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The main trends in the development of science-intensive economy in the conditions of reindustrialization of the countries of the Eurasian Economic Union

Abstract. This article discusses the conditions and prerequisites for the development of science-intensive sector of the economy in the countries of the Eurasian economic Union, taking into account the policy of reindustrialization. Reindustrialization is defined as the restoration of domestic industry on a new technological platform, as well as the return of previously exported industrial enterprises to national borders, but taking into account modern technological requirements. At the same time, the current stage of development of the countries of the Eurasian economic Union shows that the states are forced not just to reindustrialize, but practically to industrialize the economy from scratch, since the industry for certain political reasons has been completely destroyed. As part of the policy of reindustrialization, the level of readiness of the science-intensive sector of the economy of the Eurasian economic Union is determined. Comparison of the level of development of the science-intensive sector of Kazakhstan and the parameters of innovative development in comparison with other member states of the Eurasian economic Union indicates a relatively low level of performance. It is determined that the current application of the integrated policy of reindustrialization within the framework of the Eurasian economic Union did not lead to tangible results of increasing the scientific potential of the participating countries. In some areas, on the contrary, there is a tendency to worsen, which requires the development of more detailed and effective measures for the development of an integrated policy of reindustrialization within the framework of the Eurasian economic Commission.

Key words: science-intensive economy, reindustrialization, innovative development, Eurasian economic Union.

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Introduction. In the context of accelerating the world processes of scientific, technical and technological development and a significant increase in competition in the world markets of high-tech products, all States face an important task of intensive renewal and effective use of the material and technical base of the research organization.

The processes of innovation, actively promoted in recent years, in the current period of instability and uncertainty were in the new economic reality of the Eurasian economic Union. The peculiarity of our time is the formation of new priorities, new challenges and new approaches to solving the problems faced by Kazakhstan and other countries of the Eurasian economic Union (EAEU). Large-scale changes taking place today in the world economy and directly affect not only the situation in the economy and politics, but also in science and innovation. They create new opportunities for accelerated innovation development, but at the same time set limits that have to be considered by all subjects of innovation. Innovative plans and strategies of enterprises at all levels are subject to reassessment and adjustment. On this basis, the main objective of this study was to obtain rapid assessment of the relevance of the innovative changes in the conditions of economic policies of re-industrialization of the countries of the Eurasian economic Union [1, 2].

In 2011, Kazakhstan officially announced the transition to OECD standards in all areas of socio-economic development [3], and in particular, in the field of scientific and innovative development with the priority of building a «knowledge economy» based on the expanded reproduction of new knowledge in scientific organizations and universities, and the subsequent

active introduction of scientific developments of domestic scientists in the business environment. This model of innovative development of the national economy has long been tested and successfully applied not only in developed countries, but also with variable results in developing countries around the world, including post-Soviet countries. Especially instructive is the experience of the European Union, which implements a supranational innovation policy aimed at the active development of innovative entrepreneurship in the high-tech sector, as well as a policy to equalize the levels of innovative development of the countries belonging to this integration association [4].

Main results. As a basic trend of modernization of the economy, the state leaders of the EAEU member states declared reindustrialization on the basis of the latest technological structure. In addition, today the efforts of the governments of these countries are aimed at enhancing research and development activities in order to ensure the transition of the national economy to an innovative path of development.

As a rule, in general under the reindustrialization refers to the recovery of the domestic industry to a new technology platform, as well as the return of previously made abroad of industrial enterprises in national borders, but also with regard to modern technological trends and requirements.

At the same time, the current stage of development of the EAEU countries shows that the states are forced not only to reindustrialize, but practically to industrialize the economy from scratch, since the industry for certain political reasons has been completely destroyed. In this context, reindustrialization acts as designing and deploying domestic industrial-technological chains, which creates use-value of both industrial and consumer goods. This is one of the most important features of the processes of reindustrialization of the EAEU countries, which significantly distinguishes them from the reindustrialization of the USA, the UK and a number of other developed countries.

In General, carrying out of reindustrialization in the countries of the EAEU, from the point of view of S.D. Bodrunov, involves the simultaneous solution of major problems in several related areas [5]:

- restoration or modernization of production facilities lost or obsolete in the process of deindustrialization;
- implementation of innovative industrialization programs and projects;
- ensure the transition to a new stage of industrial development, taking into account the characteristics and technological challenges of the industry of the coming decades.

