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## System innovations for Modern Russia. The Search, the Problem, the Solutions

**Abstract:** For Russia to exist effectively a strategy of innovative changes is needed. Innovative development takes two forms: technological and social. The current political system needs to be transformed in order to implement innovations. Currently, radical appeals and calls for modernisation do not receive mass support and are rejected by society.

**Key words:** innovations, system innovations, postindustrial civilization, innovative type of development

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The implementation of innovations reflects a desire for progress. Each country has its specific features as does Russia. An analysis of the course of the modernisation of the political system of Russia as a wave, instead of a process of linear progression seems fairly promising. Each cycle of reforms and counter reforms does not return society and the state back to their initial condition, but instead advances them along the path to progress.

In an address by President V. V. Putin to the Federal Meeting of the Russian Federation (2012), there is special attention paid to the necessity to search for and implement innovative<sup>1</sup> approaches in all spheres of social life (*Обращение*). This was emphasised in the President's live television call-in show, where he answered questions from the inhabitants of Russia in April 2013 (*Прямая*).

The topic had been discussed earlier. The President designated a vector of development for the country at a session of the State council devoted to the prospects of Russia up till 2020, assuming the refusal of a paradigm of accelerated development. He stressed that "the only real alternative ... is a strategy of innovative changes leaning against one of the main competitive advantages – human potential, and the most effective application of knowledge and abilities of people for ... improvements in technologies, economic results, and social life as a whole" (*Выступление Президента*).

D.A. Medvedev noticed that "we should focus upon ... basic directions, on the so-called 'four i-s'," during his performance at the Krasnoyarsk Economic Forum in February, 2008, when he acted as the President of the Russian Federation: Institutions, Infrastructure, Innovations, and Investments (*Выступление Д. А. Медведева*).

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<sup>1</sup> The term 'innovation' is derived from the Latin 'novatio' meaning 'renewal'. The affix 'in-' means 'towards' in Latin, resulting in the final term meaning 'towards changes'.

The essence of the innovative process is defined as follows: it is the application of innovations covering all kinds of relations, from manufacture to consumption, as expressed by the American researcher J. Bright (Абаренков et al., 1998). Certainly, it is necessary to use every opportunity for introducing those innovations that result in increases in efficiency, improvement of quality, optimisation of processes and developments. But there are also innovative solutions which, taking root locally, lead to much more global positive effects. This is a question of so-called **system innovations**, and, according to Japanese researchers (for example professor Shimaguti Mitsuaki), the 21<sup>st</sup> century paradigm is a strategic course of development – the creation of essentially new **innovative systems**, namely: business systems, marketing, research, systems of creation of social values, systems of constant advantages, systems of interaction with clients, etc. (*Что такое*).

The Russian researcher V. Kotelnikov identifies seven basic areas of **system innovations**: innovative business models, innovative strategy, innovative institutions, innovative business processes, technological innovations, innovative marketing, innovative products (*Что такое*).

Almost all innovations are of a systemic nature, but we often limit this concept, defining it as the course of technical and technological innovations. Russia positions itself modestly enough within those spheres. The country, by Western standards, is neither an actual, nor a potential leader of technical progress in the world.<sup>2</sup>

According to polls, the finance allocated for innovations is spent basically on ‘improvement of an existing product’ (43% of respondents) or ‘existing process’ (32%). Of all companies asked, only 16% specified introduction of innovations to improve an already existing product and only 9% indicated improving of production process.

