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INNOVATION AND TECHNOLOGICAL DEVELOPMENT OF INDUSTRIAL REGIONS UNDER SOCIAL AND ECONOMIC INSECURITY

The article is devoted to the identification of the characteristics and priorities of innovation and technological development in the industrial regions of the Russian Federation in the context of the ongoing global crisis. The authors come from the hypothesis that, in these circumstances, the strategy of innovative development of industrial regions, in order to ensure their sustainability and the creation of conditions for further growth, should be an integral part of their industrial policies and focus primarily on the modernization and improvement of technical and technological level of basic units.

On the basis of the analysis of statistical data about the status of the innovation capacity in the Russian Federation the authors identified root causes of the continuing backlog of advanced foreign countries by level of innovative development (installation on raw-material orientation of the Russian economy that enhances both the technological dependence of the developed countries; insufficient financial support for innovation activities by the State; the orientation of innovation in imitation and borrowing).

There is founded the necessity to take into account in the formulation and implementation of the socio-economic strategic regions of the Russian Federation and the close relationship between the industrial-technological and innovation component of social development. In order to improve the effectiveness of regional development policies classification of Russian regions to take account of their industrial and technological specialization and identifies required elements and characteristics of effective innovation systems for each type of region.

In this article were determined proposals on measures of State support for innovation development of industrial regions, with the aim of improving their sustainability and competitiveness in the face of geopolitical and economic uncertainty.

The article is addressed to professionals in the field of theory and practice in the management of innovative processes.

Keywords: innovation and technological development, innovation policy, industrial region, region innovation system.

In the context of the second wave of global crisis which was triggered by unflagging hostilities in Ukraine and the continuing collapse in oil prices it becomes crucial for Russia to find an answer to the challenging task of choosing and implementing an optimal development strategy to assure the safety and stability of the socio-economic system. The severity of socio-economic situation in Russia in the nearest term is confirmed by a recent forecast made by International Monetary Fund in its World Economic Outlook report published on the organization's official website. It shows that in 2015 the Russian economy is expected to decline by 3 %, while in most Western European countries economic growth rate is expected to reach 3–3.5 % [1].

A particularly important aspect in the determination of the strategic guidelines is the search of the key link in the chain of interconnected elements that can give the required impact for stabilization, and then overcome the destructive processes that are visible in the discernible decline in manufacture, expected unemployment, rising prices and falling living standards. Today such key element is the boost to the innovation processes, which will contribute to the revival and modernization of the economy. According to the authors, in today's context, when a significant part of production in Russia is based on the equipment and technologies inherent to the Third and Fourth Waves of Innovation[1], it is especially important for the country to introduce innovations that target intensive modernization of manufacturing industries. Innovations become an effective development tool when they are instrumental in the solution of urgent social and economic problems.

[1] Meanwhile the industrialized world is enjoying the Sixth Wave of Innovation, when information is used in industrial production to arrange processes, which involves continuous updating of the entire life cycle of any product based on the feedback from the market, and where the standards of "electronic description" of products are introduced. All this contributes to the establishment of a unified computer technology that includes improved manufacturing methods, enhanced sales? and after-sales service mechanisms and schemes [2].

The exacerbation of Russia's technological backwardness as a consequence of the global crisis

The exacerbation of the global financial crisis and the growing geopolitical tension observed today have once again clearly proved the futility of Russia's current economic policy focused mainly on the exploitation of natural raw materials. But unfortunately, the first wave of the global crisis, which was also accompanied by the collapse in energy prices, did not teach the Russian Federation an important lesson and did not bring about the reorientation of the Russian economy towards active involvement and intensive use of innovative development tools.

It should be noted that in 2014 Russia has significantly improved its position among the 142 countries ranked by the Global Innovation Index[2], moving up from the 62th place in the previous year to the 49th, so that now it is ranked in between Thailand (48) and Greece (50). This breakthrough was due to the growth of such indicators as quality of human capital (30th place), the state of business (43), and the development of knowledge and technology (34). However, according to the data of INSEAD International Business School (France), innovative development of the Russian Federation is hindered by imperfect institutions (88th place), poor performance in creative activity (72), and in the development of the domestic market (111) [3].

