Theoretical and methodological approaches revealing the current challenges to the spatial development of regions in the steppe zone of Russia

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Abstract. To detect the current challenges to spatial development, we attempted to identify and theoretically explain the basic notions of stages of challenges' formation. Such concepts as "challenge," "danger," "treat," and "risk" were defined. The revealed determinants were classified according to five blocks of challenges, and multi-scale levels of their formation were detected. Eighteen region-subjects of the RF steppe mesoresion were chosen as the territory of the study. The methodological approach to see challenges using assessments of the rate of increase (2019 to 2010) was offered. There are 28 principal indicators grouped in blocks: inter-regional contrasts (economic development and a state of the social sphere), the imbalance of the natural-ecological and socio-economic frameworks, a compression of developed space, the formation of seats of potential ecological catastrophes, and threat of food security. The table of the rate of increase was designed. Based on this table, we could reveal prevailing negative processes and increased risk of challenge's emergence in every region. According to the study results, the examined challenges in the least degree emerged in the Republics of Adygei and Kalmykia. In the most degree (or more evident), they displayed themselves in the Republic of Bashkortostan, Volgogradskaya, and Chelyabinskaya oblasts. Some suggestions were stated to work out long-term steppe region development plans in the frame of economic-geographical and socio-economic research.

1. Introduction

The steppe and forest-steppe zones have exceptionally important socio-economic, food and nature conservation significance for Russia in the strategic aspect. On the background anthropogenic transformations of landscapes and climate change in vast areas of the country's agricultural belt, problems regarding the socio-economic, ecological and, taking into account the border position, geopolitical stability became more urgent for the last decades.

The following factors can be considered as determinants of the current socio-economic challenges (on their different stages: from potential danger to a real threat and crisis):

- social differentiation, poverty, inadequate volume and quality of social services, an insufficient level of engineering infrastructure, a deficit of qualified staff (health care, education, culture, falling birth rates, the youth migration);
• the discrepancy of scales and rates of the natural-ecological framework formation that is considerably inferior to the intensity of development of the socio-economic frame [1], a break of chains of the natural-ecological framework (ecological connectivity of the space is broken);
• low living standards of the rural population, insufficient state support directed to the social development of a village, the disproportion in distribution of population, economic structure, and natural resources;
• the transformation due to the impact of anthropogenic load [2] on landscape components stable before, a reduction of qualitative and quantitative parameters of water resources, the degradation or extermination of biocenoses formed for centuries, and, as a consequence, loss of landscape and biological diversity, wildfires activation and connected with it risks of crisis ecological and anthropogenic situations;
• a decrease of land fertility due to application of unreasonable and soil-exhausting technologies, low rates of modern agricultural practices’ introduction, imbalance of plant growing and livestock sectors, the baseless melioration measures, especially regarding the realization and incompleteness of environmental-economic megaprojects of the XX century, the formation of unclaimed land resources and use of areas for monocultures based on soil-exhausting technologies, etc.;

The total of the factors listed above in the current stage provoked risks of several socio-ecological-economic challenges to the spatial development of steppe regions: inter-regional contrasts leading to the formation of depressed regions; a lack of balance between the natural-ecological and socio-economic frameworks; a compression of developed space caused by polarization of the population and all-round reduction of the rural population; the formation of seats of potential ecological catastrophes; a treat to the food security at the expense of a loss of qualitative and quantitative parameters of agricultural branches.

2. Materials and Methods
Problems of challenges and risks emergence now are reflected in the public speech of politics, economists, political scientists, etc. D.M. Medvedev, in his work "Russia and global challenges," stated socio-economic tasks afflicting Russia in the context of modern global transformation and gave recommendations on the long-term plan of the country development directed to promote the new quality of the economic growth [3]. Speaking on the online economic forum "The Davos Agenda 2021", Putin V.V., the president of Russia, marked out three crucial challenges at which, in his opinion, the global society faced: socio-economic, public policy, and the third challenge (a threat) was the further escalation of all complex of international problems [4].

