Transformation of the scientific, technical and industrial complex of municipalities as a factor in ensuring the technological sovereignty of Russia

A V Polosin\(^1\), I A Chikharev\(^1\), E S Samoilova\(^1\) and V V Medvedev\(^2\)

\(^1\) Department of Management of Science-Intensive Sectoral and Regional Projects, National Research Nuclear University MEPhI, Moscow, Russia
\(^2\) Department of State and Municipal Management, Institute of Economics, Management and Finance, Autonomous Non-commercial Organization of Higher Education “Russian New University” (RosNOU), Moscow, Russia

E-mail: AVPolosin@mephi.ru

Abstract. The country’s economic stability and security, overcoming the consequences of the economic crisis, as well as comprehensive regional development are closely related to the preservation and further development of our own industrial, scientific and technical complexes. The introduction of the concept of technological sovereignty, as well as the definition of a set of measures to achieve it, are necessary steps towards sustainable development and security of the state. In scientific research, much attention has been paid to the problem of modernizing industrial production through the introduction of advanced innovative and technical innovations, but at the same time, the issue of ensuring the technological and component independence of domestic production has not been sufficiently studied. The practical significance of the results of the work lies in the possibility of applying the formulated conclusions and recommendations in the practical activities of the subjects of regional infrastructure, as well as in the possibility of their application by the authorities in the formation of regional economic policy for the development of the scientific, technical and industrial complex in the context of all its components in order to ensure the sustainability of the economic growth of each territory.

Key words: economic security, sovereignty, sovereign technologies, technological sovereignty, regional policy, industry, continuous production, investments, crisis.

1. Rationale
The country’s economic stability and security, overcoming the consequences of the economic crisis, as well as comprehensive regional development are closely related to the preservation and further development of our own industrial, scientific and technical complexes. The introduction of the concept of technological sovereignty, as well as the definition of a set of measures to achieve it, are necessary steps towards sustainable development and security of the state. In scientific research, much attention has been paid to the problem of modernizing industrial production through the introduction of advanced innovative and
technical new technologies, but at the same time, the issue of ensuring the technological and component independence of domestic production has not been sufficiently studied. The practical significance of the results of the paper lies in the possibility of applying the formulated conclusions and recommendations in the practical activities of the entities of regional infrastructure, as well as in the possibility of their application by the authorities in the formation of regional economic policy for the development of the scientific, technical and industrial complex in the context of all its components in order to ensure the sustainability of the economic growth of each territory.

2. Methodology

The research is aimed at developing and substantiating scientific and practical recommendations for strengthening the economic security of the country and regions by ensuring the technological sovereignty. The research tasks are as follows:

- to identify modern challenges and threats to the economic security of Russia;
- to highlight strategic priority areas and instruments for achieving the economic security;
- to determine the priority of transformation of the production and scientific-technological complexes of the country's regions;
- to substantiate and introduce into scientific circulation the concept of sovereign technologies and to consolidate the need for the country to achieve the technological sovereignty.

The theoretical and methodological basis of the research is the fundamental research of Russian and foreign scientists on the problems of economic modernization, the development of industrial production in the country, as well as the use of general and special methods of economic research, such as: systematic approach, comparative macro- and microeconomic analysis, dialectical method of cognition, structural and factor analysis. The information base of the research was economic, sociological and political research, state statistics data, information and analytical materials of state institutions, various organizations and large private companies, as well as materials from periodicals on this topic.

The Russian Federation is historically considered to be one of the world's leading academic powers, and domestic technical and scientific schools have made a significant contribution to the creation of progressive technologies and the multiplication of knowledge by mankind, and also consistently and effectively solved the problems of ensuring state security and socio-economic development. The Strategy 2030 (Decree of the President of the Russian Federation dated May 13, 2017 No. 208 "On the Strategy of the Economic Security of the Russian Federation for the Period until 2030") defines the concept of "economic security" as "the state of protection of the national economy from external and internal threats, providing the economic sovereignty of the country, the unity of its economic space, conditions for the implementation of the strategic national priorities of the Russian Federation"[1]. The Strategy makes a precise distinction between national and economic security, which complement each other, while factors that pose a threat to economic security are increasingly influencing countries. In such a situation, the leading role should be assigned to providing the country with sovereign technologies.

Sovereign technologies are solutions based on relevant domestic technologies that guarantee technological independence and are provided with a scientific, technological and production infrastructure, on strategically important for the country and promising new markets in each of the high-tech areas, corresponding to the target indicators of technological development, which are created at the pace that is dictated by global competition in this area.

