

Review Article

PECULIARITIES AND MODERN TRENDS IN WORLD ENERGY AND THE DEVELOPMENT OF GLOBAL PIPELINE TRANSPORT NETWORKS

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Abstract

Current trends in the development of world commodity markets are explained with new market conditions: changes in the ratio of market-forming factors. Special attention is paid to the impact of the current wave of scientific approaches to the study of markets, taking into account the cyclical development of the world economy in the early twenty first century, the severity of macroeconomic shocks, the impact of scientific and technological progress, and changes in natural and climatic conditions.

**Keywords:** world commodity markets, market-forming factors, markets for individual goods, market analysis, market indicators.

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INTRODUCTION

The study of commodity market conditions involves the consideration of many factors and conditions, changes in demand and supply at a certain moment as well as the ones in the future, described by using a system of economic indicators. World commodity markets(WCM) are the focus of studies conducted by the representatives of almost all economic schools.

Historically, World Commodity markets occur earlier than the world economy. The world commodity market is characterized by a complex hierarchical structure and is formed under the influence of economic, political and social factors, which allows us to consider it as a large system with a developed infrastructure, relatively autonomous behavior of its constituent elements or subsystems that are in daily interaction with their General high activeness and ability to adapt.

MATERIALS AND METHOD

Methodological and theoretical aspects of the functioning of markets related to the concepts of international trade and the economy of industries were developed in the works of foreign (G. Stigler, M. Allais, G. Akerlof, M. Spence, J. Stiglitz, P. Krugman, J. Tirole, Russian scientists from the famous school of the Market Institute: F. G. Piscoppel, F. M. Levshin, A. N. Pokrovsky, V. G. Klinov, V. O. Volkov, L. V. Sabelnikov, V. A. Oreshkin, A. N. Spartak) and Uzbek scientists (S. Gulyamov, N. Sirozhiddinov, R. Shadiev, G. Akhunova).

The study and analysis of markets is the identification of patterns of their development in order to develop practical recommendations for economic entities. N. D. Kondratiev combined theoretical and practical aspects of the formation and development of industry sectors of markets, emphasizing the priority of the general market conditions and the interrelationship of individual commodity markets: "... if we observe fluctuations in the overall conditions in the market, if they are expressed in changes in the state of individual industries and sectors of the economy, at the same time it means that those changes are inevitably different" [Kondratiev, 2002, p. 407].

Kondratiev's opinion about the relativity of commodity market, under which he understood "fluctuations in the condition of these industries and spheres of national economy in comparison with other industries and fields" [Kondratiev, 2002, p. 407], is topical in spite of many attempts to find cause and effect chains of fluctuations of sector components in world commodity markets. Nobel laureate in Economics in 1988.

French researcher Maurice Allais introduces the concept of "market economy" in his works. He justified the existence of a plurality of markets and price systems, in fact, continuing the development of N. D. Kondratiev's ideas on the priority of dynamics of real economy in market studies. [Allais, 1995, p. 56]

A close thread of continuity can also be traced in the works of Jean Tirole [1996], who won the Nobel prize in 2014 for his work in the field of analysis of market power and its regulation. The world commodity market is a set of stable, repetitive transactions for the purchase and sale of goods and services that have specific organizational international forms (exchanges, auctions, etc.) or are expressed in systematic export-import contracts of large supplier companies and buyers.

DISCUSSION

Determining factors in the global commodity market:

- globalization and internationalization of the world economy;
- formation of a new structure of needs using advances in science and technology;
- foreign trade policy of the states;
- political processes in the world;
- activities of integration groups and international trade organizations

The process of globalization of the world market takes place in a number of directions:

- globalization of the legal and regulatory framework for international trade;
- emergence of globalized clients and global unified contracts;
- competition for profitable (in terms of price or quality) raw materials in the international market;
- formation of a single statistical base for world trade.

The structure of the World commodity markets is constantly evolving. There are four groups of markets: markets of traditional goods (fuel, machinery and equipment, agricultural products, clothing, footwear, food products, pharmaceutical products, ferrous and non-ferrous metals, precious metals and precious stones, etc.); markets of the latest (high-tech) products (electronic devices, weapons and military equipment, information carriers, pet products, etc.). This group of markets is constantly expanding; service (transport, tourism, etc.) markets. tourism, etc.); markets of the results of intellectual endeavor.

