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PRIORITIES OF RUSSIA'S INDUSTRIAL POLICY AMID THE CHALLENGES OF FOURTH INDUSTRIAL REVOLUTION. PART 2 [1]

The article emphasizes the importance of developing digital economy as one of the most important areas of the fourth industrial revolution in terms of breakthrough scientific, technological, and socio-economic development. It argues that the industrial policy is a reliable tool to support this revolution. The author identified the factors that determine the industrial policy priorities, including the level of socio-economic development of the country, existing model of economic development, and image of the country's future. The author also described the evolution of industrial policy priorities in Russia and emphasized that, in today's environment, supporting the digital economy is a fundamentally new priority. The article established that it is important to proactively regulate the emergence of digital economy by ensuring joint work of all government branches, synchronization of digital economy development with industry-specific programs, innovative development programs, etc. It formulated proposals for the Industrial Development Fund to support the implementation of new priorities related to digital economy development. I elaborated proposals to adjust provisions defining the use of special investment contracts in order to stimulate the digital economy development. The article specified the main areas for supporting the provision of human resources for the digital economy. It emphasized that the "digital transformation of industry" radically changes the views on the targets and subjects of industrial policy. The author established that the new targets of industrial policy are the so-called "related industries," that is, the association of things, people, technologies in the industrial system, structures based on such special form of business models as technological platforms, as well as the human needs. During the emergence of the fourth industrial revolution, the subject of industrial policy is a specific system of interactions by federal and regional authorities with a variety of business associations and civil society institutions, which determines the multi-subject nature of industrial policy. The article substantiated increased requirements for the leaders of the state, business entities, and emphasized their increasing responsibility to prevent negative social and ethical effects resulting from the implementation of new technological solutions.

Keywords: industrial policy, fourth industrial revolution, digital economy, new priorities, industrial policy tools, industrial policy target, industrial policy subject, social and ethical responsibility, leadership

Introduction

The most important objective for the development of modern national economy is the achievement of breakthrough scientific, technological, and socio-economic development. The solution to this problem should be facilitated by the implementation of the Russian President's Decree No. 204 (May 2018), which formulated nine major national development goals of Russia for the period until 2024[2]. I should note that three of them are about accelerating the development of the high-tech sector in the economy. In particular, by 2024, the number of organizations engaged in technological innovation will increase to 50 % of the total number; it is envisaged to create a high-performance export-oriented sector in the processing industry based on modern technologies; it is defined that the increase of productivity in medium and large enterprises of basic non-commodity sectors of the economy should be at least 5 % a year; the document also provides for accelerated introduction of digital technology in the economy and social sphere.

The introduction of digital technology and platform-based solutions should become the basis for transforming the priority sectors of the economy, primarily, the industrial sector. 13 national projects will be implemented in the period from 2019 to 2024 (amount of funding will be 25.01 trillion rubles). 1.31 trillion rubles were allocated for the implementation of Digital Economy, one of the largest

[1] © Romanova O. A. Text. 2018.

[2] On National Goals and Strategic Objectives for the Development of the Russian Federation until 2024. Decree of the President of the Russian Federation No. 204 of May 7, 2018. Retrieved from: http://kremlin.ru/acts/bank/43027 (access date: June 7, 2018). (In Russ.)

projects[3]. The implementation of this project by 2024 under the national program "Digital Economy of the Russian Federation" will allow to establish a stable and secure information and telecommunication infrastructure for high-speed transmission, processing, and storage of large amounts of data available to all organizations.

Digital economy development as one of the essential areas of the fourth industrial revolution should be supported by the most effective tools of the general economic policy of the state and, in particular, by those of the industrial policy [1]. According to the definition adopted by UNIDO and OECD, industrial policy is a state policy aimed at improving business environment or structure of economic activities for sectors and technologies that can provide the most favorable prospects for economic growth and social well-being. At an international seminar held in June 2017 in the Senate Chamber of the University of Vienna and devoted to the issues of industrial policy, Professor P. Schulze (Germany) substantiated the argument that the "Industry 4.0. needs industrial policy", which was fully supported by the participants of the seminar [2, p. 75]. This once again confirms the need to use industrial policy as the most reliable and proven tool to support the digitalization of the economy [3].

Factors that determine the industrial policy priorities

Foresight is widely known around the world as a tool that allows to generate not only national but also corporate strategies and to identify threats and new opportunities to create a dynamic and adaptive economy [4, 5]. In our earlier studies based on foresight methodology, we built a common vision of the prospects for the development of the Ural industry shared by all subjects of politics, business community, and society, identified priorities the support of which requires the use of active industrial policy measures [6].