Switzerland remains leader in terms of innovation, followed by the UK, Sweden, Finland, the Netherlands, the United States, Singapore, Denmark, Luxembourg and Hong Kong. At the same time countries with the best innovation indicators also demonstrate enviable economic stability, which is not the case for Russia.

Russia lags far behind most European countries in terms of both quantitative and qualitative indicators of innovative activity (Table 1).

Thus, in Russia the proportion of organizations that are involved in innovative activity is barely above 10 %, whereas in the developed countries their number is approximately in 5–8 times higher. At the same time, the share of organizations that work on technological innovation in the total number

Table 1

International comparisons in terms of innovative activity, 2012, %

Indicators	Russia	Germany	Canada	Sweden	Finland	France	Czech Republic
1. The aggregate level of innovative activity of organizations	10.3	79.3	75.8	59.6	56.2	53.5	51.7
2. Share of organizations involved in technological innovation in the total number of organizations	9.1	64.2	58.1	48.5	46.4	34.3	34.8
3. Share of organizations who got funds from the public budget	23.1	21.6	53.2	n / a	36.1	46.1	24
4. Share of new works and services introduced into the market (% of total goods shipped)	1.3	3.7	n / a	4.2	8.4	3.5	7.4

Compilation based on [4, p. 444, 446, 448, 450, 455].

of organizations in Russia has not even reached 10 %. Naturally, the level of innovative activity in the leading countries is also substantially higher than the level reached by Russian enterprises. In particular, Russia's share of fundamentally new products is three times lower than the value for Germany or Sweden, and 6.5 times lower than that of Finland.

The export of technologies from the Russian Federation is currently 87 times lower than from Germany, 70 times lower than from Britain, 30 times lower than from Sweden, and 15 times lower than from Finland [4, p. 455, 457], [5, p. 392]. Such low level of export of technologies is a direct consequence of the degradation of science and innovation sector of the country.

It is significant, that the United States and other countries, understanding the importance of innovative resources as a driver of modern socio-economic development, continue to increase the funding of science, technology and innovation despite the global crisis. For example, in 2012 the United States allocated about USD 33 bn for fundamental research, which is almost 12 % more than

[2] The Global Innovation Index covers 80 different indicators that provide a detailed characteristic of the innovative development of the countries of the world. The index is calculated as a weighted sum of scores gained in two groups of indicators: Resources available and the conditions for innovation (Innovation Input) and actual achievements in the sphere of implementation of innovations (Innovation Output).

in 2010 [6]. As for Russia, the country is still reluctant to invest into science and innovation. Today Russia's domestic expenditure for research and development (% of GDP) is 3–4 times lower than in the leading countries (Israel, Finland, Sweden, Japan), being at the same level with that of Ukraine, Turkey, and Poland, i.e. countries that have never had a very high scientific, technical and innovative potential [7, p. 392].

We have to admit that currently there are virtually no prerequisites in Russia for the preservation and reproduction of the innovative potential beyond the public sector of economy. As a matter of fact today, in the same way as it used to be in the Soviet times the innovative activities that do not consist of imitation and borrowing ideas but involve the creation of new technologies and solutions are concentrated mainly in the military industry complex and are hardly noticeable in the civilian sector. As for the latter, modernization of the production base and the range of products is mainly achieved not by development and implementation of own innovations but by purchasing foreign equipment and technologies or due to the establishment of assembly units of foreign companies in the region.

The reasons for the stagnation in production and technological sphere

This situation is determined, above all, by the economic structure that has survived since the Soviet era, in particular, by the dominance of monopolies, as well as the presence of a strong lobby of the resource sector in the top echelons of power, which has led to the fact that fuels mining and processing, the production of coke and refined petroleum are currently far ahead in terms of profitability in comparison to all the other industries. Thus, the balanced financial result of the activity of engineering industries for 10,000 of current employees is only 3 % of the corresponding figure for companies that extract fuels. This, in its turn, leads to the sector-wise investment structure that is extremely unfavorable for the development of innovation. Today, the specific costs of technological innovations in the group of high-tech and medium-tech industries of the high level in the Russian Federation is several times lower than in the oil and gas production (in mechanical engineering these costs are almost 9 times lower, and in the manufacture of electronic and optical equipment 2.6 times lower, calculated on the basis of [8, p. 545, 572], [9, p. 222–223], [10, p. 103–107]).

