

## STRATEGIC RISKS OF RUSSIA

### Methodological approach, identification and preliminary assessment

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#### Abstract

Different accidents, crises, catastrophes and disasters in principle can lead to national and international consequences. National scale risks, connected with sustainable development and national safety, are defined as strategic. This paper is focused on identification, assessment and forecasting strategic risks in Russia in the main areas of national activity: economical, political, social, ecological, industrial, R&D. Approaches to strategic risks assessment are analyzed. An expert method mixed with a fuzzy set approach has been used for strategic risks evaluation. Some results of preliminary assessment of strategic risks (relative importance of different factors) in the main areas of national activity are presented.

#### Modern position of Russia

The last decades of 20<sup>th</sup> century in Russia experienced a lot of dangers and threats of a strategic character, these were connected with internal socio-economic and political transformations, and also global processes. The modern situation in Russia is characterized by deep and comprehensive crisis potential connected with the transition from one type of society to another; this includes changes in political systems and economics. The potentials to sustained development and effective maintenance of the national interests need to be managed. There are the following concerns: the nuclear status, natural resources; powerful industrial and financial groups, the capability to become generators of growth; a high level of educational and cultural development; scientific achievements; the remaining political potential of influence in the world; magnitude of territory.

Now practically all key indicators describing national sustainability and security (level of GDP, differences in development of regions, level of poverty, R&D financing etc.), are in the critical zone. The realization of threats to national security, intensive industry, infrastructure failure, technological lag, destruction of scientific and technical potential, social crisis and impoverishment of the population, extinction of a nation, crisis of an authority are some areas of concern.

In a situation of a system in crisis, the strong interdependence of various areas of national security needs a special approach to decision making at the government level for achieving sustainability. This analysis can be developed on the basis of the strategic risks concept.

#### The strategic risks concept and methodological bases of the analysis

Strategic risk (SR) is understood as a possibility of origin of the crisis phenomena, processes, catastrophic situations and their possible consequences, which realization results in essential



decrease in the vital interests of the person, society and the state (Akimov, Lesnykh and Faleev, 2002). The concept of SR is wider, than similar term applied in financial risk - management, where the strategic risks are connected to a possibility of essential modifications in a position of the company or corporation in the market, level of the incomes and so on. The SR definition used in this work deals with frameworks of threats to national security and is linked to the problem of sustainability. It is necessary to underline that the necessity of development and application of the concept of strategic risk is most acute during crisis development.

The basic spheres of country activity for SR were chosen as: political, economic, social, natural-technological, R&D (Table 1). The preliminary researches on selection and estimation of a significance SR for sustainable development and maintenance of national security of Russia in each of area of the state activity is now carried out.

A significance of strategic risks from the point of view of sustainable development of the country is evaluated absolute (economic estimations of probable harm to the vital interests of the person, society, state and nation) and relative (place of risk in the ranked list) parameters. Taking into account, that the absolute parameters by virtue of essential uncertainty in an estimation, on the starting stage of research the relative estimations were used.

Within the framework of studies conducted by the Center of Strategic Research of Ministry of Emergencies of Russia, the methodological approach for an estimation of a relative significance of strategic risks divided on the areas of occurrence was developed. The basis of the approach is expert methods using a scale of conjugate comparisons for a quantitative estimation of preferences. This method does not require obligatory transitivity of preferences of the expert, and the processing of matrixes of conjugate comparisons is easily developed on the computer. However the method has no precise physical interpretation and has no a possibility of treatment of received estimations as subjective probabilities, that hinders its use for processing the resulting information of the probability theory. The derivation of quantitative information about the relative significance of the risks in the indicated method was supplemented by a model based on application of the fuzzy set theory.

Table 1. The main spheres of the state activity and parameters of risk

Nº	Area of the state activity	Strategic risk characteristics
1.	Political	Political risk: - a degree of political instability; - terrorist threats; - a standard of defensive capability of country; - a level of trust of the population of an authority
2.	Economic	Economic loss: - reduction of GDP; - a level of a falling of production; - the investment in a fixed capital etc.
3.	Social	Social damage: - reduction of an average life time; - level of premature death rate; - a share of the population below the poverty level and so on.
4.	Natural-technological	Emergencies frequencies, economic and social losses: - an amount of the people, which have



Nº	Area of the state activity	Strategic risk characteristics
		<ul style="list-style-type: none"> <li>- perished and suffering;</li> <li>- population with the infringed living conditions;</li> <li>- economic damage</li> </ul>
5.	R&D	<ul style="list-style-type: none"> <li>Scientific and technical damage:</li> <li>- a share in GDP of investment for a science</li> <li>- a share of hi-tech production</li> </ul>

For quantitative estimations of an integrated degree of a significance of strategic risks the fuzzy variable "significant risk for sustainable development of the country" was entered, definite on a discrete set  $\Theta = \{\theta\}$  from  $m$  risks. Then a function of a membership of SR to a fuzzy set is constructed, which sense is formalized by the chosen fuzzy variable. The fuzzy set  $\tilde{A}$  on a set  $\Theta$  represents a population of pairs  $\tilde{A} = \{<\mu_A(\theta)/\theta>\}$ , where  $\mu_A(\theta)$  - degree of a membership of risk  $\theta \in \Theta$  to a set  $\tilde{A}$ , which can be treated as subjective probability. In more detail method, model and algorithm of an estimation of a relative significance of the factors of strategic risk is described in (Akimov, Porfiriyev and Radaev, 2002).

