

Revisiting the issue of the long-run competitiveness of the National Petrochemical Complex

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Abstract. This article addresses the issue of the long-run competitiveness of the national petrochemical complex. The authors provide an analysis of implementing a strategic program, identify factors in ensuring the long-run competitiveness of the Russian economy, and provide a forecast for the development of the petrochemical complex as a whole. Within the frame of the strategic planning of the national economy, the authors identify the strategic objective of the long-run development of the petrochemical complex. The article provides an analysis and inferences on the development of national petrochemistry in leading foreign countries.

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Introduction

The overwhelming majority of Russian economists concur with the opinion that modern social-economic policy should be oriented towards attaining a competitive economy, a high quality of life for the population, creating modern democratic institutes and a developed civil society. The necessary condition for fulfilling these objectives is the making of a developed, competitive economy and raising Russia's GDP per capita to the level of the world's developed economies.

Main part

The priorities of a competitive economy are government support of innovation activity, a wide use and engraining of R&D findings, the latest technology, and support of highly qualified, unique specialists. The use of competitive advantages related to the formation of an innovation economy and based on science-intensive products and unique technology is what makes up the basis of competitive rivalry on a global scale in the modern economy, which is developed poorly in Russia; while advantages from the use of cheap resources can always be neutralized easily by competitors. In 2012, the talks on Russia's joining the World Trade Organization (WTO) were a success, yet, judging by today's situation already, it is clear that some of the sectors of the Russian economy will be unable to compete with foreign enterprises amid the open market conditions.

A crucial factor in ensuring the long-run competitiveness of the Russian economy is an efficient system of strategic planning. We must understand that as part of strategic planning focus ought to be on work on designing and growing an integral system of institutes (institutional

modernization) needed for the efficient operation of the market economy and democratic society, which as part of this strategy ought to be consistent and systematic. Note that so-called technological modernization [1] and institutional modernization ought to be interrelated – only in this case technological progress will not be impeded by outmoded institutes, all what is the best will get engrained fast, and there will be growth in the economy. A system of state strategic planning as an institute helps mark down long-run priorities for government activity in the area of social-economic development, which helps reduce risks in making long-run investment decisions, and ensure the implementation of long-run national projects as part of a set of mid- and short-run objectives coordinated between each other, including those that warrant major organizational and resource expenditure (infrastructural projects, projects in power generation, demography, national security, and the area of the development of human potential).

Long-run forecasting and strategic planning ought to be a strategic function of the government, its regulating role in the development of the economy inclusive of the interests of the country's past, present, and future. The essence of forecasting lies in foreseeing trends in the development of the economy over a long-range period, the rate of economic dynamics, the structure of the economy, and changes in the system and organizational-economic mechanism of management. This work presupposes the introduction of initial admissions and simplifications – therefore, in order to increase the accuracy of forecasts it is crucial to accurately conduct an initial analysis of the baseline state of affairs, define all possible ways of economic and political development, analyze them, and determine

the most optimum one. Forecasting is a necessary element, a basis for putting together a strategy for development, target programs and making economic decisions [2].

The level of competitiveness of the commodity producer, and eventually of a specific commodity, depends on the influence of a set of factors, which can be divided into two groups: internal and external. Internal factors depend, to a sizeable degree, on the commodity producer (the enterprise) and include profitability, the technological and technical level of production, the scale and nature of innovation activity, the personnel qualification level, labor productivity and intensity, the efficiency of marketing efforts, the ability to promptly react to the market's changing requirements, the sophistication of employed organizational structures and forms of management, etc. [3].

External factors not dependent on the commodity producer but greatly influencing its competitiveness are [4]:

a) in terms of activity conducted mostly in the internal market – the role of government regulation in forming the competitive advantages of national producers, including the budget support of investment, customs, patenting-licensing, anti-monopoly, and price policy (above all, in respect of prices for the products and services of natural monopolies), the procedure for using proceeds from export for purchasing the latest equipment, technology, licenses, in-short-supply materials, etc.; b) in terms of activity conducted in the external market – the external economic policy of corresponding international organizations and states, tariffs and non-tariff restrictions, the system of taxes, account settlement, payments on deliveries, etc.

A substantial influence on the competitiveness of commodity producers comes from the market infrastructure within the country and methods of regulating it - in particular, the availability of certification and standardization centers, investment funds, insurance companies, a transportation network, storage facilities, provision for market relations, etc. Despite the existence of antimonopoly legislation, in many countries the government exerts immediate influence on the structure of the economy and facilitates the creation of large integrated companies with a view to bolstering their competitive positions in the global market.