The scientific community pays significant attention to the study problems of current challenges. Brega A.V. researched risks in the system of categories "challenge," "treat," "risk" characterized the national security. In the author's opinion, the risk is a derivative of a challenge, danger, and threats [5]. Apokin A. Yu. paid attention to Russia's long-term socio-economical challenge and demand for new technologies [6]. Vaysero K.I. analyzed the interconnection of socio-economic development and ethnocultural diversity of the Russian regions under conditions of globalization [7].

Prospects of applied realization and new technologies of the socio-economic progress were considered in the collective monograph edited by Alpidovskaya M.L. "The Socio-economic Progress: Challenges and Chances" [8]. Kortunov S.V. has made a considerable contribution preparing documentation on Russia’s national security for 1995-2000. In his monograph, he represented the principal outcomes of the study conducted to work out politics of the Russian natural security in the context of the establishment of international security in the XXI century [9].

The analysis of scientific publications and normative legal documents promoted us to deduce a lack of accuracy of theoretical positions at the current stage to identify and understand the substance of such category as "a challenge" [10-14]. Sushkova I.A. conducted interesting research [15]. However, in our opinion, her suggestion of a specific sequence: Challenge → Danger → Threat → Risk is disputable due to the category "challenge" is the initial component of interdependency.
In our research, we consider "risk" as the transition of a negative (for spatial development) phenomenon from the stage of potential danger to a real threat that will inevitably lead to a real threat without a proper response under the exacerbation. This transition can be represented schematically as the following diagram (figure 1).

**Figure 1.** A diagram of stages (phases) of a challenge formation.

Having accepted a definition of a risk as a totality of probability and consequences of the negative processes approach, let us try to define other categories used in the study. Realizing a complex of measures on neutralization of negative processes, we can shorten risks of their emergence and prevent the appearance of more critical stages of a challenge (threat and crisis).

Agreed with a definition of danger as the totality of subjective and negative factors realized but not having the critical probability of infliction of damage [9], let us advance a thesis that the danger, "thanks to" negative processes, risks to transit to more severe stage of a challenge – "a threat."

When the danger represents itself as only a potential opportunity, the category "threat" acquires a realistic character, and negative processes emerge more urgent in this stage. In connection with it, a threat is the more concrete (according to time and place) phase of a challenge representing itself the totality of visibly forming negative factors and conditions.

Suppose we do not give a proper response in the early stages of a challenge formation and negative processes transit to a stage of a threat. In that case, it will be high risks for the transition to a critical state – a crisis and more dangerous - catastrophe and collapse. As opposed to the last, a crisis can be overcome, and its lessons can be used.

Having considered the risks of challenges formation in time, let us pay attention to their level from the point of view of a place. From the point of view of the poly-scale, the start point of the challenge formation is a danger of developing negative socio-ecological-economic processes on the local level (for example, settlement, area, enterprises). Under these processes spreading in time and space, danger and threat on the local level can rise to a danger on the regional level, which, in its turn, under the impact of exacerbated factors and conditions without neutralizing influence, can transform itself in the mesoregional, national and at the end global scales. It is important to give a timely and adequate response on early stages and levels to challenge formation to reduce risks of its development and minimize damage.
Thus, having defined basic notions of phases (stages) of challenges, in theory, let us attempt to estimate rates of increase of the principal socio-ecological-economic parameters in 2019 to 2010 (table 1) [16-27]. It is evident that we cannot conclude about positive/negative processes and the stage of a challenge formation comparing only 2-years’ data. To understand a vector of development of the running processes, we should analyze trends based on complete statistical sampling (for years). The study aims to develop theoretical and methodological approaches to the procedure of detecting the current challenges to spatial development in the steppe zone in the frame of RF regions-subjects enclosing it [28].