However, the world practice shows that investment in innovative activity is one of the necessary prerequisites for today's socio-economic development, as well as today's innovation is a tool for solving the tasks that are vital for regional socio-economic systems, such as the modernization of production; increase of its R&D intensity and competitiveness; developing effective modern hi-tech sectors and industries; preservation and development of the existing scientific, technical, and technological potential; import substitution; attracting investments to the regions; narrowing the gap between regions in terms of their socio-economic development [11, p. 160].

For example, it is well known, that as early as in the 1970s — 1980s a number of countries including Germany, Britain, and France used innovative infrastructure as a mechanism for overcoming the economic crisis. The implementation of this mechanism results in the development of a progressive innovation sector, promotes economic growth? and leads to the creation of hundreds of thousands of workplaces. For example, in Germany knowledge-intensive industries are developing rapidly, employing nearly 2.5 million people (40 % of all the industrial employees). An important role in the development of the high-tech sector in the country belongs to innovative complexes. Thus, the industrial park "Berlin Adlershof", created in 1991, turned into the largest European innovation center 15 years later, bringing together 12 research institutes, 6 institutes of Humboldt University and more than 500 companies specializing in the field of information, bio- and optical technologies, and in new materials [12].

Thus, international practice clearly shows that tech parks and other objects of innovation infrastructure are the "points of growth", which set the tone and pace to the modern socio-economic development, contribute to the formation of innovation sector, boost competitiveness, create new workplaces.

The situation in Russia is different. According to expert estimations, during the years of reforms Russia has lost more than 300 critical technologies. Not much new technologies are developed in the country. Mechanical engineering is the key sector responsible for the condition of the country's industrial base and its technical and technological security, and today, due to the deterioration of the international situation, this is particularly important. Meanwhile in Russia mechanical engineering has been greatly destroyed. Thus, the total depreciation of equipment in the machine tool industry

has reached 80 % and the production of machine tools in the country has decreased by almost 20 times over the past 20 years (from 70,000 to 3,000), with about 50,000 machines being withdrawn from industrial use annually, according to expert estimations [13].

It is well known that the role of innovation factors in ensuring competitiveness depends much on the knowledge-intensity rate of the particular type of business. While a group of high-tech industries absolutely must have their our own exclusive developments and technologies, which predetermines the survival of these enterprises, the resource-extracting industries only need to support innovative activities at the level that keeps them in the general technological trend of their industry. If we consider the above-mentioned facts, it becomes even more obvious that the unawareness of the importance of innovations, that is characteristic for Russia, is unacceptable, and that such unawareness could have harmful consequences for the country's economy.

It is a telling fact that, according to opinion polls, more than 80 % of the teaching staff of Russian universities and Russian students are pessimistic about the likelihood of Russia's rejoining industrialized countries in the foreseeable future [14, p.102]. And this, in turn, largely determines the career priorities and life strategies of the most active and higher-qualified part of our society.

Unfortunately, we have to admit that in modern Russia it is currently quite unlikely that the existing potential of innovations and potential of improving the competitiveness and sustainability of economy will be achieved, while the effectiveness of that potential is clearly demonstrated by the experience of countries that have chosen the innovative development paradigm as their strategic guideline. It seems that the strategy of innovative development will be applicable only in a narrow range of selected areas, and even there it will only be implemented if the state provides active support to innovative processes. If the situation does not change and both high-tech machine engineering companies and oil and gas companies are treated equally in terms of the general economic conditions, their access to state financial and political support and the state budget will remain the main source of funding for research and for the development of production technologies, equipment and supplies with a high degree of innovation and technical excellence. As a result, any significant impact of the innovation component upon regional development will be possible mainly in the areas of high scientific and educational potential (Moscow, St. Petersburg, other major cities such as regional and republican centers in long-inhabited territories), as well as the residential entities where a significant share of jobs is traditionally provided by the companies of the defense industry.