The world commodity market consists of separate commodity markets, defined as the sphere of commodity and money relations that develop between countries or economic entities of these countries in the process of buying and selling any one type of goods (for example, tea, coffee, etc.) or a fairly homogeneous group of them (the market of oil and petroleum products)

It is necessary to consider the following aspects while conducting studies of individual commodity markets: 1) markets of certain products are influenced by factors common to world commodity markets at large and specific ones; 2) the degree of monopolization in individual markets is higher than in the world commodity markets as a whole (in the market of soft drinks, American Coca-Cola Company, PepsiCo); 3) the level of competition in individual markets is higher than in world commodity markets; 4) are characterized by their inherent characteristics, the sectoral structure of production, and actors of this market

There is a system of indicators and criteria for studying the economic situation in general and a particular product in particular. Due to market analysis, a picture of the market situation is created for further marketing actions of the company, i.e. whether the market conditions are favorable for the implementation of the set goals. Indicators of the market environment of a particular product market include the following: market scale; market balance; market type; market dynamics; degree of business activity; level of stability of the main market parameters in dynamics and space; level of market risk; strength and scope of competition; market cycles; average profit rate, etc.

The indicators themselves must meet certain criteria, first, they must fully meet the goals and tasks of the research subject; second, they must be measurable, and a system for converting qualitative indicators into quantitative ones is being built; third, the indicators must be comparable, i.e. they must cover a single period of time and cover the state of all sectors, spheres, and segments of the commodity market; and finally, these data will be the basis for developing a software package for analyzing and forecasting the commodity market conditions.

From the point of view of scientists, the criteria themselves require special attention and quality, since a competent analysis and qualitative market research will increase the positive results of the information processing process and presentation of the results of the study of the commodity market conditions.

A real assessment of the market situation for a particular product is provided based on a combination of market indicators. The market indicator can be either static indicators

or dynamic indexes (their growth rates). Market indicators include: receipt, sales, and commodity stocks, as well as prices, profit, or profitability. The situation of world trade for a particular commodity has its own characteristics, so if you study the market for fuel products, which include oil, gas, coal, etc., then there is an uneven distribution of reserves across countries, the depletion of their own mineral reserves and the rapid growth of needs for fuel and raw materials in a number of industrialized countries

Exports of fuel and food products in international trade in recent years account for about 1/4 of all world exports of raw materials, and taking into account trade in semi-finished products - ferrous non-ferrous metals and chemical products up to 1/3-2/5. The share of individual mineral resources entering international trade channels is high (only oil - 50%). Organizations that regulate these markets also play a huge role. The United Nations International Conference on trade and development (UNCTAD) is successfully working in this direction, which develops international stabilization agreements concluded between exporters and importers of raw materials. They provide for maintaining commodity prices within agreed limits, mainly through the establishment of a system of export quotas and the creation of so-called buffer stocks and stabilization funds. One of the successful mechanisms for regulating markets and prices is the creation of a buffer stock in developed countries that is effective if prices exceed the upper or lower limits set in the agreement.

If the price is too low, surplus goods are bought from the market to the buffer stock, if the price is too high, the product is sold from this stock. The market for ores and metals (ferrous and non-ferrous metals) and the fuel market (oil, petroleum products, natural gas and coal) are of great significance in world commodity markets.

Statistics for 2018 show that global demand for energy (and at the same time carbon emissions from energy use) grew at the fastest rate, due on the one hand to weather conditions, and, on the other hand, to rapidly increasing rates of advances in technology. Moreover, accelerated energy consumption was reflected in all types of fuel, especially rapid growth was recorded in the natural gas consumption sector, mainly thanks to the US shale revolution. Global primary energy grew from 2010 by 2.9% in 2018. This occurred despite modest world GDP growth and strengthening energy prices. At the same time, carbon emissions from energy use grew by 2.0%, again the fastest expansion for many years, with emissions increasing by around 0.6 gigatonnes. That's roughly equivalent to the carbon emissions associated with increasing the number of passenger cars on the planet by a third. This growth was largely driven by China, US and India which together accounted for around two thirds of the growth (Figure 1).

