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DE LA CCI FRANCE RUSSIE

INNOVATION POLICY IN RUSSIA: DEVELOPMENT, CHALLENGES AND PROSPECTS

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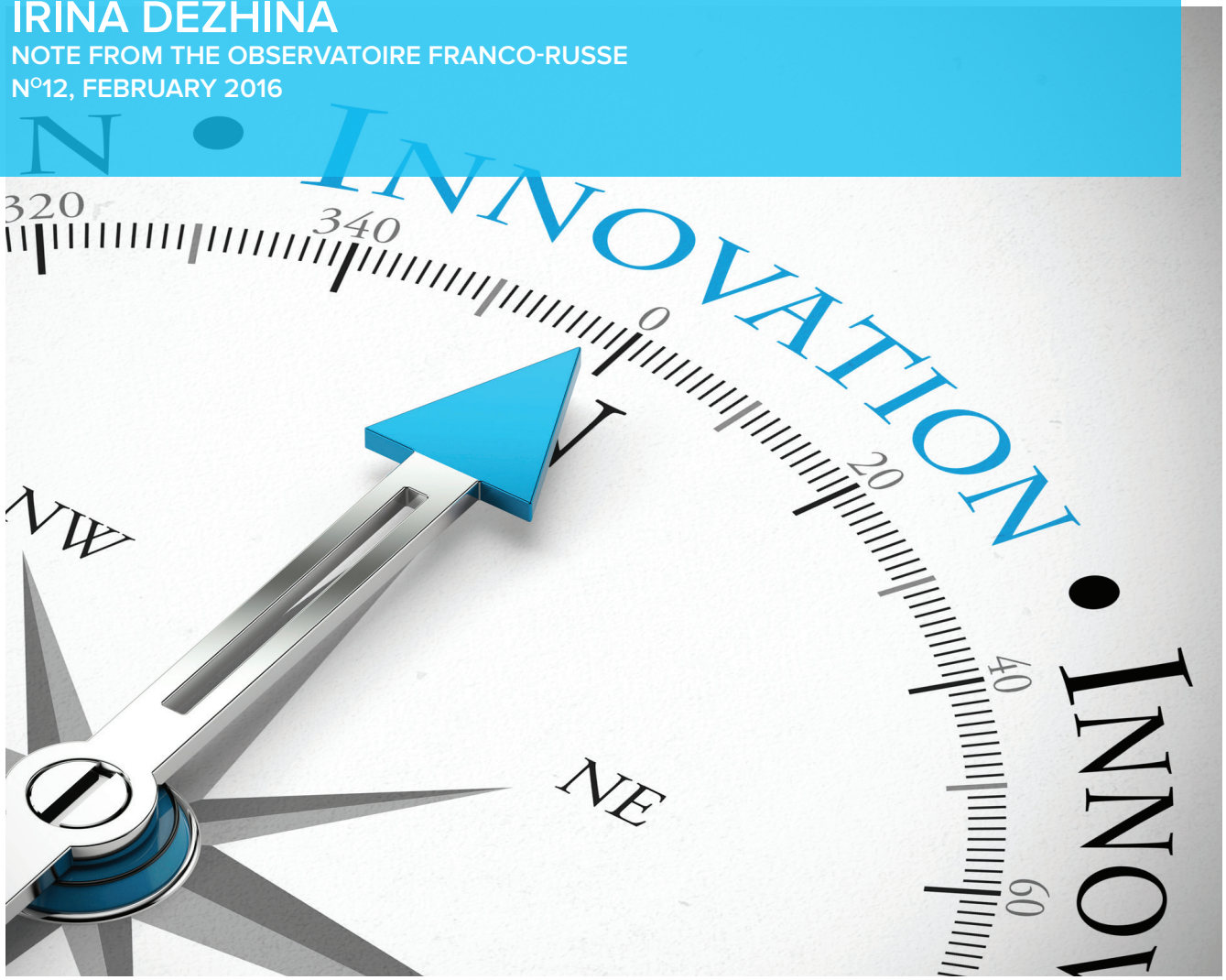