It is possible that the factor that can be instrumental in the restoration of the manufacturing industry of the Russian Federation and revitalization of innovation is the introduction of restrictions on the purchase of foreign products, first of all, machinery, equipment, and products of high-tech industries. However, this can happen, if the prohibition for the procurement of imported goods by public companies, which have no analogues in Russia, should be long-term. In addition, it is not a secret that most of European and American companies, that are widely represented in our market today, have well-established production facilities in the South-East, which allows them to transfer the products without dealing with the countries that are subject to sanctions.

The measures, that are proposed today to stabilize the socio-economic situation, are clearly insufficient and most importantly inadequate to the challenges, that the Russian economy is facing today, in particular the recovery of the manufacturing sector and lower dependence on foreign manufacturers in respect of the items that are crucial for the technical and technological security of the country, as it is required in the context of increasing tension in the international relationships.

The problem of determining priorities for the innovative strategy in the context of geopolitical and economic volatility

In today's challenging economic and political conditions it is believed that the real way to reduce the socio-economic instability has to be based on the development and implementation of the state innovation policy, that should focus on the close interrelationship and interdependence between the industrial/technological and innovative components of social development.

This is the approach that will help to build an effective strategy for innovative development in Russia and to establish an efficient national innovation system, which will take into account the production and technological capabilities of different types of regions and will promote the development of modern high-tech industries based on the potential and the needs of a particular region. Otherwise, the technological backwardness of the Russian economy will continue to increase, and Russia will be

increasingly more dependent on the developed countries with its status in the international community further declining [15, p. 16].

The priorities of the innovation strategy should be based on the fact that each type of production development of a region corresponds to a certain level of innovation system development that such region requires, i.e. the level that can provide a solution to at least basic innovation-dependent technical, technological and socio-economic problems involved in maintaining the competitiveness of the territory, based on the potential of the region, the objectives and ambitions of the state and the business community, as well as the state of industry in the context of increasing globalization. The bigger the share of high-tech industries is in the economic structure of the region, the more its economy depends on the level of the scientific and innovative potential of the territory and the more the local business community requires from the innovation system in terms of its ability to produce innovation. The reasons are quite clear: for high-tech industries continuous improvement is a key condition for their survival in the context of record-high competition for markets, whereas for resource extraction sectors this is rather an auxiliary factor, which is mainly involved in supporting adaptive functions.

At the same time, the innovative system as an integral part of the regional socio-economic organism has specific features related to the industrial profile of the region, which inevitably has its distinctive influence not only upon the economy, but also upon the overall social and cultural background of the region, and largely determines the status of the innovation potential of the territory, as well as the opportunities for its implementation. The growth of high-tech sector of the economy stimulates human capital enhancement and naturally extends the niches for innovation activities. The situation is different in the regions which had their economy focused mainly on resource extraction for a long time. In these regions it is the status of human potential that often becomes one of the major constraints to the development of the innovative system.

The connection between the industrial/technological and innovative components is the basis for an effective socio-economic development strategy

Figure 1 schematically presents the relationship between production and technical and innovative components of social development. It allows to make a more substantiated choice of the most effective and innovative systems for a specific region with due account for the characteristics of the current situation in its economy and suggested options for its further development.

Experience has shown that the higher the concentration of high-tech industries in the region, the more resilience of its economy depends on the ability of the innovation system to produce at the proper moments original and practically significant developments with a high degree of originality and hence

