

Innovative development as the basis of a leading position of the economy

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Abstract The experience of economically developed countries shows that the achievement of leading positions, sustainable development, economic progress of society is ensured on the basis of innovations which are the result of combining scientific and technical progress with economic needs. With regard to the above, innovations in general are the global trend of scientific and technological progress, ensuring a leading position in the economy. A key tool for assessing innovation development is national data dissemination platforms. Our paper discusses the practical aspects of their use based on international comparisons. Moreover, we contemplate the innovative development as the basis of a leading position of the national economy.

1 Introduction

The modern world economy is characterized by the direct influence of individual national economies with the goal of economic leadership. Achieving this goal is impossible to imagine without sustainable innovation development. For this reason, in recent decades, the problems of creating and introducing innovations, the transition to an innovative path of economic development, the formation of national innovation systems are under special attention of both foreign and domestic economists.

Leading foreign and Russian scientists, such as Gokhberg (see Gershman et al. 2018), were engaged in research on innovations to ensure sustainable development of the economy, innovative development of the economy in different years. One can also mention the works of Siebert (2003), Kuznetsov et al. (2018), Markova and Kuznetsova (2016), Mensh. (1979), Mindeli (1998), Lytneva and Parushina (2017), and many others.

In the conditions of the need for sustainable development of the economy, much depends on the degree of use of competitive advantages such as resource, territorial and intellectual. This is the key to success in the path of innovative development, chosen as the main one for the foreseeable future.

The main components of sustainable innovation development of socio-economic systems, in our opinion, are as follows:

- The current state of innovation development;
- goals, objectives and stages of innovative development;
- formation and institutional strengthening of the innovation system;
- priority directions of development of the innovation system;
- formation of organizational mechanisms for technology transfer;

- the main directions of state support and mechanisms to stimulate the commercialization of research results;
- information and analytical support for the functioning of the innovation system;
- the role of education in the development of human capital and its relationship with innovation;
- participation in the global international innovation system;
- regulatory support of the implementation of the concept of innovative development;
- procedures for monitoring, evaluating and adjusting the components of the innovation development management system;
- indicators for assessing the implementation of target targets for innovative development (step-by-step analysis).

2 Objectives of innovative development

Sustainable development of society based on innovation is a set of actions in the field of identifying supply and demand for innovations and their optimal correlation, that is, developing ideas for research organizations, coordinating human resources, finding sources of financing, production and product promotion. The specified sequence of actions involves the following tasks:

- creation of a competitive research and development sector and conditions for its expanded reproduction;
- development of institutions for the use and legal protection of research and development results;
- modernization of the economy based on technological innovations;
- formation of conditions for ensuring the effectiveness of innovation activities;
- improvement of the mechanism of innovation commercialization;
- strengthening state support for innovation.

In the studies of the audit and consulting firm PricewaterhouseCoopers, it is stated that among the technologies that will most affect the development of the business up to 2020 one can distinguish large data arrays and cloud platforms, it is also planned to introduce solutions based on artificial intelligence. According to PwC, by 2030, artificial intelligence will increase global GDP by 15.7 trillion dollars by increasing the efficiency of processes (PWC 2018).

Innovative development is determined by theoretical and practical aspects of the regulatory framework. Thus, the UN report on the Sustainable Development Goals in 2018 reviews the achieved level of promoting industrialization and innovation in the third year of the implementation of the 2030 Agenda for Sustainable Development (Report on the sustainable development Goals, 2018). This review, in particular, reflects the successes in realizing such a sustainable development goal as “Creating resilient infrastructure, promoting inclusive and sustainable industrialization and innovation”.

3 Innovation development assessment toolkits

The key tools for implementing and reviewing progress towards sustainable development goals are national reporting and data dissemination platforms. These platforms also play a crucial role in the compilation of national data, since they collect data and metadata from all segments of the statistical system. This contributes to ensuring data quality and strengthening coordination throughout the national statistical system.

Despite the fact that the national statistical platform for monitoring the achievement of sustainable development goals is being developed on many key issues, some comparisons with world indicators can be made today.

Each goal of sustainable development has its own objectives. Analyzing their achievement in accordance with the national statistical platform and international bases, the following results were obtained.

Thus, the previously voiced goal of “Building resilient infrastructure, promoting inclusive and sustainable industrialization and innovation” can be revealed through the characteristics of regional and cross-border infrastructure. Successful economic development depends on many factors, including the efficient operation of the transport infrastructure. In accordance with the UN report on the results of 2015, the impact of air transport on the world economy was estimated at 2.7 trillion. US dollars (UN 2017).