The main determinants of reindustrialization are the following factors, which in turn determine its long-term trends:

– public and corporate investments, the scale of which should significantly increase and shift to reindustrialization;

– innovations, the effectiveness of the implementation of which is determined, among other things, by the demand formed by the state for them;

– highly qualified personnel, which requires increased investment in human capital and an active personnel policy;

– technologies, primarily used in mechanical engineering, since the state of the industry is directly dependent on the state of the machine-building complex, which is the main factor in the development of all activities;

– motivation of entrepreneurs, which requires an adequate state economic policy, the creation of systems to support high-tech business, reducing administrative barriers.

At the same time, another feature of the reindustrialization of the EAEU countries is that the financial basis of reindustrialization on a new innovative basis at its first stage will be provided by the extractive sector of the economy. But this does not mean that the country deliberately preserves the raw material structure of the economy, and that over them hangs the so-called «raw curse» [6].

There are two main approaches to the impact of reindustrialization on the development of ecological, socio-economic systems:

- technocratic approach, in which reindustrialization is considered as a means of increasing the volume of GDP by improving the efficiency of the economy;

- socio-economic approach, when reindustrialization is considered taking into account the entire volume of social, economic and environmental consequences for the development of the country as a whole.

The choice of reindustrialization priorities is determined by a number of circumstances:

First, the inconsistency of the ongoing processes, expressed in the «double effect», when along with positive changes there is a real threat of social, economic and environmental consequences.

Second, the three-aspect production, which is expressed in the technical and economic, environmental and socio-economic results of the processes of reindustrialization. The close relationship between the three aspects of production is implemented in the strategies of dynamic development of national economies.

Third, due to the economic development of national economies, including in the field of innovation, which leads to uneven socio-economic development of various regions and sectors of the economy.

Fourth, alternative or variant reindustrialization in the context of the development of the national economy.

The choice of priorities largely depends on the path taken by the reindustrialization of the national economy.

The first option involves subordinating the socio-economic development of the national economy to the interests of the real sector of the economy and the industrial development of natural resources. At the same time, the industrial development of the regions in this direction will largely depend on the processes of division of labor, including the placement of environmentally burdensome production of the real sector of the economy in the less developed regions, where labor is cheaper.

The second way is to «subordinate» the development of economic sectors, including the development of natural resources, to the strategic goals of sustainable environmental, socio-economic development of countries. The choice of this direction requires strengthening the role of the state in coordinating actions and addressing issues related to the modernization of existing production, placement of new, as well as the development and processing of natural resources of the country.

The key conditions and prerequisites for the formation in Kazakhstan of an institutional environment for the development of a high-tech sector of the national economy and innovative entrepreneurship, corresponding to international conditions, based on the developments of domestic scientists, should be considered through a comparison of the main indicators of scientific and innovative development of the national economy within the same Eurasian economic Union. As the main indicator, we have defined the level of knowledge intensity of GDP as the ratio of gross domestic expenditure on research in the reporting period to GDP for the EAEU countries (Figure 1) [7-11].