3. Results and Discussion

We analyzed rates of increase of 28 principal parameters of 2019 to 2010 grouped in 6 blocks: inter-regional contrasts (economical development): \( x_1 \) – GRP per capita (thousand rubles per person), \( x_2 \) – the average annual number of employed in the economy (thousand persons), \( x_3 \) – a volume of dispatched goods of own making (in the category of manufacturing activity, million rubles), \( x_4 \) – fixed capitals in the economy (to the reported value at the end of an year, million rubles), \( x_5 \) – retail turnover (million rubles); inter-regional contrasts (a state of the social sphere): \( x_6 \) – cash revenue per capita (at a month, rubles), \( x_7 \) – average consumer spending per capita (at a month, rubles), \( x_8 \) – infant mortality rates (a number of babies dead up to 1 year old, per 1000 infants born alive); \( x_9 \) – rate of unemployment (%); the imbalance of the natural-ecological and socio-economic frameworks: \( x_{10} \) – an area covered by forests (%), \( x_{11} \) – a number of protected species of vegetation and animals (units), \( x_{12} \) – the square of SPNA (thousand ha), \( x_{13} \) – the area of built-up lands (thousand ha), \( x_{14} \) – the areas under roads (thousand ha); a compression of developed space: \( x_{15} \) – the rural population density (persons/km\(^2\)), \( x_{16} \) – a proportion of the rural population in the total population size (%), \( x_{17} \) – a rate of unemployment in the rural population (%), \( x_{18} \) – a number of rural settlements; the formation of seats of potential ecological catastrophes: \( x_{19} \) – pollution emissions from stationary sources (thousand tons), \( x_{20} \) – the area of disturbed lands (thousand ha), \( x_{21} \) – turnover water supply (million m\(^3\)), \( x_{22} \) – dirty discharge (million m\(^3\)), \( x_{23} \) – a part of dump (used) wastes of the total mass (%); the food security threat: \( x_{24} \) – production of plant growing (total, million rubles), \( x_{25} \) – livestock sector products (total, million rubles), \( x_{26} \) – productivity of crop and leguminous cultures (dt/ha), \( x_{27} \) – a total area of lands of agricultural designation (thousand ha), \( x_{28} \) – the area of the plowed field (thousand ha).

We should note the different directions of the studied phenomena. For example, we consider an increase of the built-up areas or spaces under roads as a negative phenomenon in this research under the analysis of the imbalance of the natural-ecological and socio-economic framework’s development. However, the growth of parameters of threats of developed space compression will represent positive processes. Also, several parameters (rate of unemployment or infant mortality), an increase of which leading to negative consequences and exacerbating crises, are characterized as unfavorable. The dynamics of such indicators can be interpreted - the higher indicator, the "worse" situation. They are reflected in the table as "-x." Thus, we conditionally divided selected parameters, an increase of which is "favorable" and "unfavorable" for the examined challenge. The calculation of rates of increase of cost indicators \( (x_1, x_3, x_4, x_5, x_6, x_7, x_{24}, x_{25}) \) was made in comparable prices of 2019 to 2010.

The inter-regional contrasts in economic development are defined by the value of the gross regional product per capita and growth rates of which are positive in the studied regions. On the All-Russian background and mesoregional average increase (27.1%), Omskaya, Kurganskaya oblasts, and Altisky krai are characterized by the minimum growth rates – 10%. Rates of increase of dispatched goods of own making in the "manufacturing activity" category reflect the diversification of the region's economy and a state of productive forces. The minimum rate of increase of manufacturing activity among the examined areas is in the Republic of Kalmykia (−65.7%). However, there is the maximum rate of growth of GRP per capita due to a peculiarity of the industry in the region and an increasing part of electric power and agriculture production in the region’s economy.
### Table 1. Rate of increase (%) of principal socio-economic indicators in the RF steppe regions of 2019 to 2010.