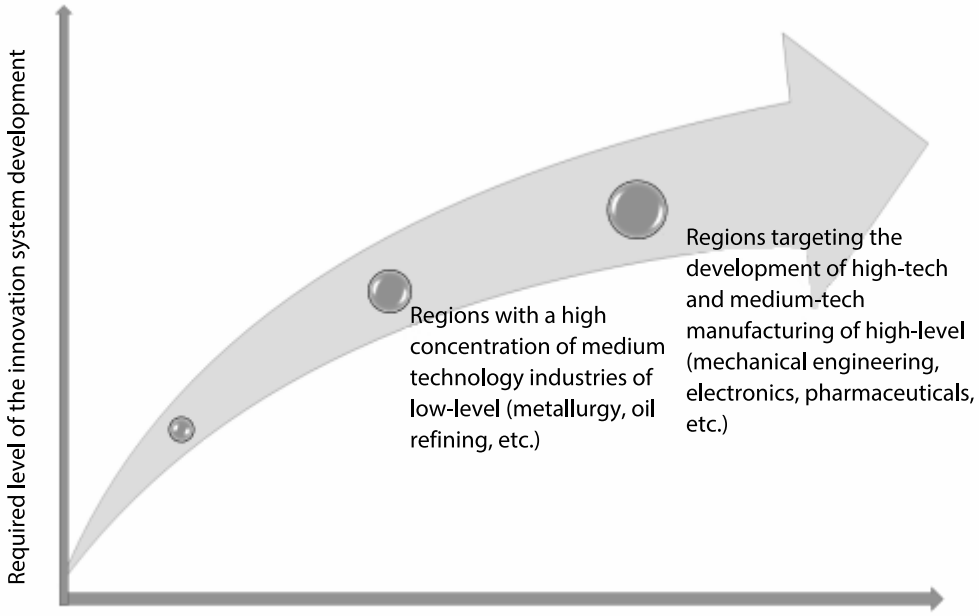

Fig. 1. *The relationship between the production/technology type of the region and the level of the innovation system development*

on the comprehensive nature and the level of development of the innovation system. On the other hand, as the innovative activity is inherently entrepreneurial, the opportunities for the development of the innovation system are largely predetermined by the demand for innovation in the manufacturing sector, the level of its receptibility to innovation and the structure of its effective demand.

Due to the need to provide resilience the work on the solution of the problems of the state governance over the social and economic processes has to provide conditions for the formation of regional innovation systems that would be as compatible as possible with the desired (intended) type of the production and technological type of the territory.

Given the fundamentally different needs in innovation of the regions with various degree of knowledge-intensity in its industries in terms of its scope and quality and as a consequence significant differences in the organization of innovation component of resilience of these areas, we identify three main types of regions that are the most characteristic for the Russian Federation:

1) regions with a high concentration of high-tech industries;

2) medium-tech regions of low level (for example, metal industry);

3) regions dominated by resource extraction industries.

The analysis of the interaction of industrial, technological and innovation development of the area makes it possible to determine the characteristics of innovation systems that would be the most suitable for the predominant production and technological types of Russian regions in terms of ensuring favorable prospects for their development (Table 2).

Given the specific nature of the regions with the predominance of high-tech industries, innovation as a resource to increase their resilience should be aimed at the creation of breakthrough innovations in the priority areas of science and technology, as well as at the development of domestic counterparts to the newest foreign developments.

The orientation to the creation of innovations with a high level of scientific novelty determines the basic contours of innovation systems that are recommended for establishment in these areas. They must ensure a complete cycle of research in the widest possible range of areas, with a particular focus on the fundamental sciences. This requires a significant increase in budgetary expenditures on research, which should eventually be brought up to the level of developed countries, and on staff training. It is recommended to create specialized applied research centers of a complex type, which should include units engaged in applied research and development, as well as in the release of small lots of original equipment and devices. This form of work represents a global trend in the organization of the work of companies specialized in the provision of engineering services.

It allows to increase the competitiveness of these firms by providing them with exclusive equipment that is tailor-made for the technological specifics of the customer enterprise and creates the best conditions for the implementation of R&D results in the form of products that may be of interest for the manufacturing sector and their promotion to the consumer. In general, this process has already started in Russia. Thus, according to the results of a poll conducted by the authors in the Sverdlovsk region, more than 60 % of the heads of applied scientific organizations determine the type of their organization as a complex one. However, their transition to a full cycle of engineering services (from exploration to turnkey delivery of the product to the customer), which is practiced by most foreign firms, is prevented by the extremely high interest rates on loans set by the Russian banks and unreasonably high level of tax liabilities. None of the civilized countries establishes equal taxes for oil companies and design organizations, knowing that to do so would mean losing the latter.