As we know, there are price competition and non-price competition and, accordingly, two sides to competitiveness – price, which is based on the use of advantages in price factors, and technical,

wherein what are crucial is consumptive qualities. Price competition means the immediate use of prices with a view to attaining the best economic conditions for sales, conquering the market through establishing prices at a lower level compared with other suppliers of similar products. Non-price competition presupposes the use of advantages of a technical nature – the uniqueness of the consumptive qualities and a high quality of the product, its novelty, science-intensity, the sophistication of applied technology, and provision of additional services on servicing.

At present, along with a dramatic stiffening of competitive rivalry in the national and global markets, there is occurring change in the nature of competition, which is mainly unfolding around new progressive products and technology. Every company is aspiring towards gaining scientific-technical and technological superiority over its opponents in terms of the quality of its product, the efficacy of applied production processes, and boosting the release of more lucrative, advanced products with unique features, intended for clear-cut consumptive purposes.

The economic security of the Russian Federation depends, to a sizeable degree, on the efficient operation and technological modernization of enterprises within the petrochemical complex [5]. It is commonly believed that at the present time the competitiveness of the Russian petrochemical complex is primarily based on the use of comparative national advantages (the availability of natural raw and fuel-and-energy resources) and the application of the price competition mechanism. A huge impact on the level of production costs in the petrochemical complex is made by energy- and materials-intensity indicators. Based on expert estimates, the energy density of Russian chemical and petrochemical products is 1.5 to 1.7 and their material-intensity is 1.2 to 1.4 times that of products made in industrially developed countries. High salary expenditure in Russia is associated not with the average level of individual salaries but the irrational and ineffective use of manpower.

In our view, the strategic goal of the long-run development of the petrochemical complex as part of the strategic planning of the national economy is providing for the needs of the market with competitive products, meeting the requirements of defense, economic, and ecological security based on creating and adopting resource-saving and ecologically-friendly technology capable of holding its own in the internal and external markets amid the openness of the economy.

In recent years, the development of the petrochemical industry of leading foreign countries

has undergone a number of substantial changes, which let us draw conclusions on the development of national petrochemistry:

- amid the intensive development of predominantly large-capacity petrochemical production works in the countries of Southeast Asia and countries of the Middle East rich in raw hydrocarbons, there has been a boost in the role of these regions in the global chemical industry;

- the existence of technical-economic preconditions, the important role of chemical science and the chemical industry in ensuring and actualizing the global dimensions of scientific-technical progress and resolving social-economic issues help maintain high rates of the development of the petrochemical industry and its significance in the structure of public production in the long-run;

- structural changes in the sector of the petrochemical complex of industrially developed countries are effected in the direction of the advantageous development of science-intensive, complex, small-capacity production works crucial to rapidly developing industries, which are amassing the modern achievements of scientific-technical progress (electronics, aerospace machinery, communications, nuclear power generation, etc.);

- of importance is exporting entrepreneurial capital overseas, acquiring firms in operation, setting up joint ventures, creating strategic alliances, and using the system of patenting and licensing with a view to conquering niches in the national and global markets;

- a huge impact on the development of the chemical and petrochemical industry comes from a new type of technological and economic set-up, which is blossoming in the West's most developed countries – a post-industrial society, in which knowledge and information are starting to play the role of a major production resource;

- the development of competition and the competitive environment are accompanied by the search for mutually profitable forms of international cooperation in various areas of activity and, above all, in the area of R&D, which is associated with a substantial increase in expenditure on these objectives and the growing role of achievements in science, engineering, and technology in ensuring the competitive advantages of companies [6].

Forecasting the development of the petrochemical complex facilitates the assessment of its long-run development dimensions with identifying “breakthrough points” and helps substantiate strategic priorities. Without working out strategic plans and target programs, chosen priorities will remain unimplemented as a result of the system's sluggishness.

Working out long-run strategic programs for the development of the industrial complex inclusive of existing global trends implies – both at the national level and that of specific enterprises – comprehensive assessment of risks concomitant with their implementation. There is a need for the wholesome analysis of existing departmental programs being worked out, inter alia, by contiguous sectoral ministries and agencies, which accumulate the most complete and objective information.