The technique for estimating the relative significance of SR, based on the proposed model, includes the following sequence of operations:

1. The choice of compared SRs or areas of their origin;
2. Choice of the experts;
3. The choice of fuzzy variable in the best way circumscribing a significance of SR for sustainable development of the country;
4. Calculation relative weights of SR on the basis of a method of conjugate comparisons with a quantitative estimation of preferences;
5. Calculation normalized weights - degrees of a membership of SR to a fuzzy set.

### Strategic risks of Russia estimation

Within the framework of the method, experts in the field of interdisciplinary and systems research developed an estimation of the relative significance of strategic risk realization. The results of the estimations are shown in the Table 2 and characterize an economic area as most significant from the point of view of strategic risks and also specify a rather high significance of a political and social spheres.

Table 2. A relative significance of strategic risks

Area	The normalized significance
Economic	1
Political	0,84
Social	0,62
R&D	0,41
Natural-technological	0,21

The engaging of the experts in the chosen areas of SR has identified the structure of the factors and helped to make an estimation of their relative significance. On a basis of trends and integrated indicators of economic development of the country, the strategic risks in an economic sphere were chosen. The results of the expert estimation in the given sphere are presented in the Table 3. It is interesting to note, that the greatest weight and the probability of



realization has such factor, as a nonrational choice of priorities and proportions of development of economy, amplification of a structural strain of a national economy. In essence it reflects high sensitivity of a socio-economic system to acceptance of strategic solutions at the present stage developments of Russia.

During significant changes happening in Russia and connected with change of patterns of ownership and character of economy political risks acquire strategic significance. The strategic risks in a political area reflect an amplification growing influence of external threats from international terrorism and also significant local conflicts. Quantitative evaluation of the significance of these factors in the given area require additional research.

Table 3. A relative significance of strategic risks in economy

Risk factors	The normalized significance
Nonrational choice of priorities	1
Crimes in economy and outflow of the capital	0,56
Decrease of an industrial potential	0,42
Possibility of energy crisis	0,32
Excess of limits of an openness of economy	0,29
Unfavorable economic conjuncture	0,17
External debt	0,15
Low competitiveness of production	0,12
Agriculture production reduction	0,11

The basic purpose of management of strategic risks in the social area is the increase of a quality of life and decrease of probability of social crises. The most significant strategic risks in the given sphere identified by the experts were: corruption, incompetence of authorities, and also decrease of a standard of living and social tension (Tab. 4).

Table 4. A relative significance of strategic risks in social area

Risk factors	The normalized significance
Corruption and incompetence	1
Decrease of a standard of living and social tension	0,76
Spiritual crisis	0,29
Differences in socio economic development of regions	0,27
Rise in crime	0,23
Growth of alcohol drug consumption	0,19
Peaking of a demographic situation	0,18
Biological-social emergencies	0,08

Among most significant risks in R&D area the experts have allocated a nonrational choice of priorities of scientific and technical policy and decrease of innovative potential (Table 5). The second factor directly reflects such negative processes as aging of the staff and crisis of education system.



Table 5. A relative significance of strategic risks in R&D

Risk factors	The normalized significance
Nonrational choice of priorities.	1
Decrease of scientific, technical and innovative potentials	0,69
Growth of information vulnerability	0,33
Threat of unauthorized use of modern technologies	0,17
Uncertainty of technologies of the future	0,1

The growing scales of the natural disasters, technological accidents and catastrophes carry strategic character and are most significant now (Table 6). Hereinafter it is possible to expect an amplification of a significance of global environment changes.

Table 6. A relative significance of strategic risks in natural-industrial sphere

Risk factors	The normalized significance
Development of the dangerous natural phenomena	1
Accidents and catastrophes in an industry	0,94
Pollution of the environment	0,43
Global climate changes	0,23
Exhaustion of natural and biological resources	0,15

### The prognosis of strategic risks in Russia

According to the experts the significance of an economic area of SR remains the most essential for all forecasting levels (short, middle, long term). In essence, the given factors influence the majority of areas of state activity. The qualitative ranking of a relative significance of the considered areas of SR remains identical to various forecasting terms (Table. 2). Definite changes of a relative significance arise basically inside each of listed groups.