(a)

| Region                        | $x_1$ | $x_2$ | $x_3$ | $x_4$ | $x_5$ | $x_6$ | $x_7$ |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Belgorodskaya oblast          | 38.7  | 8.7   | 14.6  | 109.7 | 22.8  | -5.4  | 23.2  |
| Voronezhskaya oblast          | 54.4  | 4.9   | 52.4  | 152.7 | 49.3  | 16.2  | 39.9  |
| The Republic of Adygei        | 22.5  | -0.3  | 46.2  | 106.6 | 36.7  | 17.2  | 40.7  |
| The Republic of Kalmykia      | 61.9  | -8.5  | -65.7 | 37.2  | 13.6  | 20.9  | 42.5  |
| Krasnodarskiy krai            | 24.1  | 15.4  | 53.7  | 222.0 | 11.5  | 5.6   | 18.0  |
| Volgogradskaya oblast         | 16.5  | -10.1 | 18.7  | 7.6   | -10.3 | -15.7 | -2.7  |
| Rostovskaya oblast            | 30.5  | 1.2   | 26.6  | 122.3 | 3.5   | 4.5   | 14.0  |
| Stavropolskiy krai            | 26.2  | 1.5   | 1.6   | 70.6  | -3.7  | -7.0  | 2.9   |
| The Republic of Bashkortostan | 28.8  | -7.0  | -2.2  | 100.2 | -10.4 | -14.8 | -8.2  |
| Orenburgskaya oblast          | 23.4  | -18.3 | 8.9   | 50.8  | 2.4   | -10.0 | 9.5   |
| Samarskaya oblast             | 30.0  | 7.2   | 6.8   | 67.4  | -20.0 | -28.5 | -15.3 |
| Saratovskaya oblast           | 11.6  | -13.0 | 24.0  | 52.3  | 0.9   | -6.3  | 12.4  |
| Kurganskaya oblast            | 6.3   | -23.9 | 18.5  | -4.6  | -18.2 | -22.8 | -4.5  |
| Chelyabinskaya oblast         | 29.0  | 6.0   | -1.0  | 62.8  | -27.4 | -25.1 | -15.5 |
| Alatskoy krai                 | 5.6   | -5.7  | 10.0  | 2.9   | 1.3   | 7.9   | 11.0  |
| Novosibirskaya oblast         | 38.7  | 2.9   | 27.0  | 104.1 | -15.5 | -6.5  | -5.5  |
| Omskaya oblast                | 2.4   | -6.5  | 15.6  | 46.2  | -5.2  | -11.8 | 7.4   |
| The Republic of Crimea***     | 39.4  | -5.7  | 0     | -31.2 | 60.9  | -29.9 | -31.6 |
| A total of Russia             | 27.1  | 5.2   | 27.8  | 84.9  | 0.6   | -8.0  | 6.2   |
| A total of the mesoregion     | 27.1  | -0.6  | 14.2  | 77.6  | -1.2  | -    | -    |

(b)