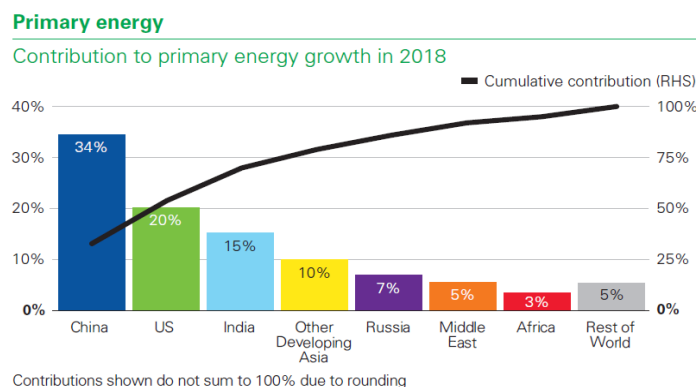


Figure 1. Contribution to primary energy growth in 2018

World production and consumption of primary energy is oil, about 40%, gas accounts for about 23%, the one of the coal is about 31%, Nuclear energy - about 2%, hydro and other types

of energy - about 3%. In world fuel exports, industrialized countries account for about 70% and developing countries for about 20%. (Figure 2).

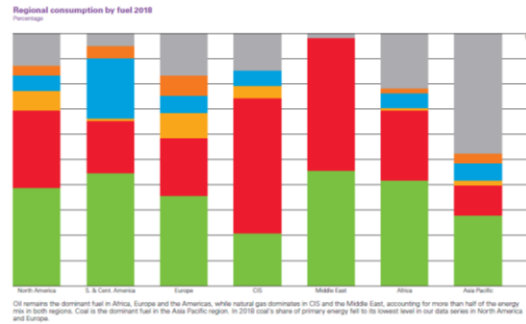


Figure 2. Regional consumption by fuel 2018

## World consumption Million tonnes oil equivalent

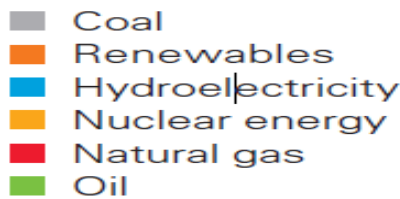


Table 2. Regional consumption by fuel 2018

In 2017, the largest annual increase in oil and natural gas production in history was marked, with most of the increase coming from onshore shale production. In recent years (2017-2019), primary energy consumption in the world was provided by gas and renewable energy sources, while carbon emissions grew at the highest rate (+2%) over the previous 7 years. China, the United States, and India together accounted for more than 2/3 of global energy demand growth, with the fastest growth in U.S. consumption over the past 30 years.

Today, there are the following challenges in the oil market: economic, geopolitical, and energy, with globalization and regionalization being the factors that strengthen them; the end of the oil era and the most relevant direction is innovative energy. In the consumption of energy resources, oil remains the leading place, coal occupies the stable second position, and gas is the third. Stricter requirements for environmental protection in order to reduce emissions of harmful gases into the atmosphere (according to the decision of the International conference in Kyoto in December 1997) in the future will have a certain impact on reducing the consumption of coal and partly oil as the most environmentally polluting energy resources.

The largest oil exporters are Saudi Arabia and Russia, whose share reaches almost 60% of world exports. The top list of leading oil exporters also includes OPEC countries (Iran, Iraq, Kuwait, Saudi Arabia, Venezuela, Qatar, Libya, the United Arab Emirates, Algeria, Nigeria, Ecuador and Angola). All of the

above countries supplied more than 90% of oil to the world market in 2017.

The most significant among exporters that increased the cost of their crude oil supplies in the period from 2013 to 2017 were the United States with revenue growth of 32% and Iraq due to a small increase of 0.6%, while for Venezuela and Nigeria, Canada and Iran saw a decrease of -69.2%; -55.5%; -32% and -14.5%, respectively.

