes Ukraine as an industrial country, where the ratio of electricity consumption in industry doubles the consumption needs of the population; that shows the development of the technological side of the economy. However, considering the quality indicators, i.e. the level of electricity consumption per capita, energy intensity of GDP, electricity tariffs, we have a different situation.

The level of electricity consumption per capita is an important indicator of living standards of the population. In Ukraine this figure decreases year by year: in 1990 it amounted to 5630 kWh and in 2013 - to 3195 kWh, a decrease is 1.6 times.

Ukraine's economy is among the energy intensive in Europe. The energy intensity of GDP in 2013 was 0.613 kilograms of fuel per UAH of output. The national economy is too overloaded with energy-intensive industrial production. Thus, despite the advantage of industry in the structure of energy consumption, inefficient use of resources and low efficiency has a negative impact on the economy and development of the country.

Since energy is a major component of the national economy, it is necessary to make the valuation of electricity. This figure reflects most clearly tariffs for industry and population.

We see that energy tariffs for the population are much higher than rates for the industry in developed countries with the highest levels of energy efficiency and conservation. Reducing electricity tariff for industry is gradually in accordance with the technological structure of the economy of the country. This affects the reduction of energy intensity of GDP, causes environmental safety of the region and affects the structure of industry in the region.

At the same time, consumer demand for electric power in the united energy system has been uneven. However, electricity is the most effective and economical only when these fluctuations at full load systems remain as small as possible. Thus, in developed countries, we see economic and technological balance, which is the vanguard of the country.

Ukraine faces such a situation when electricity tariffs for industry are 4 times higher than tariffs for population. However, artificial increase without qualitative changes does not change the situation, but rather will lead to economic crisis, i.e. there is needed an integrated socio-economic strategy of the country where the issue of fuel and energy sector will be a priority.

Ukraine energy resources make it a relatively resourced countries. However, short-sighted economic and environmental policies led to inefficient use of reserves of gas, oil and other minerals.

In the state balance of mineral resources reserves of Ukraine and prospective resources of oil, gas condensate, free and dissolved gas are recorded in the amount of over 2.3 billion tons of fuel equivalent, including reserves of industrial categories - 1,4 billion tons.

Stocks of hydrocarbons growth decreases, just over 2013 were opened 4 new deposits. In 2011, there were opened 15 new productive reservoir fields.

Ukraine has explored more than 314 oil and gas fields, including 57 classified as medium, large and unique in their inventory.

Most of them are in the final stages of development and are characterized by complicated geological and technological conditions of operation.

Despite the presence in its territory of oil, gas, coal, shale gas, Ukraine is an energy deficit country, satisfying its own needs for energy only by 50%:

- Produces 10-12% of the total oil consumption;
- Natural gas - 20-25%;
- coal - 90-92%¹.

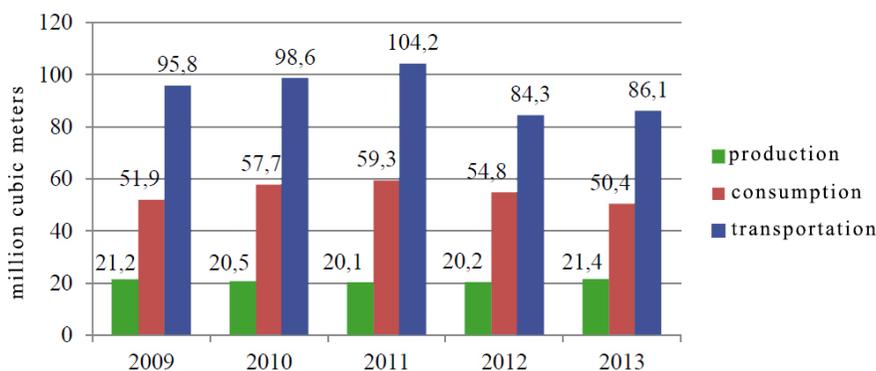


Figure 3 Gas industry dynamics

Source: Information and analytical report "Status of oil and gas production activities" (2014), available at <http://mpe.kmu.gov.ua/fuel/doccatalog/document?id=239090> (in Ukr.)

Gas industry is quite young and promising sector. Natural gas is the most efficient fuel and chemical raw material. Its production was started in Ukraine in the 50's years of the twentieth century. And today is produced 20 billion cubic meters of gas, that

¹ Muradova, O. (2011) Current state of development of fuel and energy complex of Ukraine, available at http://archive.nbuv.gov.ua/portal/soc_gum/Dtr_ep/2011_6/files/EC611_17.pdf (in Ukr.)

meets Ukraine's needs in it for 20 - 25%. Using gas is two times cheaper compared to oil.

Despite sufficient deposits of gas for consumption in Ukraine, due to lack of exploration work funding the volume of gas production is reducing. Ukraine has no plants for natural gas liquefaction. Work on the development of shale gas, which, according to experts, can provide Ukraine with gas for 30 years, has not yet started.

The volume of consumption decreases too slowly (Fig. 3), due to negative trends of the industry against the introduction of energy consumption methods.