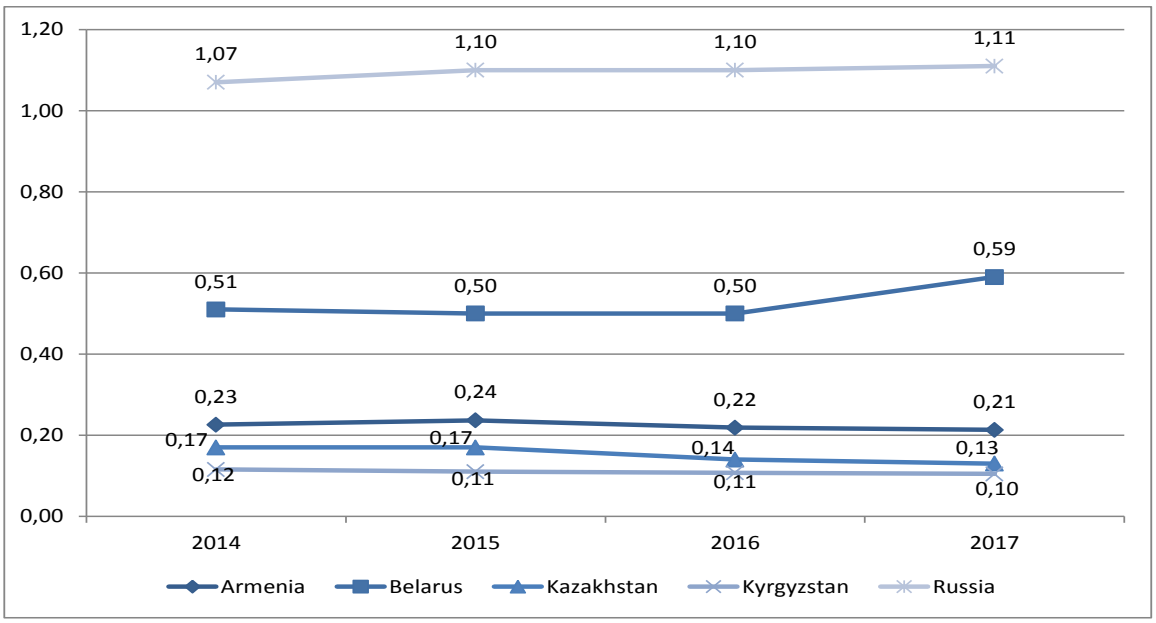

Figure 1 – Dynamics of science intensity of GDP over the EAEU countries

Source: Compiled by the author from source (State Statistics Committee. (Armenia), (Belarus), (Kazakhstan), (Kyrgyzstan), (Russia), 2019) [7-11]

As can be seen from the graph, the indicator of science intensity only in Russia meets the basic requirements of the OECD [12], i.e. more than 1% of GDP is allocated to research, although for the development of the high-tech sector in the context of specialization in export-oriented innovative entrepreneurship, the recommended level of this indicator for the OECD is 3% [13]. The indicators of Belarus tend to increase and approach the basic standards of the OECD, but the impact of the common innovation policy of the EAEU should not be attributed to this. Traditionally, funding for research has been relatively high in Belarus [14] than in other EAEU countries, with the exception of Russia. The other three countries, Armenia, Kazakhstan and Kyrgyzstan, show a very low level of science intensity, which also tends to decrease. These disappointing indicators of the knowledge intensity of GDP of the EAEU countries led to a low level of the global innovation index (GII) (Figure 2).