However, the speed of change, growing uncertainty in all spheres and sectors of the economy raises, in a new way, the question of what priorities are becoming particularly important, what mechanisms can be used to achieve them, and what is the desired future that we would like to have [7].

To identify the industrial policy priorities from these positions, it would be appropriate to reveal the impact of significant factors at the macro level. In particular, this includes the level of socio-economic development and the current model of economic development of the country, which largely generates its image of the future and determines the most important priorities for achieving this future. In addition, there are indirect approaches to judge which priorities for developing the real sector of the economy are supported in a particular country.

Level of socio-economic development of the country. The analysis of the world economy shows that the priorities of industrial policy largely depend on the level of socio-economic development of the country, which determines the balance between the goals of a purely economic nature and social development goals. World practice shows that the less developed is the economy and society, the less influence have social aspects on the content of industrial policy. For example, from the 19th century to the first decades of the 20th century, the main goal of industrial policy was to provide support for the industrial sector, primarily, the one of defense-oriented nature, as well as the interests of large production facilities. Social factors were not adequately considered during this period. But in the areas that are critical for any country (employment security, food security, etc.), industrial policy priorities also included the social aspects of production activities.

The period from the first decades of the 20th century and until the 1960s was marked by increasing importance of the balance between the interests of industrial development and basic social guarantees. In this period, the industrial policy was an element of general economic policy. Today, in the developed countries, we can generally see the equality of interests of industrial and social development. However, in highly developed countries, the social sphere is a full-fledged target of priorities implemented by the industrial policy.

Model of economic development of the country. The formation of industrial policy priorities largely depends on which models (liberal or dirigiste one) is supported by the state, business community, and society, in general. The expectations that the world will meet the third millennium "under the rule of neoliberalism" [8] failed to materialize. Convincing views were demonstrated by the authors who explained the global crisis of 2008–2009 as a crisis of a "hyper-liberalized" modern society, the main cause of which was associated with ideology and practice of "overconsumption and reappropriation of

[3] Butrin, D. & Skorobogatko, D. (2018, May 15). Shestiletku — za trinadtsat proyektov [Thirteen projects in six years]. Kommersant Ural, 81, 1–2 (in Russ.)

benefits" that were immanent to this society [9, p. 5]. The image of the desired future of the country is generated depending on the dominance of a particular development model. One of the first papers in Russia attempting to present the image of its future was published by the Institute of Contemporary Development (INSOR) in 2010. The publication of the Institute's report "Russia in the 21st Century: The Image of the Desired Tomorrow" [10] generated an intense discussion. According to V. Leksin, the report was the first liberal manifesto in Russia, where the liberalization was declared the main condition for modernization, while the "ballast of power" was proclaimed to be the main obstacle to achieving the "desired tomorrow." The authors of the report proposed to "abandon the value-based heritage" that relied on the "resource- and commodity-based way of existence" which automatically shifted the system of values from individual and society to the pole of the state and power. At the same time, the report recognized that some stimulating actions on the part of the state may be useful. However, in general, the state was recognized to be the main brake on the path to development of the modern economy.

An alternative view is based on the assertion that the positive potential of liberalism has been exhausted, and this ideology in its radical version is becoming a brake on further development. Among many advocates of this view, a prominent role is played by R. Greenberg, the Academician of RAS. He noted that "uncontrolled and unregulated market undermines the sustainable development of global and national economies, and a powerful regulatory activity of the state is the imperative of modern economic growth" [11].

Therefore, the choice of industrial policy priorities depends largely on the commitment of the ruling elite to one of the alternative models of economic development. It is known that the liberal model implies free play of market forces with minimum involvement of the state in the economy and the formation of so-called "horizontal industrial policy." Dirigiste model allows active participation of the state in the economy both as the subject and investor, which determines the vertical nature of industrial policy.

In the current conditions of economic development, with new emerging technological trends that determine large-scale structural transformations, there is an increased relevance of using diplomatic methods aimed at supporting domestic corporations, as well as the importance of various forms of protectionism. All this inevitably raises the role of the state in the formation and implementation of industrial policy. Today, it is interpreted as "increasingly active state," which defines the development priorities, plays an active role in achieving "equal opportunities," expanding public-private partnership, producing public goods, and meeting social needs of the population.

The modern state operates increasingly on the basis of "development state" model, which combines all the best from previous models and corresponds to peculiarities of the transition period and emergence of a new economic order. This model can develop as a modification of state that will allow to harmoniously interact with modern forms of democracy and civil society [12; 13, p. 20].