Other notable declines include -54.5% for Saudi Arabia, -53.6% for Kazakhstan, -53.4% for Angola, -53.3% for Mexico, -52.1% for Kuwait, -48% for Norway, and -46.3% for Russia. These countries are not in vain included in the list of leaders of oil suppliers as they have a geographical predisposition for the production, processing and delivery of oil abroad. The economy of countries whose main income is the oil industry is extremely vulnerable and directly dependent on this type of product.

In 2006-2017, the volume of proven world oil reserves increased significantly (by 50%), exceeding 1706 billion barrels. Oil prices in the market changed depending on the dynamics of supply and demand in the world market, and reached a high point in 2008, and later underwent significant fluctuations. (Figure 3.) According to experts' forecasts, the price of oil will constantly increase, and in 2030 it will amount to \$ 122. per barrel (in real terms) and \$ 206. per barrel (in nominal terms).

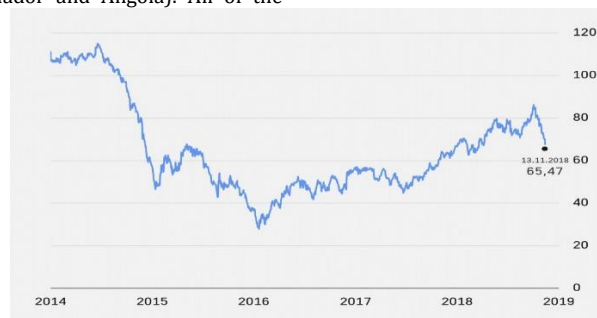


Figure 3. The price chart of Brent crude oil (Brent) for 1990-2019,\$

Transport and industry will remain the main consumer sector in 2030. And the main countries of consumption will remain

the United States, the Asia-Pacific region and the EU. According to experts, over the period 2016-2030, the consumption of oil

products in the countries will grow by 7.5 million barrels/day. In Uzbekistan, after the launch of the Uzbekistan GTL synthetic liquid fuel plant, the production of its own jet fuel and diesel fuel will begin, which will automatically prevent the import of a large volume of raw materials for the production of these types of goods, thanks to the development and modernization of this important industry.

Depending on the state of energy resources, the conditions of their transportation, and the needs for special infrastructure, the markets of their types differ in the degree of globalization.

The oil market is global due to the relative simplicity and cheapness of transportation of this energy carrier. Currently,

there are three major regional oil markets in the world: in North America (WTI oil is traded), in Europe (Brent oil is in demand), and between the Asia-Pacific countries (represented by several benchmarks)

There was observed primary energy growth in the world is represented by 2.9% in 2018 – in accordance to some estimates, it is the fastest growth notices since 2010. The phenomenon took place in spite of a backdrop of modest GDP growth and bolstering prices of energy. The following figure shows demonstrates contribution to primary energy growth in 2018 by the chief participants of the market.

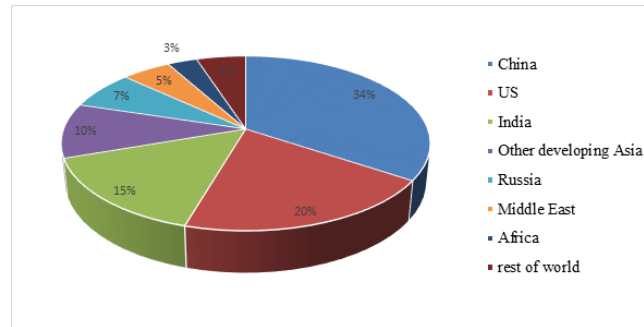


Figure 4. Contribution to primary energy growth in 2018.

Source: Compiled by the authors using the data provided in BP Statistical Review of World Energy 2019.

Upon the addition of seven new pipelines on average a year starting from 1980 to 1995, the system worldwide added an average of 25 new pipelines a year in the period from 2009 to 2018.

At the moment 302 new pipelines are being developed, in particular, 78 are under construction and 166 are in the stage

of planning. If they are erected, these schemes are expected to grow the number of pipelines worldwide by 29%, in particular, a 35% growth in the number of gas pipelines and a 19% growth rate reflects the number of oil pipelines.

Another figure shows the ratio of oil and gas in the development of pipeline transport in the world.