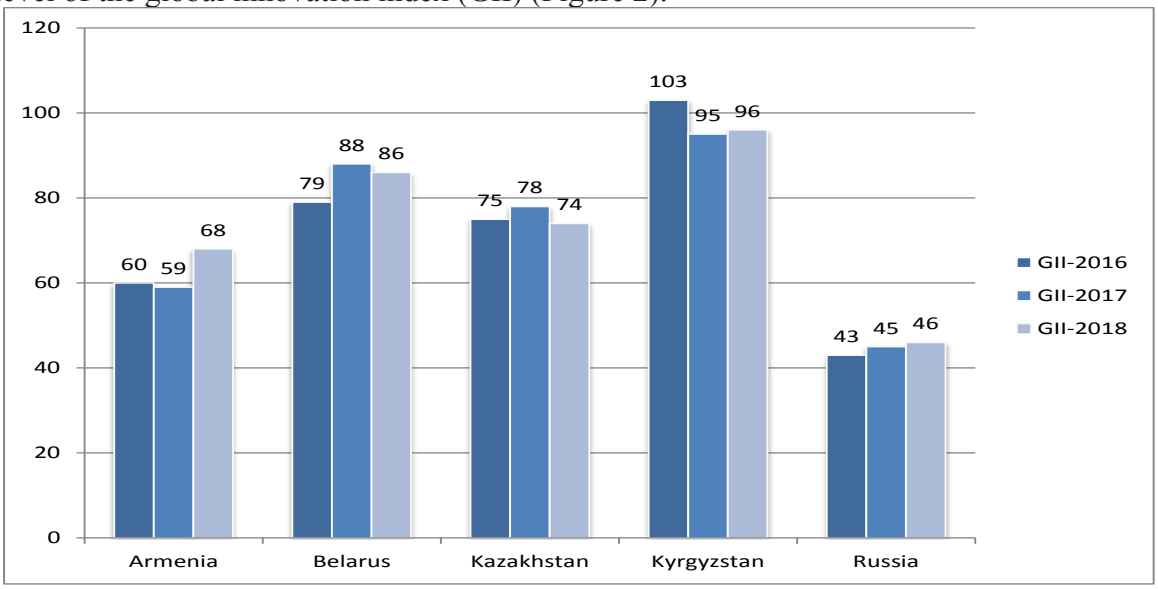

Figure 2 – Dynamics of the global innovation index (GII) over the EAEU countries

Source: Compiled by the author from source (Cornell University, INSEAD, and WIPO, 2018) [15]

As the graph shows, only Russia enters top 50 innovative countries of the world, though the figures in the rating of innovative development also tend to decline. This rating, as a composite indicator, gives a complete picture of innovative development, including an overview of the political situation, the situation in education, the level of infrastructure and business development of a particular national economy.

In General, these graphs show that the current application of the integrated innovation policy within the EAEU has not led to tangible results of increasing the scientific potential of the EAEU countries. In some areas, on the contrary, there is a tendency to worsen, which requires the development of more detailed and effective measures for the development of integrated innovation policy within the framework of the Eurasian economic Commission. In addition, greater financial investment is required in research and development in countries such as Armenia, Kazakhstan and Kyrgyzstan to bring their science-intensive indicators closer to the OECD minimum requirements.

The knowledge intensity of GDP has a multiplier effect, i.e. with the growth of investments in science, the gross product will grow in a much larger amount than the initial monetary investments. In addition to the primary effect there is a secondary and subsequent effects.

That is why most of the world's countries are interested in increasing investment in science, and those States, the knowledge intensity of GDP exceeds 3%, are at the forefront of technological progress. Today, the technology leaders support the indicator of science-intensive GDP at the level of 2.7-4.3%. In addition, it is of great importance the fact at what level the indicator of knowledge intensity of GDP is recorded. The science intensity of GDP, equal to 1% or less, is considered a threshold for the scientific and technological security of the country.

To understand the mechanism of the possibility of increasing the science intensity of GDP, i.e. an indicator that reflects the existing proportion between GDP and scientific and technical activities in the form of the amount of costs that go to scientific research, it is necessary to analyze their structure. According to the approved methodology, the indicator characterizing the volume of scientific product, i.e. research or development included in GDP, is equal to the costs of its production. Components of these costs are the following types of costs: labor; purchase of services (for their own projects); fixed assets (machinery, equipment, buildings, etc.); other operating costs (consumables, raw materials and equipment, rent, etc.).

Conclusion. In conclusion, we would like to note that the current stage of development of the countries of the Eurasian economic Union shows that the states are forced not just to reindustrialize, but practically to industrialize the economy from scratch, since the industry for certain political reasons has been completely destroyed. As part of the policy of reindustrialization, the level of readiness of the knowledge-intensive sector of the economy of the Eurasian economic Union is determined. Comparison of the level of development of the knowledge-based sector of Kazakhstan and the parameters of innovative development in comparison with other member states of the Eurasian economic Union indicates a relatively low level of performance. It is determined that the current application of the integrated policy of reindustrialization within the framework of the Eurasian economic Union did not lead to tangible results of increasing the scientific potential of the participating countries. In some areas, on the contrary, there is a tendency to worsen, which requires the development of more detailed and effective measures for the development of an integrated policy of reindustrialization within the framework of the Eurasian economic Commission.

The processes of state regulation of the social and economic consequences of the reindustrialization of the EAEU countries should be dynamic and flexible. In all the countries of the EAEU with the already established market economies, as economic development has changed the concepts, goals, objectives, priorities and mechanisms for industrial development. Reindustrialization is impossible without strengthening the role of the state on the basis of a fully justified socio-economic policy with regard to specific industrial complexes and industries.

On the other hand, it should be borne in mind that the socio-economic impact is primarily at the micro level. The construction of new and reconstruction of existing enterprises should include a comprehensive analysis of the environmental, social and economic consequences arising at all levels, both in individual regions, states and the EAEU as a whole.