Image of the future. The state plays an increasing role in shaping the image of the future of the country. It could be noted that research in this area is conducted in most countries of the world. In particular, in the US, there are 50 "think tanks" engaged in designing the future. In Russia, the image of the future for the domestic economy as a "preferred reality" is being built under the National Technology Initiative. Expert Institute for Social Research (Moscow) is working on a report on the image of the future of national economy. This report should be based on the regional sessions of Strategy 2030, which are expected to express the views of regional authorities on the image of the future of their regions[4].

The quality of strategic management was assessed by the Higher School of Economics in accordance with the parameters reflecting the readiness of the subjects of the Russian Federation [14]. 85 regions of the Russian Federation have been ranked in accordance with their Future Readiness Index (FRI). It is based on indicators that describe the range of planning horizon in the regional strategies of socio-economic development, their technological orientation, availability of media materials on the success of the regions in the area of scientific, technological, innovative, and industrial development. The analysis of these data allowed to identify the ranking of the regions included in the Ural Federal District (see table below).

[4] Nagornykh, I. (2018, August 10). Boris Gryzlov porabotayet nad obrazom budushchego [Boris Gryzlov will work on the image of the future]. Kommersant, 145, 3 (in Russ.)

As shown in the table, Sverdlovsk Region is the leader in the Ural Federal District (UFD) by all indicators included in the future readiness ranking. In addition, since the region is placed the third in the future readiness ranking, it can be considered one of the leaders in the all-Russia ranking. Such prestigious place of Sverdlovsk Region was ensured by its fairly high ranks in all three components of FRI. The region ranks third in the Russian Federation in terms of the duration of strategic planning; fifth, in terms of active media support of scientific and technological, innovative, and industrial achievements; sixth, in terms of the technological orientation of regional strategy.

Table

Ranking of the subjects of the Russian Federation included in the UFD by their Future Readiness Index (as of January 1, 2017)

Region	Future Readiness Index		Normalized indicators		
	Rank	Absolute value	Range of the planning horizon of regional strategies for socio-economic development	Technological orientation of regional strategies	Intensity of news about positive achievements in the area of scientific and technological, innovative, and industrial development
Sverdlovsk Region	3	0.5302	0.429	0.548	0.614
Tyumen Region	21	0.2980	0.429	0.181	0.285
Khanty-Mansi Autonomous District — Yugra	25	0.2723	0.429	0.298	0.090
Chelyabinsk Region	41	0.2231	0.143	0.036	0.490
Kurgan Region	60	0.1797	0.143	0.329	0.067
Yamalo-Nenets Autonomous District	73	0.1364	0.143	0.072	0.195

Despite some studies in the area of creating an image of the future, in fact, today, there is no single methodological framework which can be used as the basis for building a view on the image of the future for the state or particular region. At the same time, there are indirect reference points that can be used to build probable versions of the image of the future for a state. Two most common approaches include the approach based on relevant patent information and approach based on qualitative analysis of total wealth and specific characteristics of billionaires in different countries.

The top 100 patent holders of the Russian Federation are presented on the basis of relevant patent information contained in the reports of the World Intellectual Property Organization (WIPO) and the European Patent Office. The specific characteristics of Russia include the fact that the share of patents held by just one entrepreneur has the top place in the ranking (31 %), while the share of Rosatom is 1.75 %, the one of Gazprom is 1.46 %, etc. [15, p. 67]. However, the patent-protected technical solutions of the entrepreneur have nothing to do with the new technological paradigm and represent no breakthrough solution, because all these patents are modified methods of preparing various canned food.

The patent analysis for other countries revealed that Japan is the leader in patents for optical technologies; Germany is the leader in the area of transport vehicles; the US leads in the development of pharmaceuticals; China, in the area of mechanics; while leadership of Russia is confirmed only in the area of food chemistry [15, p. 77]. It is clear that such results in the patent-related activities do not allow to consider Russia as a candidate for the role of a world leader in the development of high-tech, knowledge-intensive production.