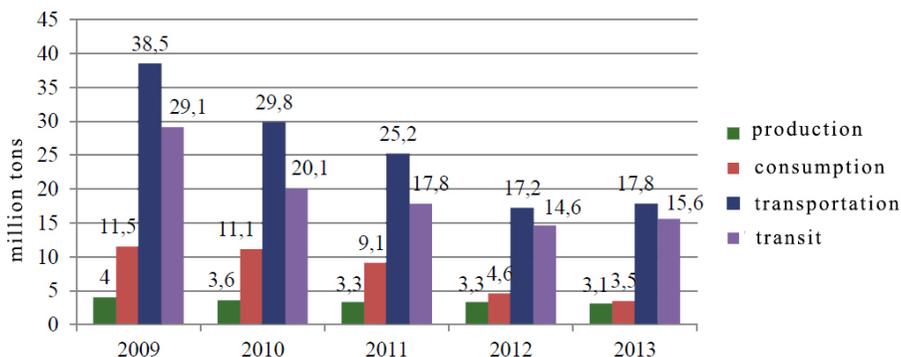


Figure 4 Oil industry dynamics

Source: Information and analytical report "Status of oil and gas production activities" (2014), available at <http://mpe.kmu.gov.ua/fuel/doccatalog/document?id=239090> (in Ukr.)

Ukraine is a transit country in the world energy market. The gas transportation system of Ukraine implemented the seasonal supplies from Russia to Europe. In recent years, Europe has reduced the dependence of transportation from RF, diversifying gas supplies and energy saving methods. That is what affected the transit capacity of Ukraine, with a negative impact on budget revenues.

Oil industry of Ukraine is characterized by low indices, although the potential for mining and processing of oil is much higher. It is represented by oil producing and refining industries. Since the beginning of 2013 Ukraine produced 1 024 400 tons of oil and gas condensate and 6.9 billion cubic meters of gas. Compared with the corresponding period last year oil and gas condensate production decreased by 5.6%, and gas increased by 1.1%. Total amount of oil pumping in 2013 amounted to 5 582.0 thousand tons, that is 14.0% (or 907.0 thousand tons) less than in the corresponding period last year. Oil transit via Ukraine amounted to 4 944.0 thousand tons, that is 3.1% (157.0 thousand tons) less than in the corresponding period last year, while oil pumping volume for Ukraine needs was 638.0 thousand tons, that is 54.1% (751 thousand tons) less than in the corresponding period last year².

The coal industry in Ukraine is a traditional industry, which occupies a leading position among fuel industries. 75% of coal is used as fuel, 25% - as technological raw materials for the steel industry, chemical industry and other fields. In 2013 83.7 million tons of coal were produced, that is 3.0% less than in 2012³.

² Information and analytical report "Status of oil and gas production activities" (2014), available at <http://mpe.kmu.gov.ua/fuel/doccatalog/document?id=239090> (in Ukr.)

³ Information and analytical report "Status of coal industry in Ukraine" (2014), available at http://mpe.kmu.gov.ua/fuel/control/uk/publish/category?cat_id=194359&page

The coal industry needs modernization and restructuring of the sector to improve profitability and competitiveness of Ukrainian coal. Selling prices for coal do not provide reimbursement for its production.

Coal industry pollutes the environment with emissions of harmful substances into the atmosphere and water.

Significant impact on the market transformation of energy resources makes an intensification of the use of alternative energy sources. There are factors of two opposite directions in its development - centripetal and centrifugal. The main centripetal forces that seek to enhance the use of alternative energy sources include the desire of countries to preserve ecological balance, reducing the cost of disposal of waste and reduce energy dependency of energy resources suppliers. The main centrifugal forces that prevent the implementation in practice of alternative energy sources is the relatively high cost of equipment for energy generation, need of large areas for its location and relatively large costs of obtained energy.

Considering that scientific progress steadily drives down the cost of power generation equipment production and reduces material consumption and its dimensions, it can be argued about the future growth of their role and importance.

Conclusions

Fuel and energy sector of Ukraine is the most important sector of the economy, and therefore its reform for market economy creation, price liberalization is a very important process.

The current task of the energy sector of Ukraine is to be able to consistently produce and use energy to promote economic growth and improve quality of life.

References

- Apergis N., Payne J. (2009) Energy Consumption and Economic Growth in Central America: Evidence from a Panel Cointegration and Error Correction Model, *Energy Economics*, 31, pp. 211–216.
- Giddens F. (1990) *The Consequences of Modernity*, Stanford.
- Information and analytical report "Status of coal industry in Ukraine" (2014), available at http://mpe.kmu.gov.ua/fuel/control/uk/publish/category?cat_id=194359&page
- Information and analytical report "Status of oil and gas production activities" (2014), available at <http://mpe.kmu.gov.ua/fuel/doccatalog/document?id=239090> (in Ukr.)
- Kosteyev, V.V. (2002), *External economic factors of industrial markets diversification: the example of the energy market of Ukraine* (PhD Thesis), Rostov-na-Donu, Russian Federation. (in Russ.)
- Levy, W. (1982) *Oil Strategy and Politics, 1941–1981*, Colorado, Westview Press.
- Lyons, P. (1998), *EU energy policies towards the 21st Century*, Elstead, Surrey, EC Inform.
- Mitchell, J. (1996), *The New Geopolitics of Energy*, London, The Royal Institution of International Affairs.
- Muradova, O. (2011) Current state of development of fuel and energy complex of Ukraine, available at http://archive.nbu.gov.ua/portal/soc_gum/Dtr_ep/2011_6/files/EC611_17.pdf (in Ukr.)
- Robertson, R. (1987), Globalization Theory and Civilization Analysis, *Comparative Civilization Review*, 17, pp. 47–49.

Yaskovets, V. (2010) Development of fuel and energy complex of Ukraine in the context of globalization, available at http://archive.nbu.gov.ua/portal/soc_gum/knp/2010_196_1/knp_236-240.pdf (in Ukr.)