In the regions where the prevailing type of companies are medium-technology company manufactures of a low level, the main priority in innovation is given to innovations that are aimed primarily at the implementation of the necessary modernization and increasing the science intensity of industries.

It is worth taking into consideration that the leading manufacturing enterprises of the Russian regions included in this group are typically large monopolies that are the main employers in the corresponding city or town, which makes it difficult for innovative businesses to emerge in the territories of such big companies if they are not affiliated to them and not focused on services provision for such companies. As a consequence, to work out the ways to make these regions resilient it is necessary to base such solutions on a reduced model of the innovation system.

Table 2

The specific features of the development strategy of the innovative system in a region depending on its industrial and technological type

The Type of the Region in Terms of Production and Technology		
Dominated by knowledge-intensive and high-tech industries	**Dominated by medium-level technology low-level manufacturing enterprises**	**Dominated by resource extraction industries**
The mission of the regional innovation system		
Consolidation of the region's position as a leader in advanced research and high technology, the establishment of scientific and technological context for the solution of the problems of import substitution and increasing the technological security of the country	Creation of scientific and technical and human resources-based prerequisites for the development and adoption of new production technologies and timely modernization of the industries	Enhancement of the receptibility of production and socio-economic environment to innovation
The key elements and features of the regional innovation system		
1. The presence of leading scientific schools in the field of fundamental studies, as well as applied research centers. 2. Classical universities and technical colleges where students get in-depth theoretical knowledge base. 3. Developed network of research and pilot production units and organizations at industrial enterprises. 4. Significant potential for the development of small business innovation and mainstreaming of innovative scientific and technological solutions	1. Scientific organizations mainly specialize in applied areas. 2. Predominance of technical universities and higher education institutions. 3. Pilot production units of industrial enterprises intended for the creation of medium-level innovations. 4. High barriers of the market entry for innovative companies that are not related to the main companies of the region	1. Scientific production and development organizations. 2. Technical colleges with a relatively narrow range of specialisms. 3. Pilot production and commissioning services at enterprises. 4. Poor opportunities for innovative businesses to survive
Priority measures of state support		
1. Increased budget spending on fundamental and applied research on breakthrough and promising areas of science and technology. 2. Provide tax benefits for research organizations and enterprises engaged in breakthrough research in science and technology. 3. Development of a network of multidisciplinary innovation centers and other facilities of the innovation infrastructure aimed at the creation of technologies and products with a high level of innovation. 4. Reducing the tax burden for small innovative businesses	1. Increase the share of R&D expenditures focused on the solution of technological problems that are relevant for the core industries. 2. Tax benefits for research and innovative organizations working in the spheres that are top priority for the region. 3. Development of innovation centers and technology transfer centers corresponding to the specialization of the region	1. Support for research and development aimed at the discovery and restoration of natural resources and raw materials, as well as at technological modernization. 2. Providing tax benefits to small innovative businesses. 3. Development of public and private support for small innovative business and innovative projects
Expected socio-economic results		
1. Preservation and development of the research potential of the Russian Federation as a basis for the social and economic stability of the system. 2. Consolidation of the position in high technology products and services at the global markets, promote the growth of exports of high-tech products. 3. Bridging the gap between Russia and economically developed countries in terms of technological development. 4. Lower technological dependence on foreign suppliers	1. Creation of favorable conditions for technological modernization and diversification of production. 2. Improving the quality and competitiveness of the products. 3. Growth of innovative activity in the region. 4. Industries become less taxing on the local environment	1. Growth of the region's readiness to introduce innovations. 2. Enhancement of the technological level of resource industries. 3. Ensuring environmental safety

Translation

As for the regions where resource extraction prevails, the strategic goal for the development of an innovative system is to increase the level of innovation sensibility of production and that of the socio-economic environment.

As the conducted analysis shows, the extremely depressed state of innovative processes that is currently observed in the Russian Federation is mainly due to general economic causes. Therefore, it is impossible to give a true momentum to innovative activity in Russia today by measures that are addressed exclusively to subjects of innovative entrepreneurship.

Unfortunately, the government is not ready to take decisive actions to improve the situation and prefers half-measures, which are a priori incapable of getting innovative processes in Russia off the ground.