| Region                        | $-x_8$ | $-x_9$ | $x_{10}$ | $x_{11}$ | $x_{12}$ | $-x_{13}$*** | $-x_{14}$*** |
|-------------------------------|--------|--------|----------|----------|----------|--------------|--------------|
| Belgorodskaya oblast          | -2.2   | -1.3   | -0.1     | 22.5     | 9.3      | 3.1          | 7.2          |
| Voronezhskaya oblast          | -3.0   | -3.9   | -0.1     | -0.6     | -19.7    | 4.4          | 0.6          |
| The Republic of Adygei        | -2.5   | -1.1   | 0.1      | 0        | 1.0      | 4.7          | 0.5          |
| The Republic of Kalmykia      | -8.1   | -5.6   | 0        | 9.0      | 9.3      | 7.3          | 0.5          |
| Krasnodarskiy krai            | -1.5   | -1.9   | 0        | 42.4     | -27.3    | 3.9          | 0.2          |
| Volgogradskaya oblast         | -5.7   | -2.7   | -0.1     | 0        | 4.1      | 0.2          | 0.1          |
| Rostovskaya oblast            | -2.8   | -2.9   | 0        | -0.6     | 101.6    | 1.1          | 0.9          |
| Stavropolskiy krai            | -2.5   | -2.1   | 0.1      | -1.7     | 2.3      | 0.8          | 0            |
| The Republic of Bashkortostan | -0.8   | -4.5   | 0        | -1.5     | 1.3      | 8.1          | 0.8          |
| Orenburgskaya oblast          | -2.7   | -2.8   | 0.1      | 149.3    | 85.8     | 3.4          | 0.1          |
| Samarskaya oblast             | -2.2   | -1.9   | 0        | 185.3    | 26.2     | 4.7          | 0            |
| Saratovskaya oblast           | -1.8   | -2.0   | 0        | -4.5     | 4.2      | 4.7          | 0.1          |
| Kurganskaya oblast            | -3.8   | -4.3   | 1.0      | 4.3      | -4.1     | 0.4          | 0            |
| Chelyabinskaya oblast         | -2.7   | -2.4   | 0.1      | 25.4     | 2.6      | 7.8          | 0.1          |
| Alatskoy krai                 | -4.1   | -3.0   | 0.3      | 1.7      | 16.1     | 0.9          | 0.8          |
| Novosibirskaya oblast         | -2.5   | -1.6   | 0.7      | 2.7      | 19.1     | 1.5          | 0.1          |
| Omskaya oblast                | 0.4    | -1.7   | 0        | 30.8     | 106.3    | 0.2          | 0.1          |
| The Republic of Crimea****    | -1.6   | 3.9    | -8.3     | 252.4    | -       | -            | -            |
| A total of Russia             | -2.6   | -2.7   | -0.2     | -12.8    | 6.9      | 2.0          | 0.5          |
| A total of the mesoregion     | -     | -      | -        | 21.2     | 3.2      | 0.5          | -            |
A total of the regions

| Region                  | x₁₅ | x₁₆ | x₁₇ | x₁₈ | x₁₉ | x₂₀ | x₂₁ |
|-------------------------|-----|-----|-----|-----|-----|-----|-----|
| Belgorodskaya oblast    | -2.8| -1.3| 0.1 | -0.1| 18.5| 0   | 11.3|
| Voronezhskaya oblast    | -7.7| -2.5| -1.3| -1.0| 35.7| 12.5| 44.5|
| The Republic of Adygei  | -2.9| 3.6 | -2.3| 0.9 | 77.8| 33.3| -1.1|
| The Republic of Kalmykia| -9.2| -1.8| -2.5| 0.4 | 85.7| 0   | 0   |
| Krasnodarskiy krai      | 2.8 | -2.5| -1.4| 0   | 210.7| 5.7 | 28.0|
| Volgogradskaya oblast   | -9.7| -1.3| -3.8| -0.5| -28.6| 7.1 | -10.7|
| Rostovskaya oblast      | -4.5| -0.9| -2.7| 0   | -10.1| 21.5| 90.7|
| Stavropolskiy krai      | -3.8| -1.9| -1.9| -0.1| 55.6| -2.9| -5.5|
| The Republic of Bashkortostan | -7.5 | -2.7| -1.7| 0.1 | 21.4 | 1.2 | -0.8|
| Orenburgskaya oblast    | -8.5| -2.1| -0.4| 0   | -26.7| 4.0 | 7.7 |
| Samarskaya oblast       | 0.4 | 0.3 | -2.2| -0.1| -17.6| 0   | 8.4 |
| Saratovskaya oblast     | -10.5| -1.8| -1.3| 0.3 | 26.8 | 13.6| -5.1|
| Kurganskaya oblast      | -17.3| -3.8| -3.3| 0   | -17.8| 0   | -17.4|
| Chelyabinskaya oblast   | -5.8| -1.0| -3.4| 0.2 | -34.2| 18.3| -14.7|
| Altaiisky krai          | -10.2| -2.9| -2.7| -0.6| -18.4| 2.9 | -5.4|
| Novosibirskaya oblast   | -9.8| -3.4| 0   | -1.1| -40.4| 0   | -22.9|
| Omskaya oblast          | -10.7| -2.5| 1.9 | 0.1 | -34.4| -2.0| -41.5|
| The Republic of Crimea   | -3.1| -0.2| -0.7| 5.8 | -3.4 | -70.0| -45.5|
| A total of Russia       | -0.8| -0.9| -1.0| 0.3 | -9.5  | 7.7  | 2.4 |
| A total of the mesoregion | -4.6 | - | - | 0.1 | -7.4  | 4.2  | 5.9 |