The strategic goal of socio-economic development of the countries of the Eurasian economic Union in the context of globalization in the next 10-15 years from the point of view of structural transformation, is the formation of a modern competitive national economies, at the same time the most important constraint on the solution to this problem is the necessity of neutralizing the negative social and environmental impacts of reindustrialization.

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Еуразиялық Экономикалық Одақ елдерінің қайта индустрияландыруы жағдайында ғылыми сыйымды экономика дамуының негізгі үрдістері

Аңдатпа. Бұл мақалада қайтаиндустрияландыру саясатын жүргізуді есепке ала отырып, Еуразиялық экономикалық одақ елдеріндегі экономиканың ғылымисыйымды секторын дамытудың шарттары мен алғышарттары қарастырылған. Қайтаиндустрияландыру отандық өнеркәсіпті жаңа технологиялық платформада қалпына келтіру, сондай-ақ бұрын шетелге шығарылған өнеркәсіптік кәсіпорындарды ұлттық шекараларға, бірақ қазіргі заманғы технологиялық талаптарды ескере отырып қайтару ретінде айқындалған. Бұл ретте Еуразиялық экономикалық одақ елдерінің қазіргі даму кезеңі мемлекеттер тек қана қайтаиндустрияландыруды жүргізуге емес, экономиканың индустрияландырумен іс жүзінде нөлден айналысуға мәжбүр екенін көрсетеді, өйткені белгілі саяси себептерге байланысты өнеркәсіп толығымен қираған. Қайтаиндустриаландыру саясатын жүргізу шеңберінде Еуразиялық экономикалық одақ елдері экономикасының ғылымисыйымды секторының дайындық деңгейі анықталды. Қазақстанның ғылымисыйымды секторының даму деңгейін және Еуразиялық экономикалық одаққа қатысушы басқа елдермен салыстырғанда инновациялық даму параметрлерін салыстыру көрсеткіштердің салыстырмалы төмен деңгейде екенін куәландырады. Еуразиялық экономикалық одақ шеңберінде қайтаиндустрияландырудың интеграцияланған саясатын ағымдағы қолдану қатысушы елдердің ғылыми әлеуетін арттырудың елеулі нәтижелеріне әкелмегені анықталды. Жекелеген бағыттар бойынша керісінше нашарлау үрдісі байқалады, бұл Еуразиялық экономикалық комиссия шеңберінде қайтаиндустрияландырудың интеграцияланған саясатын дамыту бойынша неғұрлым егжей-тегжейлі және тиімді іс-шаралар әзірлеуді талап етеді.

Түйінді сөздер: ғылыми сыйымды экономика, қайта индустриаландыру, инновациялық даму, Еуразиялық экономикалық одақ.

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Основные тенденции развития наукоемкой экономики в условиях реиндустриализации стран Евразийского Экономического Союза

Аннотация. В данной статье рассмотрены условия и предпосылки развития наукоемкого сектора экономики в странах Евразийского экономического союза с учетом проведения политики реиндустриализации. Реиндустриализация определена как восстановление отечественной промышленности на новой технологической платформе, а также возвращение ранее вынесенных за рубеж промышленных предприятий в национальные границы, но с учетом современных технологических требований. При этом современный этап развития стран Евразийского экономического союза показывает, что государства вынуждены не просто проводить реиндустриализацию, а практически заниматься индустриализацией экономики с нуля, поскольку промышленность в силу известных политических причин оказалась полностью разрушенной. В рамках проведения политики реиндустриализации определен уровень готовности наукоемкого сектора экономики стран Евразийского экономического союза. Сравнение уровня развития наукоемкого сектора Казахстана и параметров инновационного развития по сравнению с другими странами-участницами Евразийского экономического союза свидетельствует об относительно низком уровне показателей. Определено, что текущее применение в рамках Евразийского экономического союза интегрированной политики реиндустриализации, к ощутимым результатам повышения научного потенциала стран-участниц не привело. По отдельным направлениям наоборот наблюдаются тенденции к ухудшению, что требует разработки более детальных и эффективных мероприятий по развитию интегрированной политики реиндустриализации в рамках Евразийской экономической комиссии.

Ключевые слова: наукоемкая экономика, реиндустриализация, инновационное развитие, Евразийский экономический союз.

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