For instance, one of the recent Government initiatives was to adopt the state program for industry development and improvement of its competitiveness [16]. To their credit, the authors of the program have no illusions regarding the effectiveness of the measures they propose. For example, in the evaluation of the expected efficiency (see p. 75 of the Program) it is indicated that as a result of the implementation of the program the share of industries that are the subject to it (including automotive industry, machine-tool industry, machine engineering for heavy industry, transport and agriculture, light industry, defense industry? and a number of others) the country's GDP will increase from 5.5 % to 5.7 % (i.e. the expected growth is at the level of the statistical error). There is no reason to expect a better result, taking into account that the main part of the annual state budget expenditures of RUB 120–160 billion goes to automotive industry (in other words, to maintain the VAZ company, which is just a tactical move to reduce social tension in the region). In the structure of the total expenses of the federal budget for the program that are provided for its entire effective term (2012–2020), investments into the automotive industry amount to 75 %. The second place belongs to the defense industry, which accounts for only 4.7 %; the third, with the share of 3.5 %, is the cost of ensuring the implementation of the program, while transport machine building industry comes only fourth (2.1 % of the total cost, or about 60 % of the amount provided to ensure the implementation of the program), and the fifth place belongs to the costs of the development of technical regulation system (1.3 % of the total costs). The share of machine engineering in the program is limited to 1 % and that of the light industry to 0.6 %. This means that it is another area where the trend is definitely towards the maintenance of the resource extraction focus of the economics of the Russian Federation and even towards the reinforcement of the existing system (this is due to the fact that any participant of the technological race who is not trying to move on is left behind, and this happens very quickly).

In 2010, the Russian Government decided to form innovative development and technological modernization programs for PPP natural monopolies and large PPP companies. Currently such plans have been prepared by the main monopolies (Gazprom, Rosneft, Russian Railways, etc.). But these companies, considering the specific nature of their business and the especially favorable conditions that they enjoy are basically uninterested in the diversification of production, nor are they eager in the development of something radically new and therefore rather pretend to do something in the framework of all these programs than actually do something. The Expert journal conducted the analysis of innovative development programs drafted by state-owned corporations, which also supports the above; the journal recognizes that judging by the content of these programs the corporations in the natural monopolies sector do not set the goal of solving the problem of technological inferiority even in the areas that are key to their own business, and a significant part of the activities included in the plans are merely investment projects [17]. However, the state, which is an influential owner of such corporations, has a relaxed attitude to this fact.

As for defense industry enterprises, which also included in this program, it should be noted that the ongoing reorganization of the defense industry on the basis of the state-owned vertically integrated structure bears the risk of a sharp decline of the possibility to use the potential of these enterprises for the solution of urgent problems of many industries, including engineering and metallurgical enterprises, the problems of neo-industrialization [18, p. 52], and the development of civil high-tech sector.

Another burning problem of modern Russia, which also hinders the construction of the social foundations for the effective innovation system, is that virtually all of today's large and medium-sized manufacturing enterprises were established in the Soviet period bear the "generic faults" of the corresponding socio-economic system, as well as those of the era of "wild" privatization. The ways

towards the creation of fundamentally new businesses of relevant categories, which would be more compatible with the innovative economy ideology of their owners, are blocked. This hinders the process of eliminating the ideologemes of the old days which still exist in the popular mind and does not let the new technological wave replace the previous one in a natural way.

The priority measures of state support for innovative activity

The improvement of the situation can be achieved by government action aimed at limiting monopolism and the creation of legal and economic preconditions for the emergence of innovative manufacturing enterprises, primarily in the high-tech sector. These companies have to be new not only according to their constituent documents, but also in terms of the origin of their capital.

On the other hand, it is necessary to create the conditions that would support the convergence of the business environment, which should be constantly undergoing self-renewal and accumulate the "critical mass" of the owners actively involved in innovation. This is about the establishment of social mobility opportunities in the society so that educated, active and talented Russians (i.e., those who are able to innovate, know how to do it and enjoy doing this) realize their potential in business that is directly related to their own country. This is definitely a complex social problem, so the officials who decide to work out a solution to it have to demonstrate political assertiveness and considerable personal courage, and it is hardly possible to find any ways to resolve the situation in an evolutionary way.