Western countries have considerably overtaken us in innovative culture – the key parameter of post-industrial civilisation. The share of high technologies in the industrial output of Russia included in global economic circulation at the turn of the 21<sup>st</sup> century was less than 1%. The presence of innovative Russian products in the world market is only 0.2–0.3%, whereas the USA’s share is about 40%. In Western Europe, 80% of companies use the latest technological advances while the rate in Russia is only 5%. The world market of information technology has grown to USD 1.5 trillion, while the Russian market is worth USD 8 million (which makes only 0.5%). The Russian economy is often not capable of digesting even the discoveries of Russian scientists. We are the 6<sup>th</sup> best in the world in terms of generating ideas, patents and other objects of intellectual property, but as for the ability to do business on that basis, i.e. to capitalise intelligence, we occupy the 90<sup>th</sup> position. Against a background of long-term efforts to realise the so-called government program “Electronic Russia”, in 2006, our country occupied the 70<sup>th</sup> position in the world (of 122) in terms of IT technologies, according to the World Economic Forum (Ракитов, 2004).

It is necessary to compare our reality, capabilities and the experience of others (the advanced industrial Western countries) where creation of organisational formations of an innovative orientation is carried out mainly in the form of special programs of various

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<sup>2</sup> Russia is not even considered to be a so called dynamic adopter.

governmental departments (in the USA it is basically the Department of Energy and National Scientific Fund).

According to global practice, various innovative structures operate this, such as: technological incubators, technological clusters, information networks, expert and consulting bureaus, patent services, financial institutions, united into national and trans-national 'innovative' networks, for example, 'the European network of the business innovative centres' (*The European*), information systems (*Euro Info*), centres of technology exchange (*Innovation Relay*) etc.

In the second half of the 1990s the governments of almost all West European countries approved programs for the stimulation of innovative activity (*Инновационная деятельность*).

Now, in the developed countries of the West, the share of new or advanced technologies, equipment and other products containing new knowledge or solutions provides 70 to 85% of GDP. They constitute more than 90% of global scientific potential and control 80% of the global hi-tech market, which is estimated to be USD 2.5–3 trillion, overtaking the markets of raw materials and power resources. It is predicted that in 15 years it will be worth USD 4 trillion.

The profit received from high technology product sales is huge. Annually, high technology exports bring about USD 700 billion to the US, USD 530 billion to Germany and USD 400 billion to Japan. The most dynamically developing sector is exchange of technologies and services (Бойко, Власкин, Овчинников, Ленчук, Цукерман). The developed countries have basically 'grabbed' the fast-growing and the most promising (in terms of export incomes) innovative-technological segment of the world market, with the main players thereof being the transnational corporations controlled from within the leading industrial countries.

The following major innovative technological directions at the beginning of the 21<sup>st</sup> century can be identified based on the range of scientific and technological achievements, as well as on their social and economic potential: information and telecommunication technologies; medicine and public health services; environment protection.

Special attention should be placed upon computer science as the technology which has truly generated the global innovative sector and has the highest multiplicative effect. It is this sphere that during the 1990s became an area of dramatic changes, affecting not only economics, but also lifestyles, public awareness and culture. The role of the Internet is considered to be equivalent to that of the invention of printing in the history of mankind.

Three centres, namely the USA, Japan and the EU now have greatest scientific, technical and technological potential in the world (*Наука и высокие*). Of the fifty highest technologies enabling manufacture of high technology products in the fields of space technology, automated equipment and IT, electronics, pharmaceuticals, exact measuring devices, electronic equipment etc., the developed countries possess forty six technologies today, controlling 4/5 of the world's production of scientific and hi-tech goods. Of those technologies, 22 are controlled by the USA, 8–10 by Germany, 6–8 by Japan, 3–5 by Britain and France each, and Sweden, Norway, Italy and Switzerland have 1 technology each. All other countries control only 3–4 such technologies together. One or two critical technologies from the leading industrial states have been implanted into Singapore, Taiwan

and China. The USA is the indisputable leader of world innovative processes today (*Инновационная политика*).