Note:
- "a" – a rate of increase of the unemployment rate of the rural population is calculated in 2019 to 2015.
- "b" – a rate of increase changes of the areas of lands of agricultural designation is calculated in 2019 to 2013.
- "c" – a rate of increase for the mesoregion is calculated excluding the Republic of Crimea.
- "d" – a rate of increase of indicators calculated in 2019 to 2015, x₂₂ – in 2019 to 2014 in the Republic of Crimea.

Green color – a rate of increase characterizing positive processes.
Red color – a rate of increase characterizing negative processes.
It is logical to assume that the GRP growth must stimulate the social sphere development. But the evident connection is noticed only in Voronezhskaya oblast and the Republic of Kalmykia, where under an increase of GRP (54.4% and 61.9%, respectively), an increment of cash revenue per capita (16.2% and 20.9%), and consumption spending (39.9% and 42.5%) have happened. Inverse arouse interest. In the Republic of Crimea, with the GRP increase at 39.4% (2015-2019), rates of growth of parameters of fixed asset capital in the economy (−31.2%), cash revenue per capita (−29.9%), and consumption spending (−31.6%) are the minimal among the studied regions. The growth of the unemployment rate in the Republic of Crimea is −3.9%, which is caused by events in the spring of 2014. When old economic connections were broken, and new relations did not have time to be formed, a jump in the unemployment rate has happened from 1.7% (2010) to 7.2% (2015). The unemployment rate in Crimea has gradually improved for the last five years (5.6% in 2019).

One of the factors of the imbalance of the socio-economic and natural-ecological frameworks' development is lag of areas, qualitative and quantitative characteristics of the objects of the existing SPNA network from rates of increase of the urbanized framework in the region. Meanwhile, some steppe regions managed to realize a complex of measures developing a network of the natural-preservation fund. An increase of the SPNA’ square in Orenburgskaya oblast at 85.8% happened thanks to the establishment of a new plot of the "Orenburgskiy Reserve" – the Preduralskaya steppe (16.5 thousand ha) and the Shayan-Tau reserve (6.7 thousand ha), and several wildlife preserves of the regional significance: the Svetlinskii (9.3 thousand ha), the Karagay-Guberlinskoe gap (1.4 thousand ha) [29]. The area of protected territories considerably increased in March of 2018, when the regional preserve of the Guberlinskie mountains was founded (107.1 thousand ha) [30]. In Omskaya oblast, the SPNA area of the regional significance increased for 2010-2019. It happened due to the establishment of such preserves within the territory of the region as Stepny [Steppel] (112.6 thousand ha), Prigranichny [Border] (71.1 thousand ha), Lesostepnoy [Forest-steppe] (71.9 thousand ha), Nadezhdenskiy (29.3 thousand ha), Bairovsky (68.6 thousand ha), Vysokiy Uval [High Ridge] (35.7 thousand ha), Luzinskaya dacha (30.4 thousand ha) and the others.

The compression of developed space is defined by a reduction of areas and point objects of the developed territories. Special attention was paid to the reduction of village' numbers, rural population decrease, and its polarization in connection with it. The analysis of rates of increase of corresponding indicators displays the main reason for migration out rural areas – unemployment of the rural population. Kurganskaya and Omskaya oblasts have the minimal rate of increase of the rural population density (−3.8% and −2.5%) and the maximal rate of increase of rural population unemployment (3.3% and 1.9%) among the regions of the steppe zone.