Considering the **short-term forecasting** (up to 5 years), it is possible to speak about probable occurrence of strategic risks for several reasons:

- excess practically of all critical levels of indicators of national security;
- the wide list of the factors of SR, having a high degree of realization;
- strong mutual influence of the factors and potential possibility of interconnected amplification.

In an economic area the occurrence of strategic risks contacts to a nonrational choice of priorities, amplification of crime level and capital outflow, decrease of an industrial potential and possibility of an energy crisis. Two last components correspond with the scientific and technical factors of SR – reduction of innovative and scientific potential. In the political area the significant factors are external threats, interethnic and regional conflicts. Special attention is required to deal with the problem of international terrorism having internal and external sources.

The joint influence of economic and political threats already in the nearest prospect can strengthen frequency and scales of SR in social area. The high level of criminality in economy and incompleteness of legislative bases of a transitional period will promote a high level of corruption. The errors in a choice of priorities of development of economy, different level of development of regions, insufficient attention to spiritual development of the society in recent years with a high probability will increase spiritual crisis (especially in a youth medium), will aggravate a problem of consumption of alcohol and drugs.



In spite of the fact that natural and industrial risks close the list of a relative significance, their constant presence at the forecasting allows to speak about base character of the given factors. Unfortunately, the natural extreme phenomena are poorly managed not only in our country, but also worldwide. There are complexities in forecasting reliably. For example, geological, meteorological and a number of complex natural risks exist. In this connection special attention must be given to the development of methods of monitoring and engineering methods of serving the safety of the population and territories. Industrial risks are more manageable; however with allowance for process of aging of equipment and decrease of a professional level of staff. Recent years have shown it is necessary to expect increased frequency and scale of consequences from accidents and catastrophes on potentially dangerous objects.

**Looking forward 10 years** to the factors listed above we must emphasize economic risks due to threats caused by an excessive openness of economy of Russia and growth of sensitivity of various branches of a national economy to oscillations of a global conjuncture. On a background of adaptation to global economic processes, the balanced system of defence of the domestic markets should constantly be considered. The other listed threats can have not only economic consequences, but also promote an amplification of social strength. In an economic area the probability and potential scales of an energy crisis (regional, inter-regional, national) could amplify. Despite a significant reserve of power resources, a lag in rates of reforming the base branches of energy industry, a low level of innovation processes and a number of other factors can create increased threats to energy safety at a national level.

The analysis of the forecasting results on separate component of SR adds a conclusion that strategic risks occurrence is rather probable in the Asian part of Russia. The deployment of a number of the large-scale projects in Siberia and on Far East, the outcomes of which can essentially influence not only an internal socio economic atmosphere, but also cause a modification of a conjuncture in Asian - Pacific region. The occurrence of the local centers of the interethnic conflicts is possible, but a special concern is connected with a problem of terrorism, as new industrial objects can become sources of increased interest on the part of the such groups.

The social aspect of SR is potentially connected to the further magnification of antagonism between poor and rich part of the population, differences in social development of regions, peaking of the demographic situation, rise in crime, occurrence of strength between the representatives of different branches of economy. If now most obvious differences of economic development of regions are reflected at comparison of the European and Asian parts of Russia, in ten years the same process inside the Asian regions of country could amplify. The realization of the large projects, probably, initiates migratory processes, which also can become a source of the additional social conflicts.

**For the more remote prospect (till 20 years)** the prognosis of SR, naturally, carries the most schematical character. For the given forecasting time is characteristic about the same list of possible threats, however the likelihood of their potential realization perhaps may decrease a little. Depending on efficiency of antiterrorist operations, it could be weakened or could be increased both danger of the large-scale terrorist actions, and possibility of strong Muslim orthodox center in Asia.

Even for the remote prospect in the prognoses social component of SR Russia still has a problem of a rise in crime, alcohol and drug consumption. Currently there is not enough existing knowledge and mechanisms to manage of the risks.

## Conclusions

The application of risk methodology for estimation and forecasting of the crisis phenomena and catastrophes in modern Russia allows us to develop base principles, methods and systems of identification, assessment and management of strategic risks at federal and regional levels. On



the basis of a regular estimation and prognosis of strategic risks the transition to regulation of national security of Russia on a uniform system, in which the rather safe realization of socio economic and political transformations in Russian Federation is possible.

Strategic risks parameters can be used in the programs of socio - economic development of the country and its regions. Using estimations and prognosis of SR, the state can form a complex system of measures for strategic risk management on the given territory in a concrete period of time. Such approach can effectively influence practice social - economic planning with allowance for of existing global tendencies of growth of an amount of catastrophes and crisis phenomena.

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