As we can see, the innovative policy is essential for our country. A. G. Fonotov, in his book *Russia: innovations and development*, describes it as a set of actions aimed at the creation of social and economic, scientific and technical and organisational preconditions for aiding the development of the productive forces of a society and social production as a whole. According to him, an object and an end point of innovative policy efforts at such a level of generality is technology in a broad sense, represented and expressed not only by and through technologies, but, taken together with a complex of the major conditions for its creation, formation and functioning (Фонотов, 2013, 353),<sup>3</sup> it is a link between the sphere of 'pure' (academic) science and manufacturing problems.<sup>4</sup>

We think that it is expedient to speak about a similar paradigm of development and living requirements with regard to a policy, political system or political life where new ideas, new approaches and new technologies are undoubtedly necessary, and which can be the driving forces behind innovations in other spheres too (*Теория*).

As a whole, the role of the state in the field of innovations support can be outlined as follows (*Инновационная политика*):

- the state promotes scientific development, including applied science, and preparation of scientific and engineering personnel (the basic source of innovative ideas);
- within a majority of governmental departments there are the various programs aimed at an increase in innovative business activity;
- state orders, mainly in the form of contracts for research and development, provide the initial demand for many innovations which then find wide application in various branches of the national economy;
- tax collection and other elements of state regulation form a stimulating influence on the environment encouraging efficiency and the necessity of applying innovative solutions by individual firms;
- the state acts as an intermediary in the effective interaction between the academic and applied sciences, stimulates cooperation in the field of research and development of industrial corporations and universities;
- creation of consortia, engineering centres, scientific and technological clusters and other promising institutions that successfully realise complex innovative ideas is a bright example of efficiency of the state cooperation.

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<sup>3</sup> Experiences of many industrial countries show that in terms of development and stability of the political system everything should begin with establishing a governmental innovation policy to form a favourable economic environment, social basis and legal standards to kick-start the innovative process in the state and society.

<sup>4</sup> Analysis of the innovative subjects and phases of the innovative process can be traced in some works by foreign and domestic researchers: Р. Верона, Дж. Даннинга, П. Дракера, Ч. Киндльбергера, Р. Коуса, Д. Куинна, Г. Менша, Р. Рича, Э. Тоффлера, Л. Уэллса, П. Фишера, Дж. Форреста, К. Фримена, С. Хаймера, И. Шумпетера and others. К. А. Багриновского, А. С. Белорусова, С. Ю. Глазьева, О. Г. Голиченко, Л. М. Гохберга, А. А. Дынкина, Н. И. Ивановой, Д. А. Карцева, Я. Кузьминова, В. Л. Макарова, В. А. Орешкина, В. Е. Рыбалкина, Г. С. Сагиевой, Л. Е. Товстых, В. С. Циренщикова, А. В. Шамраева and others.

At state level, there is a document, approved in 2004, called “The basic directions of a policy of the Russian Federation in the field of development of a national innovative system for the period till 2010.” The innovative policy in this document is focused on the formation of an economy based on new knowledge and promising technologies. These directions are taken as a basis for the concept and plans for the social and economic development of Russia until 2020.

In Russia, a draft of the federal law “About innovative activity and the state innovative policy” (*О нпоекме*), has been developed, in which the following concepts are applied:

- an innovation is the end result of creative activity which has been realised in the form of new, advanced production, or a new or advanced technological process used in economic activity;
- innovative activity is the creation of new or advanced products, new or advanced technological processes being realised in economic activities on the basis of scientific research, developmental work or other scientific and technical achievements;
- the state innovative policy is a component of a social and economic policy directed towards the development and stimulation of innovative activity;
- venture innovative funds are non-commercial organisations established by legal and/or physical persons on the basis of voluntary property payments and/or voluntary investment in exchange for a portion of share capital aimed at financing the development of new kinds of products in manufacture and/or technologies connected with high risk;
- the infrastructure for innovative activity is those organisations rendering services to the subjects of innovative activity necessary for realisation of the innovative activity.