The aspects indirectly affecting the image of the future of the country can be revealed by the qualitative analysis of the total wealth and specific characteristics of billionaires in different countries [16]. The analysis by 23 leading countries based on data provided by the Forbes magazine, which has been preparing the ranking of billionaires since 1987, allowed to establish the industry specialization of billionaires. It turned out that the interests of billionaires in Switzerland, China, Germany, India, South Korea, Japan, and France lie in the area of industrial sector and high technology. Billionaires

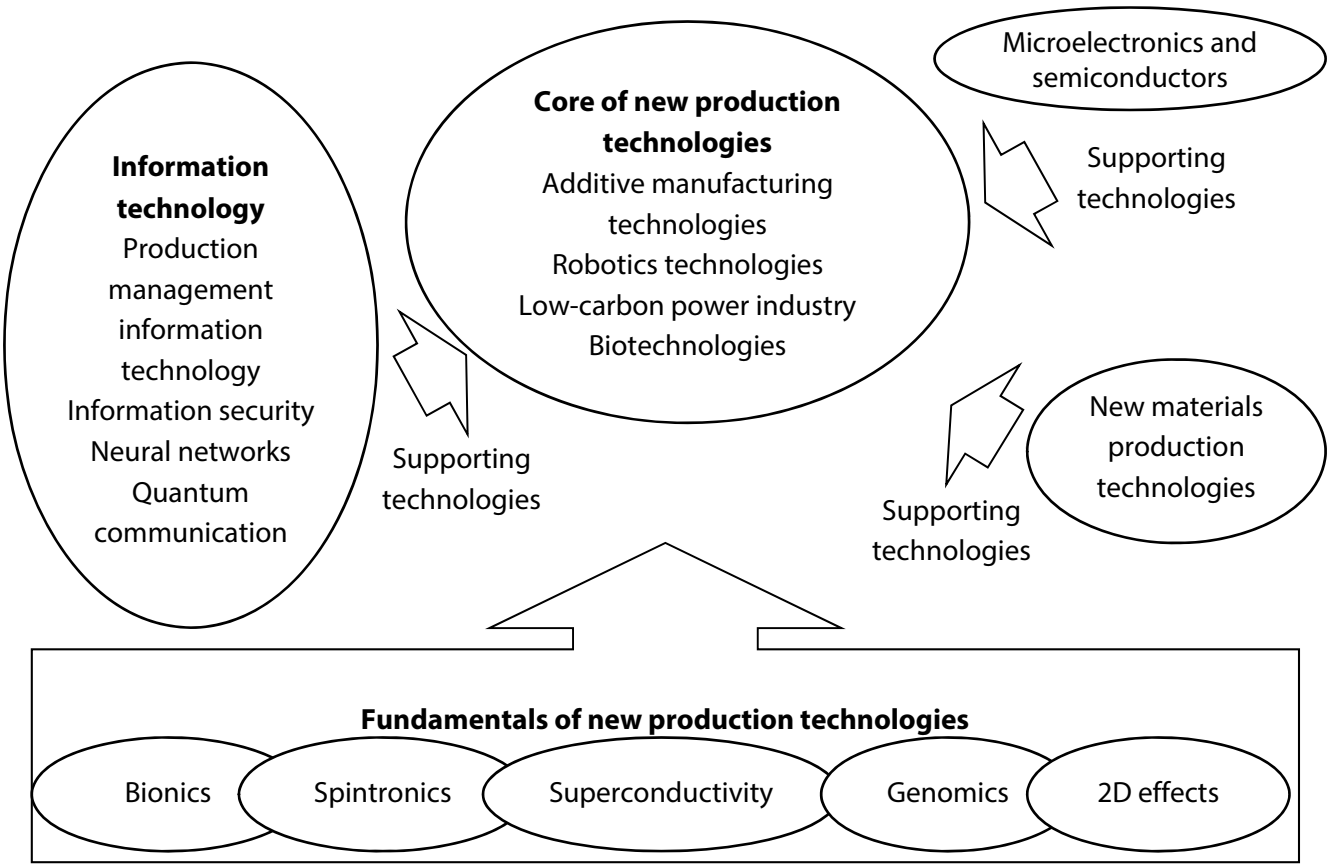

Fig. 1. *Industrial policy as a tool to support new production technologies (Diagram prepared based on Ermak, S. (2017). Ponyat gryadushcheye [Understand the Future]. Expert Urals, 36(739) (in Russ.)*

in the US and the UK made their fortunes in industrial technology and financial activities, while the billionaires from Russia have an unprecedented high orientation on raw materials and substantial orientation on financial activities [16, p. 74].