Besides, the economic expediency and success of the implementation of a strategic development program is based on a number of factors. Within the frame of the general forecasting of the country's social-economic development for petrochemical complexes, such factors are: forecasting demand for polymers in the internal market, linked with forecasting the import-export ratio for polymer products; forecasting the need in major types of raw materials for production (naphtha, NGL for petrochemistry), which help attain set objectives and specific parameters. When it comes to Russia, the level of consumption of petrochemical products does not meet the level of the country's development and GDP dynamics. Growth in demand will be facilitated by the development of technology and production works relating to the release of new construction materials, the development of production works for the release of consumer electronics and packing materials, the development of the automotive industry, and, above all, localizing in Russia the production works of foreign producers, which will entail demand for bearing materials and natural rubber for the tire industry with increased requirements as to the technological and environmental credentials of materials [6], [7].

The analysis of the implementation of a strategic program ought to be also reinforced with work on specific issues: a) providing the project with properly qualified human resources at all its stages; b) the availability or possibility of obtaining the latest technology competitive in the international market; c) putting together newly launched production works within an operating technologically integrated complex, which helps reduce the volume of investment in infrastructure and lower product costs. It is also expedient to consider issues relating to the geographical whereabouts of new production works, which helps substantially reduce logistical costs, as well as those relating to engrained technology and production works being in line with existing ecological norms and requirements as to environmental protection and the protection of the health of personnel [8], [9].

Conclusion

The world's practice indicates that the competitiveness of petrochemical companies, just like that of firms within other science-intensive sectors, is immediately associated with investing in R&D, creating and mastering innovation, and attaining scientific-technical advantages. There are major changes taking place in the scientific-technical and technological areas. The lifecycle of processes and products, which used to be measured in decades before, is now in many cases less than 5 years long. The last 30-40 years account for around 90% of all global solutions in the area of chemical science, technology, and production. The reduction of the lifecycle of new products and technology substantiates the need for substantially intensifying R&D oriented towards meeting rapidly changing demand, reducing times for developing and putting into action new solutions in production. Besides, the attained level of scientific knowledge and the sophistication of technology and engineering have led to R&D getting highly complex and costly and an increase in risks associated with it [10], [11].

Inferences

Thus, the low productivity of and the use of outmoded technology by Russian petrochemical plants, as well as the use of cheap raw hydrocarbons from foreign producers in recent years, are in the long-run behind the higher cost of production compared with most modern high-tech complexes in operation and under construction across the globe. What remains to be seen is how effectively national business owners are going to act in this situation and what conditions the government is going to create for its producers with a view to keeping up their competitiveness within the global markets.

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References

1. Yasin, Y.G., 2012. Long-Run Scenarios for Russia. A New Impetus in Two Decades. In

the Proceedings of the 8th Scientific Conference on Issues in the Development of the Economy and Science. Moscow: Izdatelskiy Dom Vysshei Shkoly Ekonomiki, pp: 82.

2. Shigabutdinov, A.F. and D.A. Yafizova, 2012. Issues in the Implementation of Institutional Policy for the Innovation Development of Petrochemical Complexes. Academic Journal "Intellect. Innovatsii. Investitsii": 47-50.
3. Shigabutdinov, A.F., 2009. The Formation and Operation of the System of Innovation Development of Industrial Enterprises: A Monograph. Kazan: Kazanskiy Gosudarstvennyi Universitet, pp: 142.
4. Aminev, S., 2012. The Potential of an Industry. Trends in the Development of Russia's Chemical Industry. Neftegaz.ru, 11: 12-16.
5. Review of Small Business Taxation. Date Views 15.08.2012 www.dcode.co.uk.
6. The Council's Action Plan for a Small Business Act for Europe. European Commission - Enterprise and Industry. Date Views 9.06.2011 www.ec.europa.eu/enterprise/policies/sme/files/docs/sba/sbaactionplan.pdf.
7. French, W.L. and C.H. Bell, 2000. Organizational Development and Transformation: Managing Effective Change. New York: McGraw-Hill, pp: 494.
8. Jones, G.R. and C.W.L. Hill, 1992. A Transaction Cost Analysis of Strategy-Structure Choice. Strategic Management Journal, 9: 160-172.
9. Nicholson, W., 1992. Microeconomic Theory: Basic Principles and Extensions. 5th Ed. London: Dryden Press, pp: 440.
10. Satiety, F. Experiment and Theories on the Employment Effect. In the Proceedings of the 18th IAREP Annual Colloquium on Economic Psychology, pp: 59-65.
11. Sveiby, K.E., 1997. The New Organizational Wealth: Managing and Measuring Knowledge-based Assets. San Francisco, CA: Berrett-Koehler Publishers, pp: 416.

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