The principal types of the innovative activities in the Russian Federation are defined in the document as follows:

- carrying out research, developmental and technological work aimed at the creation of new or advanced products, new or advanced technological processes, utilised in economic activities;
- marketing research and the management of innovative product markets;
- technological re-equipment and manufacture preparation;
- carrying out of tests, certifications and standardisation of new processes, products;
- the initial period of manufacturing new or advanced products, applying new or advanced technology before achievement of a standard time of return on investments for the innovative project;
- creation and development of an innovative infrastructure;
- training and skill conversion of personnel for the innovative activity;
- protection, transfer and acquisition of rights for intellectual properties and confidential scientific and technical or technological information;
- financing of innovative activity, including investment in innovative programs and projects;
- other kinds of work which are necessary for innovative activities and do not contradict the legislation of the Russian Federation.

The long-term forecast to 2030 corresponds with these positions to a certain degree, and that has been confirmed by the Prime Minister D. A. Medvedev (*Д. Медведев*

*придумал*). The document has been developed by the Ministry for Economic Development of Russia, following a decree of the President of the Russian Federation dated 7<sup>th</sup> May, 2012.

The forecast for social and economic development stipulates the creation and modernisation of high-efficiency workplaces, accelerated development of hi-tech branches of the economy, increase in investment activities and improvement of the enterprise climate, growth of labour productivity and resolving problems of social development.

Three basic scenarios for long-term development are present in the document: conservative, innovative and intensified. The given scenarios assume the continuing tendency of globalisation of markets with increasing growth of world trade, reduction of income differences between developing and developed countries and conservative assumptions of world prices for Ural oil until 2030, at the level of USD 91–110 per barrel from 2013–2030 at the prices of 2010.

Meanwhile the basic distinctions among the scenarios are the degree of modernisation of the economy of Russia, initial preconditions for possible restrictions on budgetary expenses and others, including demographic forecasts.

So, the conservative scenario is characterised by more active modernisation of the fuel, energy and raw material sectors in comparison with the civil hi-, and medium-technology economic branches. This modernisation type is based mostly on import of technologies and knowledge. Mid-annual rates of GDP gain are estimated at a level of 3–3.2% and investment in fixed capital at a level of 4.7%. The share of Russia in global gross domestic product will drop from 3.8% in 2012 to 3.6% in 2030.

Meanwhile the innovative scenario is characterised by strengthening of the investment orientation of economic growth and rests on the creation of a modern transport infrastructure, competitive hi-tech production facilities and a 'knowledge-based economy' along with modernisation of the power resources and raw materials complex. It is assumed that the transformation of innovative factors into the leading source of economic growth and rapid increase of efficiency of human capital will take place around 2020–2022. That will allow the social parameters of development to improve. Mid-annual rates of GDP gain are estimated at a level of 4–4.2% with investment in fixed capital being 5.9%. The share of Russia in global GDP will increase to 4.3% by 2030.

The intensified scenario is characterised by an intensification of all available factors of economic growth and assumes acceleration of reforms for business climate improvement, activation of use of national savings, growth of state expenditure on the development of social, power and transport infrastructures, creation of large non-raw material export and considerable inflow of foreign capital. Mid-annual rates of GDP gain are estimated at a level of 5–5.4% with investment in fixed capital being 8.2%. The share of Russia in global GDP will increase to 5.3% by 2030.

This specific scenario is characterised by raised risks of macroeconomic imbalance. In particular, the scenario provides for the growth of corporate sector debts to 119% of gross domestic product by 2030 (vs. 78% of GDP in the innovative scenario), and the debt of households to 65% of GDP (vs. 52%).

It would seem that the objectives of the innovative policy have been established, but it is expedient to correlate the problems of innovations and modernisation, which is suggested by academia, publicists, and experts.



There is a real danger that, under the conditions of political opposition, the concept of modernisation can be used to suffocate the **tendency toward innovative development**. Meanwhile modernisation has its own appropriate place. It lies first of all where there are still no innovative reserves or where they have not yet achieved the level of mass application. The basic characteristic of the **innovative type of development (ITD)** is that the centre of gravity is transferred from production of material components (implements of production, machine tools, machinery, materials, physical work) to the non-material sphere – information, knowledge, creativity. It is those components that labour productivity, the results of manufacture and its influence on social life depend.