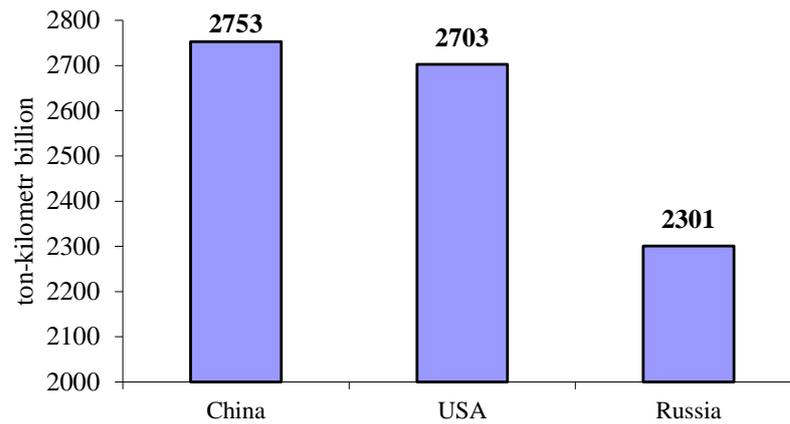


Fig. 1 Freight transportation by rail in 2015
Source: UN (2017)

Russian Federation is in the group of leaders in freight transportation by rail. So, by the end of 2015, their volume amounted to 2301 billion ton-kilometers compared with China and the United States - 2753, 2703 billion ton-kilometers, respectively (Rosstat 2016). At the same time, in the world the leading place is occupied by road transport. It accounts for 63% of all goods transported.

Considering the challenge of achieving inclusive and sustainable industrialization by 2030 and increasing employment in industry, the main role of manufacturing as the main engine of economic growth is recognized.

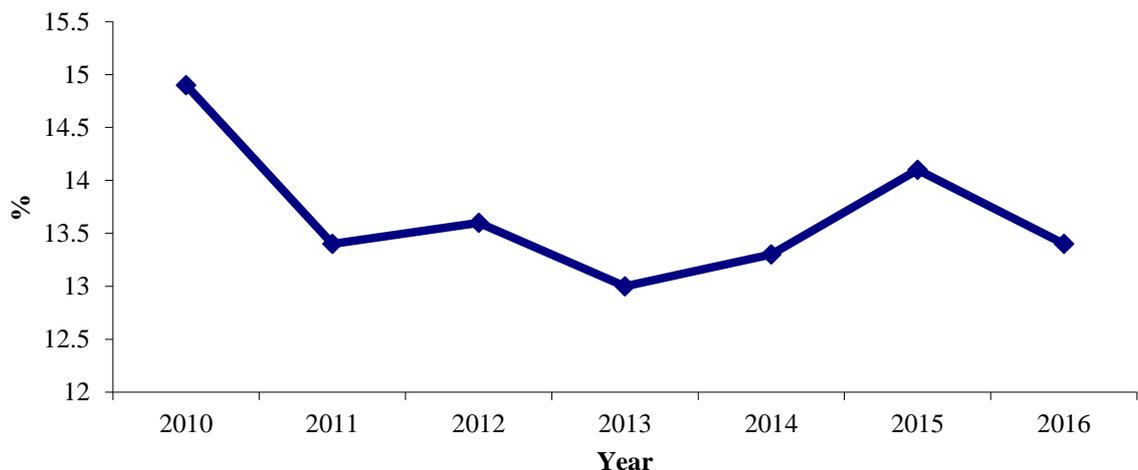


Fig. 2 The share of value added of the “Manufacturing Production” sector in the total volume of the Russian Federation’s GDP for 2010–2016
Source: Federal State Statistics Service (2019)

For the period from 2005 to 2016, the output of manufacturing in per capita terms increased by 22.6%. At the same time, there was a gap between industrial production in richer and poorer regions. Thus, in the least developed countries, this indicator at the end of 2016 was \$ 100, and in Europe and North America - \$ 4,621 per capita (UN 2017). Statistics in the field of achieving the goals of sustainable development show that in Russia the ratio of the value added of manufacturing and gross domestic product in 2016 was below the level of both the previous period and the level of 2010, which is undoubtedly rated negatively (Federal State Statistics Service 2019).

One of the objectives of innovation development by 2030 is the modernization of infrastructure and re-equipment of industrial enterprises by increasing the efficiency of resource use and wider use of clean and environmentally friendly technologies and industrial processes. In the period 2000-2014 carbon dioxide emissions from manufacturing value added decreased in all regions of the world, which is positive. During this period, Europe and North America reduced emissions by 36%. In Russian practice, such an indicator is calculated as the amount of greenhouse gas emissions per unit of gross domestic product, which by the end of

2015 amounted to 31.853 tons/million rubles. In this case, there is a discrepancy between the indicators calculated by domestic and foreign experts in the field of monitoring sustainable development.