The studies, where the image of the future is based on identifying new production technologies, represent a significant interest. For example, the Ural Federal University named after the first President of Russia B.N. Yeltsin, together with the Expert-Ural analytical center, conducted a large study to identify new production technologies [17]. The authors established the fundamentals of new production technologies, identified their core and three groups of so-called "supporting technologies" (information technology, microelectronics and semiconductors, new materials production technology), which are necessary for the full-fledged functioning of the core of new technologies. They proposed to determine the demand for new production technologies in two stages. The first stage uses interviewing and analysis of the patent activity of foreign companies and the extrapolation of these results to domestic production facilities to identify the future demand. The second stage estimates the current demand based on four parameters, including bidding procedures; projects under the Russian Government Decree No. 218; projects supported by development institutions; projects under the federal target-oriented program "Research and Development in Priority Areas of Science and Technology Complex of Russia for 2014–2020."

Industrial policy is a key tool to support and stimulate the development of new production technologies listed in Fig. 1. Their stage-by-stage implementation can help to achieve a new image of the industrial complex.

In this area, the Institute of Economics of the Ural Branch of the Russian Academy of Sciences conducted research on generating the image of the future for basic industries of industrial region by using the case of metallurgical complex. A particular aspect of our work was to build a model for variable-based assessment of metallurgy repositioning in the region. This model relies on artificial neural networks and allows to assess the changes in the essential parameters of the metallurgical complex amid the evolving market environment [18].

New industrial policy priorities

A fundamentally new priority declared at the government level is the development of digital economy. It requires substantial clarification in terms of understanding possible mechanisms and tools for implementing the industrial policy. Although it remains advisable to use existing mechanisms such as public-private partnership, etc., it is inevitable that there will be new or adjusted tools of industrial policy that stimulate the development of the digital economy and its infrastructure component. Moreover, it is obvious that the industrial policy aimed at the development of digital economy can be implemented either by direct allocation of resources for these purposes, or by using a variety of economic regulation tools, that is, by creating the so-called "resource endowment" effects, or by a variety of combinations involving these areas of support [19].

The support provided by the industrial policy for the necessary technological breakthrough in the development of national economy will be effective only if the old organizational forms are changed. Today, our economy is mostly copying the generally outdated Western organizational forms, which have been characteristic of passing technological paradigm. This applies to such industrial policy mechanism as the project-based approach as it has proved to be quite a successful mechanism for effectively managing the development of existing technological solutions.[5] However, today's objective is to create new technological solutions, which inevitably involve risks. Therefore, in order to achieve a technological breakthrough, industrial policy priorities should take into account the need to invest in risk-related projects, and make the transition from KPIs to value-based management, from prototypes to life-cycle management and mechanisms of venture-based management, which are the most progressive in today's environment [20].

The Federal Law "On Industrial Policy in the Russian Federation" provides not only for stimulating the industrial activity and priority support to the defense industry, but also for supporting the territorial development of industrial sector. In this regard, it is very important to timely prepare the regions for the digital economy, create necessary conditions for its development there, including the provision of appropriate human resources. The absence of the necessary conditions will not allow to implement the priorities of industrial policy related to digital economy development. A technological breakthrough will be impossible without proactive regulation, which is an important area of industrial policy that ensures the joint work of all branches of government, synchronization with industry-specific programs and innovative development programs, etc. At the same time, there is an increasing relevance of "stand-by management," that is, the creation of functions to accelerate projects and train teams at all levels of government.

In accordance with the priority functional areas [21], the carefully categorized industrial policy tools can be used in the future to adjust the instruments for supporting the digital economy development that are currently regulated by the Federal Law "On Industrial Policy in the Russian Federation." The law provides for five preferred categories of subsidies that may be provided in the industrial sector, state guarantees and preferential loans which are provided on the basis of competitive selection and are target-oriented. Financial support for the industrial sector, including the digital economy, includes the support mechanisms of development institutions (Industrial Development Fund (IDF), Vnesheconombank, RVC, RUSNANO, etc.). These are such tools as grants, loans, credits, participation in the capital, which are determined by the procedure for granting budget subsidies to the relevant institution.

This article highlights new proposals that can be implemented through the support provided by IDF using a new tool stipulated by the Federal Law "On Industrial Policy in the Russian Federation" (2014). IDF was the most successful tool of the state industrial policy for the effective development of industrial sector [22]. IDF concluded 72 cooperation agreements with the regions. The most active participants of that cooperation are Moscow Region (16 agreements), Moscow city (13 %), and Sverdlovsk Region (10). 24 regional IDFs have been established so far. Their activities are regulated by agreements with the federal Fund [11, p. 22].

The Industrial Development Fund supports various branches of industrial sector. The largest share is held by machine engineering, where 51 projects were financed for a total of 11.23 billion rubles. The second largest share is held by medical and biopharmaceutical industry with 22 funded projects for the

[5] The Agency of Strategic Initiatives has identified three priorities in education and training for the Digital Economy in Russia, March 7, 2018. Retrieved from: https://asi.ru/news/89818/ (date of access: May 24, 2018). (In Russ.)