Innovative development acts in two forms: **technological and social**. The content, size and quality of this potential are reflected in the categories of human capital and social capital (*Инновационная деятельность*).

However, there is a question if all countries can and should have state innovative programs. In the dispute between supporters of innovative development and loans, the supporters of the latter approach won in Russia. The experience of successfully developing countries that started from the level of democratised Russia (backlog level), has shown that they did not begin with the development of innovations at all. Rather, they simply borrowed technologies from the ‘developed’ countries. Many think this is the proper approach. With our current backlog to the advanced countries it is necessary to focus on constant borrowing and adaptation of technologies already developed by them to raise production efficiency. And as we approach the ‘technological border’ of the developed countries it is necessary to increasingly rely on innovations, i.e. to create technologies and products which have not yet been created in other economies.

Not simply modernisation but an ‘innovative modernisation’ (Николаев, 2005),<sup>5</sup> is currently needed in Russia, that will allow us to change the type of social and economic development of the society and will demand, in turn, the essential transformation of the existing political system. Near this world technological border, non-standard institutes of development cease to work, and for further growth creative changes in the political system, civil society and social capital are necessary.

The paradoxical situation is obvious: the society is facing an imperative of ‘creative modernisation’, without having solved the problems of modernisation of the lower order – we call this ‘primary modernisation’ – that we believe is needed to release the society from traditional, totalitarian stratifications to rid it of deformations of ‘wild capitalism’

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<sup>5</sup> The idea of ITD has been accepted more and more widely since the second half of the 1990s. Seminars and round tables are held on this subject, strategic plans developed in the regions and enterprises. In 1999, the “National Charter culture of innovation”, signed by the representatives of science, culture, education, business, and government was adopted in Ulyanovsk and Moscow. It spoke of the crucial role of the cultural environment in shaping positive attitudes to innovations in production and working conditions, of the improvement of the environment and social life. In 2001, an international forum on the subject was held in Moscow under the auspices of UNESCO that focused on the idea that innovation culture is a strategic resource of the 21<sup>st</sup> century. In the same year, a Committee on the Innovation Culture was established under the Commission of the Russian Federation for UNESCO Committee Affairs, its mission being to build partnerships with UNESCO on the development of this issue.

and to conduct the re-industrialisation of the country. The two kinds of modernisation – ‘primary’ and ‘creative’ – are inseparable in time, though the first logically precedes the last and is its necessary precondition.

For now, there are no significant socio-political resources for changes in the existing political system (Ð'âîâ). There is no alternative. In such a situation, radical appeals and actions do not receive mass support and are rejected by society. This is not owing to any national-historical features of ‘the mentality of the inhabitants of Russia’ but rather due to fear of a massive calamity, which is based on the recent experience and the big risks of failure in an uncontrollable and disintegrating depression.

At the same time, the society feels all the more sharply that the need for changes has not disappeared, but is always there. Ever new impulses of the ‘need for change’ are emanating from the society.

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### Streszczenie

#### **Inwestycje systemowe we współczesnej Rosji: poszukiwania, problemy, rozwiązania**

Dla skutecznego istnienia państwa rosyjskiego niezbędna jest strategia wprowadzająca szereg innowacyjnych zmian. Rozwój innowacyjny przejawia się w dwóch formach: technologicznej i społecznej. By wprowadzić innowacyjne rozwiązania niezbędna jest przebudowa istniejącego systemu politycznego. Tymczasem obecne – radykalne – apele i działania na rzecz modernizacji nie cieszą się wsparciem opinii publicznej, są wręcz odrzucane przez społeczeństwo.

**Słowa kluczowe:** innowacje, innowacje systemowe, cywilizacja postindustrialna, innowacyjny model rozwoju