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INTRODUCTION

Since Vladimir Putin took office for his third presidential term in 2012, new priorities related to innovation policy have emerged. Along with this there has been a major shift in the macroeconomic and geopolitical situation, which without doubt has had an impact on innovation. The period under review began with changes to the institutions that coordinate innovative development and determine its strategic priorities. A month after he took up his presidency, Vladimir Putin signed Decree No. 878 on 18/06/2012 "On the Council for Economic Modernization and Innovative Development under the President of the Russian Federation," which abolished the Commission for Modernization and Technological Development under the President of the Russian Federation. A little later, in August, the Government Commission on High Technology and Innovation was closed down. The reduction in the number of institutions involved in innovative development was attributed to the necessity to avoid overlap. In both the President's budget speech on budgetary policy for 2013-2015, and his speech to the Federal Assembly, he did not mention the word "innovation" even once, and in August 2012 the Ministry of Economic Development said that in the next two years the government would roll out spending cuts on innovation. This sequence of events could have been interpreted as the beginning of the shift of government focus away from innovation, but it has subsequently shown that this was not the case. The process of reformatting approaches to the enhancement of innovative work and selection of topic-based and functional priorities has already begun.

1. THE DEVELOPMENT OF INNOVATION IN TERMS OF MACROECONOMICS

The implementation of the innovation development goals, however, has been hampered by the macroeconomic issues that have arisen. Since 2013 we have seen an increase in capital outflow from the country, a drop in manufacturing, and subsequently problems emerged resulting from the strong dependence of key industries on imports[1]. The situation for small innovative businesses began to deteriorate in 2013 as a result of the twofold increase in insurance premiums, and in 2014 the procedure for registering companies became more complex (long timeframes, difficult and multistage licensing and permit application procedures, etc.).

The other two reasons for the poor business environment most frequently referred to by small companies are the increased number of supervisory checks and the high interest rates on loans. The incentive mechanisms to encourage large companies to outsource some of their development work and purchase the products of small companies have not been effective.

The situation with large companies has varied, and the reasons for the lack of innovation on the part of state-owned companies were different from those that were characteristic of private companies. A survey[2] conducted in 2014 among major Russian companies showed that the main barriers to innovative development in state-owned companies were personnel related. This lack of key skills to find and implement new solutions (stated by 42% of state-owned companies responding to the survey), and the attitude to innovation among managers and key personnel is most likely negative (39%).

The two main problems the private companies are facing are quite different. These are the lack of funding and significant administrative barriers (37% of companies stated each of these reasons).

At the same time, in the last year, the interest of private companies in innovation declined since the current economic problems arose. In general, the financing of innovation on the part of large companies remained at the level of the previous year, which when adjusted for inflation was actually a decline.

The venture market in Russia was unstable - the rise in 2013 was followed by a drop in 2014. The number of early stage investments in the venture capital market in Russia in 2013 increased by 65% from the previous year, and investments of business angels increased by 70%. However, at the seed stage less than 5% of the funds available on

[1] Thus, even in oil production, which the Russian economy is largely based on - the contribution of foreign oil service companies in Russian projects related to horizontal drilling, was 56% before the sanctions, and in hydraulic fracturing technology - 93%. Source: V. Inozemtsev. «*Kak poluchilos, chto Rossii ne nuzhna nauka*» [How is it that Russia does not need science] // Slon.ru, 10/06/2015.

[2] The survey involved 54 representatives from 49 large companies and 20 venture capital market experts. The survey was conducted in September-November 2014. Source: «*Korporativnye venchurnye investitsii v Rossii: sostoyaniye i perspektivy (2014-2015)*» [The state and prospects for corporate venture capital investments in Russia: (2014-2015)]. - M.: NP "Directors Club for Science and Innovation", 2014.

the market were invested. More than 70% of the investments were made in internet projects, but in e-commerce, and not in long-term or breakthrough developments.

In 2014, investments in the venture capital industry dropped, private funds were cut by more than a half - from the beginning of the year corporate foundations reduced support for projects by 61%. By the end of November it became clear that the outflow of money to international markets was underway not only from foreign but also Russian investors. The main reason for this was the lack of demand for innovation in Russia, and the innovative programs of state-owned companies and other measures such as "the compulsion to innovate" failed to stimulate this demand. The second reason was the growth of the problem of companies "exiting" from innovative business (i.e. selling their large high-tech companies) due to the withdrawal or reduction of the presence of Western companies in the Russian market.