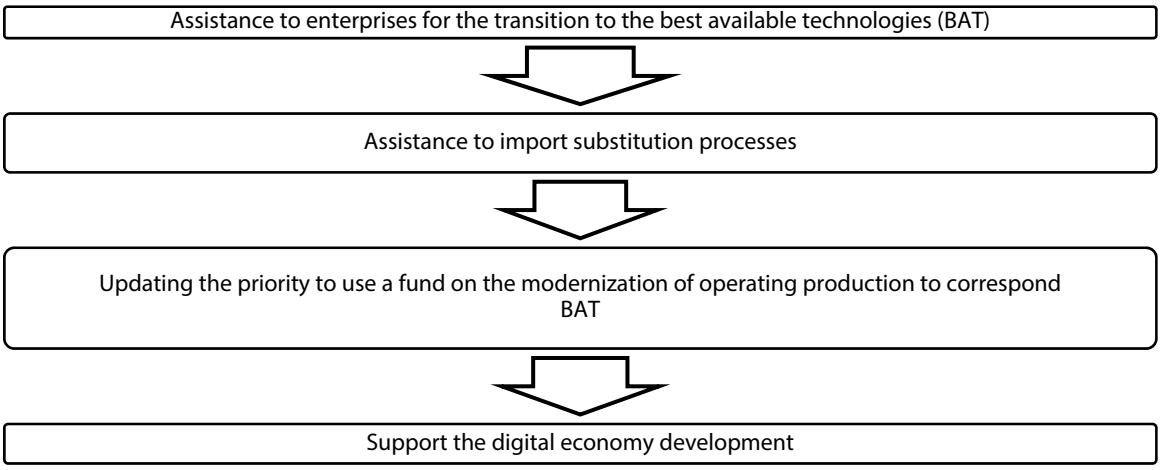

Fig. 2. *Changing priorities for support provided via the Industrial Development Fund*

total amount of 5.56 billion rubles; the third largest share is held by metallurgical industry (18 projects in the amount of 3.98 billion) [23, p. 54].

Therefore, IDF is a rather effective tool for supporting high-tech branches of the industrial sector and modernizing its traditional branches. However, there were quite often changes in the priorities of industrial policy and, hence, the areas for using this Fund. Initially, the Fund was established to support the modernization of domestic industrial enterprises, which implied that they had to achieve performance corresponding to the Best Available Technology (BAT) indicators. Such conformity is a mandatory requirement of the Organization for Economic Cooperation and Development. The transition of the Russian industrial sector to the activities based on the principles of BAT was stipulated by the Federal Law "On Environmental Protection" as early as in 2014, but the main mechanisms for the implementation of BAT should start operating in 2019. The change in the geopolitical situation led to the new priorities associated with the development of import substitution. At the same time, international experience shows that the success of industrial policy increases if it is export-oriented. In this case, it is particularly important to support not just all exports but the exports associated with the greatest externalities [24, p. 187]. In addition, we believe that, in this work, it is important to consistently support a branch or specific industry, even if there is no immediate success, because it can emerge as a result of "learning by doing" [24, p. 188].

The approaching year of 2019 again made it relevant to prioritize the use of IDF funds for the modernization of existing production facilities so that they correspond to the best available technology. However, as it was noted in the Address of the President of the Russian Federation to the Federal Assembly on March 1, 2018, only 300 industrial enterprises with the most negative impact on the environment must switch to BAT from 2019; while all enterprises with high risk for the environment have to do that only from 2021. However, the approval of the list of three hundred most environmentally hazardous facilities is not completed. Based on the objective criteria, this list should include sites that contribute no less than 60 % to the total emissions and discharges of pollutants in the Russian Federation. According to the Russian Ministry of Industry and Trade, the investments related to the transition to the Best Available Technology are 8–9 trillion rubles, which is comparable to half of all investments made in 2017.

It is expected that the reform of environmental regulation should ensure an investment and technological breakthrough by accelerating the annual growth rate of investments by about 6 %[6]. Stricter requirements for compliance with environmental restrictions required yet another adjustment for the priority of support measures provided via the Industrial Development Fund. But in the current situation, when the digital economy development was proclaimed by the Russian President to be the issue of national security, there are already proposals to support new priorities (Fig. 2).

"Digital transformation of industrial sector" is inevitably accompanied by new business models and, in many sectors, changes the priority of selling products to a new priority of providing services.