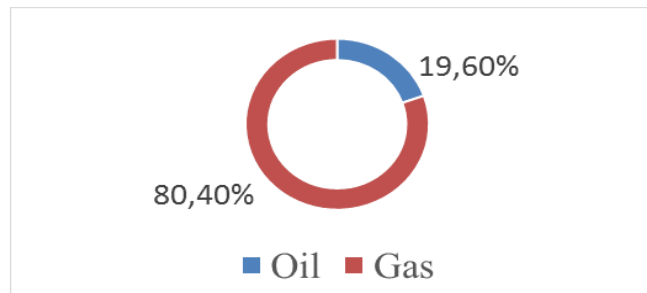


Figure 2. Shares of Oil and Gas in Global Pipeline Development (by length)

Source: Pipeline Bubble, Global Energy Monitor Report, 2019.

In all respects, North America is a global leader in the development of new pipelines, the following position belongs to the Asia Pacific region. In accordance with the following table, over half of pipeline projects under development

belongs to North America (in accordance with the number of projects) or for over a third (by pipeline lengths). It includes 64% of oil pipelines being developed globally and 48% of gas pipelines in the world.

Region	Oil		Gas		Total	Share
	Proposed	Construction	Proposed	Construction		
Africa	6602	2336	8910	497	18344	10%
Asia Pacific	952	69	34775	7460	43255	24%
Euroasia	1384	0	9510	5372	16266	9%
Europe	0	0	13345	2520	15865	9%
Latin America	475	0	6907	6145	13527	7%
Middle East	4415	0	7795	1900	14110	8%
North America	17592	2144	31356	11058	62149	34%
<b>Total</b>	<b>31419</b>	<b>4549</b>	<b>112597</b>	<b>34952</b>	<b>183517</b>	

Table 1. Regional Distribution of Pipeline development (Km)

Source: Pipeline Bubble, Global Energy Monitor Report, 2019.

One can notice from the table that North America and Asia Pacific lead in the distribution of pipeline development, while

Africa occupies the following position by its share in regional distribution of pipelines. The fact that the pipeline transport

networks are extensively developing worldwide and how individual regions pay attention to the development of them once more demonstrates the significance of pipeline transportation in delivering energy to consumers globally.

#### RESULT

Approaches and methods of analysis of studying the markets of individual products are currently topical for Uzbekistan. The creation of open commodity markets and the formation of modern competitive relations will significantly increase the quality and demand for domestic products in general, as well as the foreign trade potential of Uzbekistan. In confirmation of this, there was an increase in exports of finished products: exports of machinery and equipment increased by 60.1% in 2017, transformers and batteries – by 54.8%, cable and wire products-by 33.3%, boilers, equipment, mechanical devices and their parts – by 24.0%. The volume of exports of food products increased by 26.1%, and ferrous and non-ferrous metals-by 29.5%.

The domestic market of Uzbekistan is experiencing significant changes both in creating a competitive environment and in filling markets with domestically produced goods. It is also important for the markets to create a favorable legal environment, as new rules for conducting exchange trading on the Uzbek Republican commodity exchange and conditions for entrepreneurs to participate in them have been adopted. Advanced information and communication technologies and innovations in exchange activities are widely used for the convenience of business entities, and they are given the opportunity to choose better products and services at more affordable prices.

#### CONCLUSION

Creating a competitive environment through the creation and implementation of state programs to promote markets is important for the functioning of commodity markets. These measures include;

1. formation of regulatory and legal acts that promote exchange trade in goods, simplifying the mechanism for organizing exchange trade with the introduction of communication technologies;
2. regulation of monopoly of large companies;
3. introduction of market pricing as a condition and necessity of competition in the markets;
4. further reform of the state tax system to ensure entrepreneurial activity of businesses;
5. development of the pipeline transport networks which are important in delivering energy to consumers globally.
6. diversification of exports and analysis of the commodity structure of imports, the formation of a specific list of analogue-products, taking into account the availability of material resources, local human resources and comparative cost estimates.

Market analysis and the ability to have information about the market gives certain advantages, as it allows you to reduce risks when making important decisions such as entering new markets, producing new goods or services, developing new business ideas, expanding existing production and business.

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