Finally, 2014 was marked by a new wave of economic sanctions, which already partly impacted the opportunities for developing technological innovation. Formally, science and innovation are exempt from the sanctions and, moreover, the goals and objectives of the restructuring and development of R&D mean the expansion of international cooperation. This applies, in particular, to the implementation of priority scientific and technological projects. However, the situation was not symmetrical, and the scientific and technological fields in Russia suffered from the deterioration of political relations with the countries with highly developed scientific and technological industries to a degree and manner that has not yet been fully assessed.

If at the beginning of 2014 the sanctions imposed restrictions mainly of a temporary nature on ties between Russian and American scientists, collaborating on projects implemented in the national laboratories of US agencies like NASA and the Department of Energy, in the fall the impact of sanctions became less relevant. Problems emerged with contracts with Western firms supplying scientific instruments and equipment, anchor foreign companies that were going to produce parts began to leave industrial parks. By November, there were reports of a ban on the import of a number of parts. Thus, the sanctions began to spread not only to possible dual-use technology, but also affected international research projects. In the long term this will affect the capabilities and speed of the development of new technologies in Russia. Almost all the high-tech sectors in the country greatly depend on imports, from reagents to parts of complex products.

The growing problems are reflected in the official statistics (available only up until 2013). The proportion of organizations involved in innovative activities remains extremely low, and has not changed (for communication companies and companies working with computers and information technology) and slightly decreased for mining and manufacturing, and among small businesses (Table 1). According to these indicators, Russia lags far behind not only industrialized countries but also the former socialist countries, where the level of innovation in companies is at least an order of magnitude higher[3].

[3] Source: «*Indikatory innovatsionnoy deyatelnosti: 2015. Statistichesky sbornik*» [Indicators of innovative activity: 2015. Statistical compilation]. M.: Higher School of Economics, 2015. P.300.

Table 1
The proportion of organizations implementing technological innovation, %

Type of organization	2011	2012	2013
Mining and manufacturing	9.6	9.9	9.7
Communications, companies working with computers and information technology	9.9	10.3	10.3
Small businesses (from the total number of small businesses, %)	5.1	...	4.8

Source: Indicators of innovative activity: 2015. Statistical compilation. M.: Higher School of Economics, 2015. P.11, 14.

In mining and manufacturing based on data for 2013 the number of companies that acquired new technology is almost 13 times higher than the number of companies that transferred new technologies they had developed. As in previous years, among the different types of technological innovations in the mining and manufacturing industries, the purchase of machinery and equipment dominated, which accounted for 59.1% of total expenditures on innovation in 2013. The second most important innovative activity was R&D (20.4%).

However, it should be noted that one area continued to develop rather successfully, and this was innovation in information technology. In this case, the impact of sanctions could serve as an additional impetus for its development due to the sharp rise in the price of imported engineering software.

2. CREATING LINKS IN THE INNOVATION SYSTEM: TECHNOLOGY PLATFORMS AND INNOVATION CLUSTERS

All the key components inherent in the advanced industrialized countries were manifested in the innovative system of Russia in the post-Soviet years, but its effectiveness remains low. One of the key issues along with the small number of medium and large private tech companies and consumers of innovation are the underdeveloped links between the main actors. In recent years, the government has significantly increased its focus on providing incentives for their emergence and consolidation. This explains the considerable attention paid to tools such as technology platforms and innovation clusters.

Technology platforms (TP) were initiated by the government in 2011, and innovation clusters in 2012. The approach to the creation of technological platforms has been adopted from the experience of the European Union, and the clusters from the diverse practices of European and Asian countries.

Technology platforms have been positioned at the federal level as a communication tool between government, science and business, which largely should be based on self-organization of the actors. Companies operating under all types and forms of ownership, research institutes and universities, and professional associations can participate in the platforms. State organizations such as research institutes, universities, and companies with state participation have shown the greatest interest in integrating such platforms. At first, they saw the TP as a new source of support. However, federal funding was not received for the creation and launch of the platform, and this had an impact on the speed of development and effectiveness of this tool. At the same time, the platform was given the job of becoming a sort of "collective expertise" in the technological fields that matched its profile. In 2012, the Ministry of Economic Development and the Ministry of Education and Science requested proposals from technology platforms in order to form the subject of the federal targeted programs for which the ministries are customers. The proposals proved to be of poor quality, they were poorly written and not linked to timeframes or results. Indeed, the platforms had almost no experience in goal-setting and developing roadmaps, and there were no funds to pay for qualified consultants who could help them to achieve this work.