[6] Shapovalov, A., Nikitina, O., Dzhumaylo, A., Kozlov, D. & Skorlygina N. (2018, April 5). Ochistnaya kompaniya [A Cleanup Campaign]. Kommersant, 58, 2 (in Russ.)

Among the seven priorities identified in the Strategy for Scientific and Technological Development of the Russian Federation, the transition to digital technology, robotic systems, big data systems, artificial intelligence, and new materials are in the first place.[7]

Proposals for supporting new priorities via the Industrial Development Fund can be categorized as follows:

— Creating an integrated system to finance projects for the development and implementation of digital technology and platform-based solutions;

— Building the mechanism for reconfiguring the tool to subsidize pilot batches of equipment by shifting emphasis on digitalization tasks;

— Clarifying the list of software, the acquisition of which is subsidized by the Russian Ministry of Industry and Trade;

— Allocating subsidies to build an HR training system designed to teach the basics of productivity improvement, including through the use of digital technology and platform-based solutions;

— Expanding support measures for software products required for industrial Internet technologies;

— Providing preferential loans at 1 % p.a. for IoT technology projects;

— Building regulatory framework for digital economy.

In addition to the Industrial Development Fund, a special place among the industrial policy tools introduced into economic practice by the Federal Law "On Industrial Policy in the Russian Federation" is held by special investment contracts, a new tool to support priority industrial development areas. The practice of its application has been quite effective. About 150 billion rubles have been invested in the Russian economy through projects supported by special investment contracts. This allowed to create about 5,000 new jobs [23, p. 55]. This tool can also be used to achieve the goals defined in the Program for the Development of Digital Economy of the Russian Federation. Of course, there is a need to make some adjustments that allow to use special investment contracts in this area. In particular, given the need for long-term investments in the projects for digital economy development, it is advisable to increase their duration by 1.5–2.0 times, that is, from 10 to 15–20 years. It is also advisable to expand the list of potential participants in these contracts. Given the situation in both national and regional domestic markets, which does not stimulate consumers of high-tech products, it is advisable to develop a mechanism that guarantees the demand for products manufactured under the state orders made within special investment contracts.

An additional tax incentive was introduced from 2018. It may be used by the subjects of the Russian Federation as a tax benefit. This includes a new format of the special investment contract which establishes, for large investors who invested more than a billion rubles in the projects, special terms providing for stability of tax laws, infrastructure solutions, as well as preferential tax treatment [25, p. 4].

Supporting provision of human resources for the digital economy. Currently, the Russian IT sector employs about 400 thousand people. However, this absolutely does not cover the needs of the sector in the required specialists. There are virtually no data scientists in Russia. Under the program "Digital Economy of the Russian Federation," the Agency of Strategic Initiatives, as a competence center for Human Resources and Education, has identified three important areas that should address the issue of providing human resources with necessary skills for the Russian economy. These include the issue of personal digital certificates (that is, funds provided by the state to the population for acquiring key competencies of the digital economy); doubling student enrollment for IT professions in the next five years; and supporting startups aimed at developing technological solutions and services for training people in new required competencies[8].

Target and subject of industrial policy

It is natural that the "digital transformation of industry," an initiative widely discussed at the World Economic Forum in Davos in 2015–2017, radically changes the idea of the target and subjects of industrial policy. The transition of economic entities to operations in digital format allows to use

[7] On the Strategy of Scientific and Technological Development of the Russian Federation. Decree of the President of the Russian Federation No. 642 of December 1, 2016. Retrieved from: http://www.consultant.ru/law/hotdocs/48053.html (date of access: January 26, 2018).

[8] The Agency of Strategic Initiatives has identified three priorities in education and training for the Digital Economy in Russia, March 7, 2018. Retrieved from: https://asi.ru/news/89818/ (date of access: May 24, 2018). (In Russ.)

network effects for creating such an effective model of activity as a platform. While the third industrial revolution was characterized by the emergence of purely digital platforms, the peculiarity of the fourth industrial revolution is the emergence of global platforms closely related to the physical world. Platform strategy is very promising. In terms of their total market value of brands in the second decade of the 21st century, 14 out of 30 largest companies operated in the platform-based format[9]. Potential business areas, as well as operational models that would allow a more efficient use of opportunities provided by the fourth industrial revolution, are considered within that initiative.