It is quite obvious that in recent years both the tendency to spread challenges and threats of a military-political nature in the sphere of the domestic economy and the use of economic methods to achieve political goals have intensified. In particular, the tendency of developed countries to use their advantages in the degree of economic development, high technologies as a tool of global competition can be attributed to the key challenges and threats to economic security, which the technological sovereignty will allow to avoid in
whole or in part. Provided the development of its own technologies, the use of discriminatory measures against key sectors of the economy and the restriction of access to foreign modern technologies will not be able to become a lever of pressure from outside. Ensuring a safe level of the country's technological sovereignty, primarily of strategically important industries, the creation and further sustainable development of promising high-tech sectors of the economy is of paramount importance to guarantee a sustainable growth of the real sector of the economy, as well as a comprehensive modernization of the production and technological base of the spheres of the real sector, taking into account new industrial and environmental safety requirements. Also, in the market context, sovereign technologies are necessary from the point of view of complete security of solutions, uninterrupted implementation of agreements, regardless of external political and technological stability, and the possibility of better adaptation of solutions [2]. This, in turn, will contribute to improvement in the investment climate, and even to an increase in the attractiveness of the Russian jurisdiction for doing business.

It should be specially noted that at the moment all over the world there is a transition to a new model of socio-economic development based on advanced technologies. The accelerated spread of new technologies, their penetration into all spheres of activities is now leading to rapid changes both in the economy and in the social sphere. Cheap labor and natural resources are no longer the main factors in the economic development of states at a time when the world is entering, perhaps, the largest technological transition, where automation and robotization are becoming technological processes for all types of industries. These technologies, along with digitalization and improving the quality of human capital, should provide a radically different quality of growth. It is worth remembering that in March 2018, the President of the Russian Federation V.V. Putin in his "Message to the Federal Assembly" emphasized: "... the speed of technological change is growing rapidly, going up sharply. Whoever uses this technological wave will get ahead of the game. Those who cannot do this, this wave will simply overwhelm, drown"[3]. Also, the President of Russia noted that "Technological lagging behind, dependence means a decrease in the country's security and economic opportunities, and as a result, the loss of sovereignty." In light of the fact that advanced technologies will develop very quickly and have a systemic ubiquitous impact on all spheres of life of the state and society, we would like to once again emphasize the need to strengthen the technological sovereignty, as the only possible way to solve a number of priority tasks of the state.

The introduction of the latest breakthrough technologies is a priority task for all leading countries of the world, therefore, any lag in a country multiplies vulnerability, along with the lack of its own component base for production. In general, in order to ensure the sovereignty, security and development of the country in 2030, now it is necessary to take part in the formation of a new economy and occupy our own sectors in rapidly growing markets and, at least, to fulfill the basic condition - the provision of scientific, technological and industrial infrastructure, production complexes in strategically important and promising new markets [4].

It should be noted that in order to ensure the country's security, improve the quality of life of the population, and strengthen its position in the global ranking of living standards by creating, based on advanced scientific research, demanded products, goods and services (in accordance with the expected results of the implementation of the Economic Security Strategy 2030 [5]) it should be remembered that the population of the territory depends on more than only the ratio of the number of births and deaths. The most important role is played by migration flows, and one of the reasons for this movement is the attractiveness of the territory. However, a situation often arises when newcomers have low or no qualifications, so they can work only in rather narrow, non-innovative fields of activity that do not require special skills, training and education. In the long term, this can lead to a situation where, given the widespread automation of labor, this fact can destabilize the situation in the regions. Almost exclusively unskilled labor is imported into Russia on a large scale, and such uncontrolled immigration entails a significant increase in tension in large cities, challenging social and political stability in the country.
With the strategic tasks of improving the national settlement system, creating conditions for the development of urban agglomerations, as well as focusing on reducing the level of interregional differentiation in the socio-economic development of the constituent entities of the Russian Federation and stimulating the expansion and strengthening of economic ties between the constituent entities of the Russian Federation, along with the creation of interregional production and infrastructure clusters, it is worth, first of all, to pay special attention to the development of human potential. At the same time, more and more educated and qualified people leave Russia year after year for permanent or temporary residence abroad.

Formation of opportunities for attracting investments for the creation of new industries, including foreign investors, raising the level of education of personnel, active production and promotion of industrial products of regional manufacturers on the Russian and international markets would certainly solve the lion's share of current tasks and provide a confident basis for security and stable economic and political future of the country.