To date, 35 technology platforms have been created, however, the MES has estimated that only about 20% of them are effectively working structures. In part the low capacity of the platforms is borne out by the fact that they are insufficiently embedded with international networks and partnerships. However, there is reason for optimism. A number of platforms have managed to create an expertise system, with 2/3 platforms stating that their suggestions and expert opinions were taken into account and incorporated into the various documents of the government authorities - which is a fairly good result[4].

[4] The survey, conducted by the Russian Foundation for Technological Development, at a visiting meeting of technology platforms, which took place in Pushchino on July 2-3, 2013. 22 TP organizations and coordinators participated in the survey.

Innovative clusters have evolved via a different scenario. The conceptual basis of their creation was developed over a long period of time, funds were not immediately allocated, but the clusters from a financial perspective proved to be of a higher priority than the TP. Innovation clusters are supported in many countries, although they are considered to be a rather risky instrument, as cluster initiatives are pricey, long-term, and if the right location is not found the financial losses are significant. In addition, more than half of the budget of virtually all cluster initiatives comes from public funds, and the transition to self-sufficient clusters in most cases is problematic. In this regard, it is believed that in general it is less effective to create new clusters than to identify and support the existing ones. In Russia, however, the first approach was chosen, and support is provided for projects to create clusters.

The selection of innovation clusters, in principle, was consistent with existing international practice. Out of 100 applications, 25 regional project clusters have been approved, of which 14 were entitled to state subsidies. Despite the reliance on international experience, the Russian cluster policy quickly acquired its own features. The first concerns the goal of supporting clusters. In Russia, the focus is on innovative development and thus it is considered important to attract organizations to the clusters that are involved in R&D, such as universities and research institutes. International experience shows a range of possible goals, including the restructuring of high-tech industries, boosting competitiveness in certain areas, but in any case, the list of goals and problems to be solved is formulated more narrowly and specifically than in the Russian initiative to develop clusters. The second feature is the focus on solving the problems of large companies, with little involvement of small businesses in managing clusters, while foreign clusters pay special attention to small and medium-sized companies. The third feature is the relatively short timeframe of guaranteed support[5]. Foreign clusters typically provide support for 7-8 years, while in Russia this is not more than 5 years, as of mid-2015.

In 2014, an impact assessment of the innovation infrastructure was carried out, and it was found that it was functioning well. In the innovation clusters, R&D expenditure on the part of cluster companies increased from RUB 72.9 billion in 2012 to RUB 85.4 billion in 2014 (in 2012 prices). However, quantitative estimates have limitations because expenditure data says little about results.

Clusters are developing in a way that reflects the numerous systemic problems in Russian innovation, which are difficult to resolve at the local level (the level of individual clusters). Experts from the Russian Cluster Observatory noted that there is a low proportion of private companies, small and medium-sized companies in Russian clusters, and weak competition within the cluster. Thus, the experience of cluster development shows that the primary goal of innovation policy should be to change the business climate and create favourable conditions for development of small and medium-sized companies. Clusters can somewhat realign and accelerate the process of technological development, but the instrument of cluster policy is secondary, and is unlikely to change the innovative environment as a whole.

[5] I. Dezhina. «*Tekhnologicheskiye platformy i innovatsionnye klastery: vmeste ili vroz?*» [Technology Platforms and Innovative Clusters: together or apart?] - M.: Gaidar Institute publishing house, 2013. P.51.

3. THE SUCCESSES AND PROBLEMS OF DEVELOPMENT INSTITUTIONS (RUSSIAN VENTURE COMPANY, RUSNANO, THE SKOLKOVO FOUNDATION)

The goals of innovation policy include ensuring that the various instruments being implemented are compatible, including through the use of development institutions. By 2012, a number of institutions working in innovation had been created, including the Russian Venture Company (RVC), the Russian Corporation of Nanotechnologies RUSNANO (OAO RUSNANO - a Russian company), the Skolkovo Foundation, and the Foundation for Assistance to Small Innovative Enterprises in Science and Technology. Originally created with different missions and goals (RVC - to develop the venture capital industry, RUSNANO - to support the development of the nano-technology industry, the Foundation for Assistance - to support small innovative business), the development institutions have gradually diversified their activities and they have partly overlapped.