Stimulation of innovation, as well as an increase in the number of employees in the field of R&D, is intended to intensify scientific research and increase the technological potential of the industrial sector. Table 1 shows the dynamics of this criterion.

Table 1. R&D expenditures as a percentage of GDP, in %

Regions	2010	2014	Deviation (+/-)
North Africa and West Asia	0,42	0,57	+0,15
Central and South Asia	0,55	0,68	+0,13
Latin America	0,53	0,69	+0,16
East and Southeast Asia	1,53	2,07	+0,54
Australia and New Zealand	1,5	2,07	+0,57
Europe and North America	2,05	2,21	+0,16
Russia	1,13	1,07	-0,06

Source: UN (2017)

At the end of 2014, the total global investment in R & D amounted to 1.8 trillion. USD. In relative terms, 1.69% of world GDP was allocated for these purposes. According to Table 1, it can be seen that the share of research and development expenditures in total GDP ranged from 0.42% to 2.21%. Despite the positive dynamics, its pace is insufficient. In Russia, this indicator remained at the level of 1%, which is lower than the values achieved by the most developed countries. In addition, the number of researchers per million inhabitants has decreased. So, in 2014, this figure was 3,042 people, and in 2017, 2,796 researchers.

In this regard, it is advisable to consider the share of high-tech and knowledge-intensive industries in Russia's GDP. The results are presented in Table 2.

Table 2. The share of high-tech and high-tech industries in the Russian GDP for 2010-2016, in %

Year	2010	2011	2012	2013	2014	2015	2016
Value of the indicator	22,8	19,7	20,3	21,1	21,8	21,3	21,6

Source: Federal State Statistics Service (2019)

For the period 2010-2016 covered in our paper, this indicator practically did not change, on the contrary, the results of 2016 are lower than the level of 2010, which indicates the need to increase this type of product in accordance with the global trend.

4 Conclusions

Thus, one can conclude that in the recent years, great attention has been paid to the problems of introducing innovations. However, the analysis of the sustainability of innovation development and the sustainability of the economy as a whole using information platforms remains relevant in modern conditions.

Improving the methodological tools of national statistics in accordance with international requirements can be the basis for the formation of an effective innovation policy for the sustainable development of both an individual economic entity and the state as a whole, as well as achieving leading positions. These results are of a great importance of the further economic development of the Russian Federation as well as other countries that aspire to lead the global economic development.

All in all, innovative approach to economic development might ensure the leading position not only for the country's economy but also for the country itself on the international arena. The politicians as well as economists and policy-makers should not forget about it and should take into account these implications when forming economic strategies and policies.

References

- Federal State Statistics Service (2019) Statistics. <http://www.gks.ru/wps/connect/rosstat/rosstatsite/main/> Accessed 12 April 2019
- Gershman M, Gokhberg L, Kuznetsova T, Roud V (2018) Bridging S&T and innovation in Russia: A historical perspective. *Technological Forecasting and Social Change* 133:132-140. doi: 10.1016/j.techfore.2018.03.014
- Kuznetsov SV, Rastova YuI, Sushcheva NV (2018) The role of public companies in creating a platform for economic growth in Saint Petersburg. *The Journal of Baltic Region*: 37-55. doi:10.5922/2079-8555-2018-3
- Lytneva N, Parushina N, Polyanin A, Kyshtymova E, Vertakova Y (2017) Methods of complex analysis in management of commercial organizations owned capital. *Proceedings of the 29th International business information management association conference - education excellence and innovation management through vision 2020: from regional development sustainability to global economic growth*, pp. 2126-2134.
- Markova VD, Kuznetsova SA (2016) Strategic development guidelines for high-technology companies (2016) *Proceedings of the 13th International Scientific-Technical Conference on Actual Problems of Electronic Instrument Engineering*, pp. 269-271.
- Mensh G, *Technological stalemate: innovations overcoming depression*, 1st edn. (Cambridge: Massachusetts, 1979), 314 p.
- Mindeli L (1998) Actual problems of Russia's science and innovation policy. *Research Evaluation* 7(2):63-70. doi: 10.1093/rev/7.2.63
- PWC (2018) Risk management in the era of innovation. <https://www.pwc.ru> Accessed 29 March 2019
- Rosstat (2016) *Russia and countries of the world*. (Stat.SB. Rosstat, 2016), 379 p.
- UN (2017) Report on the sustainable development Goals. <http://www.un.org/ru/index.html>. Accessed 27 March 2019
- UN (2018) Report on the sustainable development Goals <http://www.un.org/ru/index.html>. Accessed 27 March 2019
- Zibert H (2003) How can you avoid fallacies in economic policy http://sbiblio.com/biblio/archive/sibert_ef Accessed 30 March 2019