The transformation of the scientific, technological and industrial complexes of the regions can be carried out both with the help of new targeted programs and locally using a number of tools, such as, for example, attracting sufficient qualifications of personnel in the scientific field, creating and stimulating powerful scientific and educational centers, increasing innovative activity enterprises of the regions, as well as their cooperation with scientific and educational institutions, the creation of technological parks on the territory of the regions, the creation and development of an adequate regulatory and legal framework, support for enterprises investing in innovations and research areas, and, of course, first of all modernization of enterprises and the organization of their own production of components and parts, ensuring continuous industrial production of at least the products of strategically important industries [6].

3. Results

The current existing threats and challenges to the country's economic security are analyzed, which can be leveled out by transforming the production and scientific-technological complexes of the country's regions, the threats that technological sovereignty will allow to avoid in full or in part are highlighted, and ways of solving these issues are described. The concept of sovereign technologies has been defined and clearly fixed and the need for a country to achieve technological sovereignty has been argued.

4. Conclusions

Taking into account the extreme unevenness of the spatial development of the Russian Federation, the increasing differentiation of regions and municipalities in terms of the level and rates of socio-economic development in the conditions of exhaustion of the export-raw material model of economic development, as well as a sharp decline in the role of traditional factors in ensuring economic growth associated with scientific and technological changes, in order to ensure economic stability and security of the country, it is necessary to modernize the very structure of the economy, focusing on the transformation of the scientific, technical and industrial complexes of the regions, assigning a special role to domestic technologies and the component base of production [7]. Creating conditions in the regions for the development and implementation of modern technologies, stimulating innovative development, as well as improving the regulatory framework in this area will serve not only to ensure technological security, but also to develop human potential, which are also the main directions of current state policy [8].

The need for protection from unwanted external influences and radical internal changes, in other words, the need for security is a fundamental need for both the life of an individual and various associations of people, including society, individual regions and the state as a whole. The openness of the economy and globalization made it possible for foreign manufacturers to seize the Russian market, as well as to have an unacceptably high impact on production, as a result of which the country's national security is under threat for a number of reasons. The process of ensuring technological sovereignty will have a positive impact on
a number of factors at once - social, strategic and economic, will ensure the stability and sustainability of
economic relations both at the level of the country as a whole and at the level of the economy of regions
and industries, ensuring the independent and stable development of regions. At the level of market agents,
it will ensure the flow of additional investments, since technological sovereignty will guarantee the timely
fulfillment of all obligations by production, regardless of the political, global economic and epidemiological
situation, as well as global logistical problems (as an example, 2020 is very indicative, when the Covid-19
crisis disrupted industrial value chains around the world). Thus, the state strategy of economic security
pursues the goal of ensuring the protection of both the country as a whole and the population by increasing
the level and quality of its life, effectively solving internal economic and social problems, as well as
influencing world processes, taking into account national state interests, at that time as technological
sovereignty makes it possible to solve most of the set strategic tasks and is an effective and necessary step
towards strengthening the sovereignty of the country as a whole.

5. References
[1] Decree of the President of the Russian Federation dated May 13, 2017 No. 208 "On the Strategy of
the Economic Security of the Russian Federation for the Period until 2030"
http://government.ru/docs/all/111512/
[2] Henderson V 2003 Marshall’s Scale Economies J Urban Econ
[3] Putin V V "Message from the President to the Federal Assembly" dated March 01, 2018 (speeches
and transcripts) http://kremlin.ru/events/president/news/56957
[4] Decree of the President of the Russian Federation dated May 7, 2018 No. 204 "On national goals and
strategic objectives of the development of the Russian Federation for the period up to 2024".
http://kremlin.ru/acts/bank/43027
[5] Decree of the President of the Russian Federation dated May 12, 2009 No. 537 "On the National
Security Strategy of the Russian Federation for the Period until 2020", clause 6 // SPS "Garant".
https://www.garant.ru/products/ipo/prime/doc/95521/
[6] De La Roca, Jorge and Diego Puga 2017 Learning by Working in Big Cities Rev Econ Stud
[7] Rosenthal S S and Strange W C 2004 “Evidence on the Nature and Sources of Agglomeration
Economies” in Henderson, J V and Thissé J-F (Eds.), Handbook of Urban and Regional
Economics 4 (Amsterdam: Elsevier)
[8] Carlino G and William R K 2015 "Agglomeration and Innovation", Handbook of Regional and Urban
Economics 5