RUSNANO, Russian Venture Company and the Skolkovo Foundation are actively engaged in educational work. All these institutes have been paying more attention to analytical work, helping to draw up strategies and concepts, and improving the regulatory framework. On top of this, for example, 90% of the work of Russian Venture Company today involves holding tenders and compiling rankings, developing training programs, holding conferences, supporting analytical resources that are engaged in the analysis of the venture capital market, and only 10% of its work is related to its original mission which was to be a fund.

Development institutions are constantly attracting public attention, as there are no unambiguous, immediate and clear results of their work. There are frequent discussions and debates revolving around the work of RUSNANO, the Skolkovo Foundation and RVC. In 2013, the Accounting Chamber audited RUSNANO and found various problems and shortcomings, as a result of which more than 60% of the company's management was laid off. Company heads have acknowledged that mistakes were made due to the low quality of its management, burdened by procedural failures. For example, the monitoring procedure established by the RUSNANO documents excluded the evidence that was found of misuse of funds[6]. Budgetary funds were invested in unprofitable projects, errors were made in market assessments, but this did not stop the company employees receiving pay rises, which over the past five years had shot up by 9 times.

However, by 2015, 57 plants were opened or new facilities were built at existing plants. Exports of nanotechnology products in 2014 amounted to RUB 204 billion, exceeding the forecasted RUB 124 billion. The RUSNANO management expects by the end of 2015 to fulfill all its commitments, including the production by RUSNANO's

[6] A. Volobuev. «*Nanochistka. Za chto Anatoly Chubays uvolil dve treti menedzherov "Rosnano"*» [Nano clean. Why did Anatoly Chubais fire two-thirds of the managers at Rosnano?] // Lenta.ru, 25/05/2015.

portfolio companies of nano-technology worth RUB 300 billion. Therefore, the government is considering the possibility of extending funding to RUSNANO for 2016-2020 via budget subsidies and state guarantees for loans.

The future of the Skolkovo Foundation, whose work is also in constant public attention, looks less promising. Problems are growing primarily due to the introduction of sanctions, and the consequent difficulty in attracting foreign scientists, experts and companies to the project. The budget sequestering is constantly discussed: for example, the Ministry of Finance of the Russian Federation proposes to cut spending on Skolkovo in 2015.

In 2015, the technological valley of the Moscow State University (MSU), which is partly reminiscent of the design of the Skolkovo Foundation, became a new priority. In the context of the sharp criticism of Skolkovo, a similar project, involving the large-scale construction of scientific and residential buildings in the area of Moscow State University, and the involvement of large companies to raise funds to support scientific and technological work, raises questions and stirs debate.

The project was first announced back in 2013, but its implementation will begin in 2016. The amount of funding that will be allocated for the construction of the valley has not been exactly specified, and according to different documents, ranges from RUB 110 billion to nearly RUB 150 billion. At the same time about 65% of the funds are intended for the development and construction of MSU laboratories. It is also assumed that large Russian companies will help finance the project, helping to fill the Moscow State University Endowment Fund. Such a scheme was also implemented in the early stages of the Skolkovo Institute of Science and Technology, but in the future, the government considers it inappropriate to coerce business into providing this kind of patronage. In the new draft history repeats itself, but the results may differ as President Putin addressed entrepreneurs with a request to support Moscow State University[7].

As a whole, as was shown in the first section, the results of the innovation system in Russia remain poor, it shows that development institutions only help to some extent to diminish or solve some problems, and their work does not lead to systemic change.

[7] T. Melikyan. «*Zolotye Vorobyevy gory. Putin predlozhil milliarderam solidarno pomoch MGU*» [Golden Vorobyevy gory. Putin asked billionaires to join in and help MSU] // Lenta.ru, 28/05/2015.