Modern technology development trends that transform traditional business environment bring about inevitable changes to the very form of organizational structures [26]. The most successful will be those organizations that will be able to move from a hierarchical structure to the models defined by a network-based cooperation and interactions, which also fundamentally changes the target of industrial policy. While traditional targets were considered as the economy as a whole or its separate sectors, such as the industrial sector, and as the processes in the formation of a favorable institutional and business environment, etc., amid the fourth industrial revolution, the targets of industrial policy are the entities based on other type of business models. These business models are based on digitalization and aimed at users who are constantly on the network. These could be technological platforms described above (as a special type of business model) and built on the principles of network centricity creating business ecosystems, stable network production and service systems, etc. In other words, the new targets of industrial policy are the so-called "related industries," which represent the combination of things, people, and technologies in the industrial system. The multiplied importance of the role played by humans in the fourth industrial revolution, when knowledge, competence, and skills are the main factor of development, makes human needs the main reference point for the development of economy in the world. This is yet another factor that determines the new target of industrial policy.

The state is traditionally viewed as the main subject of industrial policy, and the extent of its participation in the formation and implementation of this policy is determined by whether the country has a dirigiste or liberal model of economic development. It is obvious that, in today's Russia, the state continues to be the main subject of industrial policy. At the same time, it is certainly necessary to improve the system of collaboration between the federal and regional authorities, on the one hand, and various business associations and civil society institutions, on the other, in the area of modern industrial policy, which determines its multi-subject nature.

Responsible leadership in the preparation and implementation of industrial policy

The fundamental feature of the fourth industrial revolution is the situation when, regardless of the priorities set for industrial policy, the main recipients of the dividends provided by the revolution are suppliers of intellectual or physical capital. This situation contributes to a growing gap in the well-being of those who own capital and those who live according to their labor compensation. A number of similar situations in the area of growing inequality that accompanies the achievements of the fourth industrial revolution makes relevant the public concern over potential adverse social and ethical effects of business activities in the implementation of new digital technology.

It could be noted that the issues of social responsibility for businesses and improvement of business ethics have been studied for a long time. However, one of the early works by A. Smith [27], where he had comprehensively studied the issue of moral principles in economics, was left outside the scientific interests of specialists in this area. Moreover, this work was written before the publication of the famous work on the nature and causes of the wealth of nations.

The implementation of industrial policy priorities in the context of the fourth industrial revolution makes special demands on the leaders of the government and businesses. In a rapidly changing world, modern leaders should have a strategic vision, that is, see what is not visible to traditional leaders, ability to lead people within this vision, and willingness to manage change, which implies (among other things) the ability to adapt to the rapidly changing business environment. For a modern leader implementing the industrial policy priorities, the ability and willingness to cooperate with all those involved in the common process become very important. According to Martin Nowak, professor of mathematics and biology at Harvard University, cooperation is "the only thing that will save humankind" [28].

[9] MIT Sloan Executive Education's program. Retrieved from: https://executive.mit.edu/blog/the-ups-and-downs-of-dynamic-pricing#.WeXRwtSLTGg/ (date of access: March 23, 2018). (In Russ.)

To fully consider the changes imposed by the fourth industrial revolution, we need to increase the role of new leaders in business, government, science, civil society, young generation as co-actors in assessing the ongoing changes and identifying new industrial policy priorities, the implementation of which can lead to the desired positive changes. Successful approaches to the implementation of modern industrial policy priorities can be based only on a holistic, flexible, and adaptive policy of leaders that allows to integrate a variety of interests and opinions. New leaders must be more active agents of change and show more innovation in various activities. The risk of failing to cope with a number of problems generated by the fourth industrial revolution raises the need for trust to a new level, which increases the extent of inclusiveness in the development of society, team work, and universal involvement in the implementation of agreed industrial policy priorities.

Conclusion

As a system of responsible relations between government and businesses, the industrial policy is designed to stimulate the dynamically changing priorities of technological development. Targeted adjustment of industrial policy tools will allow to use them for raising the attractiveness of digital economy in the eyes of businesses and society, and neutralizing negative social and ethical effects of its implementation. Industrial policy can be successful only when there is a clear reference point for achieving long-term development goals and consistent support for declared priorities. However, high level of dynamism observed in the modern period and the emergence of many highly unpredictable new trends in technological development make it advisable to also test a somewhat different approach to the selection of priorities supported by the industrial policy. Today, an attractive approach may be the policy of "pilots" which makes it more advisable to timely abandon the implementation of a particular area in case of promising new ideas generated by emerging radical technological innovation. But most important is the fact that undeniable economic benefits of digital economy should be combined with the priority of factors having a positive impact on individual, as this allows to reduce the risks associated with the fourth industrial revolution.

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