To improve the situation in the economy and in innovation sphere as one of its integral components it is crucial that the government takes action aimed at limiting monopolism and the creation of legal and economic preconditions for the emergence of innovative manufacturing enterprises, primarily in the high-tech sector.

It is also necessary to create favorable conditions for the development of innovative entrepreneurship in order to ensure its expanded reproduction, constant self-renewal and the accumulation of a critical mass of actively innovating company owners. Particular attention should be paid to the establishment of social mobility opportunities in the society so that educated, active and talented Russians (i.e. those who are able to innovate, know how to do it and enjoy doing it) realize their potential in business that is directly related to their own country.

Thus, the top priority general economic measures to be implemented in the Russian Federation in order to establish a favorable environment for the enhancement of innovation processes and the use of the potential inherent to innovations to improve the efficiency of production in the regions include the following:

— The formation of the institution for the state regulation of the sectoral proportions of the economy in the Russian Federation, in particular, introducing measures aimed at substantial improvement of the overall economic functioning of civil engineering and high-tech industries in order to enhance their attractiveness for business (a significant reduction of the total tax burden for these types of industries, including taxes and mandatory deductions that depend on the salary budget and the number of employees, including the abolition of a number of taxes, such as VAT, introduction of protectionist measures in relation to groups of domestic goods that are strategically important for the improvement of the structure of industrial production, etc.). This was the first step made by all countries that intended to form a strong cluster of high-tech industries (postwar Germany, Japan, China, etc.);

— Improving legal protection of business from the pressure from monopolies and crime;

— Making government loans and "cheap" loans truly available for entrepreneurs who are not family members of the traditional oligarchic clans. The high monopolization of the Russian economy, as well as the strongly degraded state of machine engineering and high-tech sectors of business and domestic science in terms of their economic potential, human resources and technological level mean that if they do not have government support, the advocacy groups that are greatly interested in the revitalization of the innovation processes in the country are not able to compete with the resource extracting industries in the struggle for political and economic preferences.

Without these conditions technological modernization alone simply cannot succeed beyond certain particularly favorable oases determined by the current political and economic situation (resource extraction, metallurgy, petrochemical industry, defense industry, pharmaceuticals, etc.) and even there, the modernization will be reduced as much as possible, as the priority will be given to

purchasing ready equipment and technology from other countries, even if such equipment is already somewhat obsolete, due to the goals set by the plant owners and the quality of management.

To develop an effective innovation strategy it is necessary to apply a differentiated approach. Table 2 represents the proposed priority measures of state support for innovation, addressed to the regions of the Russian Federation according to their industrial and technological types. These measures are formulated with due account for the specifics of the territories and the tasks assigned to the innovative system (those that should be assigned) by the regional community based on the need to ensure their successful socio-economic development. It is also important to take into account the objective level of the development of various elements of the innovation system and the problems identified during the analysis that hinder the maintenance and development of scientific, technological and innovative potential in the Russian regions.

Thus, in the region dominated by knowledge-intensive and high-tech industries based on the mission of the innovation system and the characteristics of the potential of the regions it seems appropriate to provide state support measures to ensure the creation of favorable conditions for the expansion of fundamental science, which is the basis for the creation of innovative products and technologies, as well as to foster innovation in a wide range of areas of science and technology. In the regions where medium technology industries are predominant, the most rational option is to encourage state support for applied research and innovation aimed mainly at the solution of technical and technological problems which have the priority in the given industrial complex territory. Finally, in the regions with the predominance of resource extracting companies the main objective is to ensure state support for the innovation activity as the guarantee of social and economic stability.

The implementation of the proposed measures will make it possible to apply a differentiated approach to the choice of strategic priorities for the innovation policy and the development of innovative systems that best meet the needs of maintaining competitiveness and sustainable development of the Russian regions according to their type in terms of production and technology, and will contribute to the solution of the most pressing problems of today's Russia, such as import substitution, reduction of the technological gap and reinforce the country's position in the global high-tech markets.

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