4. NATIONAL TECHNOLOGY INITIATIVE: A NEW TOOL FOR INNOVATION DEVELOPMENT

In late 2014, the country began to develop new concepts and innovation development tools – "national extended projects" and the National Technology Initiative (NTI).

"National extended projects" refers to integrated cross-sectoral programs, which consist of related projects, with the goal to modernize the key sectors through technological innovation. Such projects should provide a significant economic effect in 10-15-years. The specification and approaches to the identification of "extended" projects resemble already known mechanisms, and it seems that the main novelty of the concept is the parameters that are used to describe the economic results expected as a consequence of the modernization. These include GDP growth, exports, import substitution, technological sovereignty, an increase in life expectancy, and a reduction in environmental pollution. These parameters also serve as the criteria for the selection of promising technologies. So this is another attempt to improve the mechanisms for selecting technology and the absorption of technologies by the market, which implies the creation of new programs.

At the end of 2014, however, this concept was relegated to second place, giving way to a new concept entitled the NTI. The term "National Technology Initiative" was first used by President Vladimir Putin in his address to the Federal Assembly in December 2014. He announced the launch of the NTI, explaining that such an initiative should help identify the priorities and goals for development over a 10-15-year timeframe. Despite the external consonance of the "national extending project", the goal was more ambitious: to create a mechanism that would link the overarching problems of the economic development of the country, the technological priorities they define and the mechanisms for their implementation.

To date, a number of formulations have been developed for the concept of the NTI and its constituent components. The most widely discussed of these was the concept of the Agency for Strategic Initiatives (ASI), which is currently responsible for foresight and the comprehensive development of roadmaps. At the same time the Russian Academy of Sciences, the Ministry of Education and Science of the Russian Federation and the Expert Council under the Government of the Russian Federation[8] have offered their own visions of the NTI[9].

In the interpretation of the Agency for Strategic Initiatives, it is first and foremost the creation of new consumer markets, which are networks by nature. It is expected that in 10-20 years such markets will be worth more than USD 100 billion, and Russia has the opportunity to gain a considerable market share in this respect[10].

[8] The basis of the national technology initiative. The Russian Academy of Sciences. Information-Analytical Center "Science". Version from 22/5/2015, P.7.

[9] The draft concept of the development and implementation of the National Technology Initiative. Expert Council under the Government of the Russian Federation. March 16, 2015.

[10] «*D. Peskov: "Nas ozhidayet korennaya perestroyka osnovnykh otrasley*» [D. Peskov: "We expect a radical restructuring of our major industries"] // Kommersant, 01/04/2015.

To accurately identify the markets a detailed study of four interrelated parameters have been initiated: "markets", "technology", "infrastructure" and "institutions", as to achieve the goal to enter the markets of the future, system solutions for the identification of key technologies are required, as are changes to the rules and regulations, and financial and human resource development measures. Selection and substantiation are performed by various methods, including foresight and via the creation of roadmaps. True to form, by the time the foresight was performed (in May 2015), which involved 700 experts, a preliminary selection of the 9 markets of the future had already been made. They are divided into three groups – national security and the provision of resources (food markets, energy and security); the development of the transport system (transport, air transport and sea/river transport); the markets in which we are now seeing revolutionary technological changes (digital health markets, new finance and neuro communications).[11] A similar approach with a predefined set of priority areas was applied in 2009, when President Medvedev announced the selection of five "strategic vectors of modernization" for the country, which subsequently formed the basis of the Skolkovo project, and the clusters created within it. In the case of the NTI the selection of these 9 markets was based on two main criteria - the prospects for development in the global context and the presence of companies in the country (people) who are capable of becoming leaders and taking responsibility for the development of industries and entering new markets. Accordingly, the NTI will be considered a success if leading Russian companies emerge in the global technology markets in 2025-2035.

In the approach to the implementation of the NTI a number of positive points should be noted. Firstly, the important transition to personal responsibility; secondly, the emphasis on horizontal communication; and thirdly, the system remains open – the discussion of prospective markets may be continued in 2016. However, the approach adopted in the formulation and implementation of the NTI means the possibility of its success in dependence on a number of poorly projected parameters, namely:

1. The correct prediction of the future, which means the art of finding the optimal structure and composition of experts.

2. The ability to identify truly brilliant and charismatic leaders.

3. The ability to establish mechanisms for their implementation, the movement towards targeted market niches.

Since the concept of NTI combines choice and mechanisms for implementing technological priorities, and since it takes into account global trends, it is important to understand what the main developmental trends of mechanisms consist in for implementing the priorities abroad. Despite their wide range, there are several similar and key characteristics:

[11] National Technology Initiative: inconvenient questions and honest answers. Information on Foresight Navy, 12-16 May 2015 ASI, RVC, the Foundation for Assistance to Small Innovative Enterprises in Science and Technology. P.5

1. The implementation of selected priorities is institutionally materialized in coordinated programs, which may take the form of "initiatives" and even resemble infrastructure projects. For example, in the US, the so-called "national priorities" are implemented through initiatives announced by the President, each of which is coordinated by several agencies. In the UK, the national scientific and technological priorities are implemented through a similar mechanism of catapult centers that are created at universities or a network of several universities. In the EU, a common mechanism, in addition to the framework programs, is technology platforms on pressing subjects, which, if successful, are converted into "joint technology initiatives" under the leadership of big business.

2. National priorities are implemented by combining efforts of universities, business, and also potentially numerous financial institutions. At the same time the focus of joint activities varies from the initial stages of research to later stages close to commercialization. This provides extra motivation to business to participate in the programs (initiatives) announced by the government.

3. The government sets the ratios and forms for co-financed projects. Typically, government involvement is no more than half of the total project budget.

4. Government guarantees support from 5 to 7 years, with the possibility of extension; on the basis of ongoing monitoring it is possible to adjust the conditions of co-financing.

Discussions are being held in Russia on the mechanisms and opportunities to create "project consortia", involving the participation of companies of various sizes.

After discussing the essence of the NTI and approving roadmaps for the first three markets (aviation, automobile and shipbuilding) the outlines of management imitative got cleared. RVC will be the project office of the initiative, and the Ministry of Education and Science of the Russian Federation has requested that it coordinates the research and technological part of the work to be performed during the implementation of the roadmap. Moreover, at the meeting of the Presidium of the Presidential Council for economic modernization and innovative development of Russia in June 2015, the Ministry of Education proposed three priority areas of science and technology that can be supported under the NTI as providing access to new markets: advanced manufacturing technologies, quantum technology and photonics. True to form, these priorities were put forward even in 2013-2014, prior to the initiation of the NTI, so the NTI can thus be considered as the new core project, which has the potential of combining the previously relatively fragmented lists of priorities.

If they are well managed, the "national extending projects" and NTI will be synchronized. If not, they will be duplicated. Synchronization is always quite complicated, since each project has its own interest groups. At a time when further and significant reduction in budget allocations for science, technology and innovation is expected[12], it seems inappropriate to initiate a number of different priority projects. If the main priority now is to enter new markets, the choice of technologies and areas of support of related research should take place under this concept, which would not negate the possibility within it to consider the most promising, extending projects that can provide the greatest economic benefit.

[12] In particular, in 2016 public expenditures are to be reduced by 28,9% for the governmental programme 'Development of science et technologies for the period 2013 to 2020', for pharmaceutical and medical industry by 31,4% and by 61,6% for shipbuilding industry. Source: P. Netreba. «*Komu otrezhut 16%*» [Cutting spending by 16%] // RBC, 21.05.2015, p.9.

CONCLUSION

During the past three years, there have been two contradictory trends in Russian innovation policy: the reduced capacity of the state to finance innovation, and the growing number of priority measures in which the government should be involved.

Measures already been taken have not been cancelled, despite the fact that some reformatting of coordination structures at the federal level has been performed, and new approaches have been developed, especially the ones that involve direct state participation (both through development institutions, and by supporting priority areas and technologies).

It is now apparent that the policy is to search for and develop new markets. An attempt is being made to replace the technocratic approach, which has dominated for many years, with a market approach, and to shift from technology proposals to identifying areas of demand.

The prospects for the development of innovation in Russia depend on government's ability to correctly prioritize the areas it will support, on its capacity to identify not eye-catching and prestigious projects, but projects that are useful to society and which will have a significant impact. The second factor affecting the prospects is the ability to develop international cooperation not only in science but also in the development of new technologies at the pre-competitive stage.