Formation of seats of potential ecological catastrophes can be as spontaneous (accident, explosion, fire) as caused by the long negative impact of an agglomeration, city, or a separate enterprise on the environment. Rising processing industry development rates in Karsnodarskiy krai (53.7%) led to a considerable increase in atmospheric pollutant emission (210.7%). The maximal values of atmospheric pollutant emission from stationary sources are noticed in Novorossiysk (the center of cement production in the south of Russia) and Krasnodar (the largest industrial center in the south of Russia). Spillover of polluted effluents to surface water bodies in Saratovskaya oblast increased several times for the last two years. Enterprises of Saratov discharge a considerable volume of polluted effluents to the Volgogradskoe reservoir – 86.7 million m³. OOO (LLC) "Kontsessia vosdosnabzheniya – Saratov" is the principal enterprise polluting the reservoir (85%). The highest value of the dirty water discharge in the table is for Saratovskaya oblast and the Republic of Crimea (565.7% and 123.2%). It is caused by technically outdated water and wastewater treatment facilities and sewerage systems not providing a necessary degree of discharge treatment, leading to pollution and worsening of the state of water bodies in the region. The acutest situation has been formed in Simferopol, Saki, Armyansk, Stary Krym, Sudak. Measures directed to recultivating disturbed lands in the Republic of Crimea led to their reduction at 70% (from 5 thousand ha in 2010 to 1.5 thousand ha). It promotes to return lands into turnover, allow using them in agriculture or other branches.

Food security of a region and the country, on the whole, is in the stable development of the production of agricultural products. In this research, the accent is put on the steppe zone regions in Russia, which
give more than a half of plant growing products of the country and 40% of livestock sector's products. High rates of increase of the principal parameters (crop production, livestock products, and productivity) are typical for Belgorodskaya and Voronezhskaya oblasts. In the context of intensive agriculture development, we can interpret the reduction of arable lands and total agricultural areas as a positive event, but only under the condition of increase of productivity and introduction of new technologies of land use.

4. Conclusion
The conducted analysis of rates of increase of socio-ecological-economical indicators displays dominance of negative processes and rising risk for challenges' formation:

- inter-regional contrasts of economic development: in the Republics of Crimea and Bashkortostan, and Kurganskaya oblast;
- inter-regional contrasts of the social sphere state: in Volgogradskaya, Samarskaya, Kurganskaya, Chelyabinskaya, Novosibirskaya and Omskaya oblasts, and the Republics of Crimea and Bashkortostan;
- the imbalance of the socio-economical and natural-ecological frameworks: in Belgorodskaya, Voronezhskaya, Volgogradskaya, Rostovskaya, Saratovskaya oblasts, and the Republic of Bashkortostan;
- compression of developed space: in every examined region, except Krasnodarskiy krai, the Republic of Adygei and Samarskaya oblast;
- formation of seats of potential ecological catastrophes: in Saratovskaya and Chelyabinskaya oblasts, in the Republics of Adygei and Bashkortostan, in Krasnodarskiy, Alataiskiy and Stavropol'skiy krais;
- the threat to food security: in Orenburgskaya, Samarskaya, Chelyabinskaya, Novosibirskaya oblasts, Krasnodarskiy and Alataiskiy krais, and the Republic of Bashkortostan.

According to the study results, the considered challenges emerge in the least degree in the Republics of Adygei and Kalmykia and the most degree in the Republic of Bashkortostan and Chelyabinskaya oblasts.

Detection of current challenges within the regions was conducted, taking into account positive or negative rates of increase. We cannot affirm that the decrease of some parameters' values will lead to a challenge formation in the future, as the positive dynamics do not guarantee the absence of problems in a region. A more accurate prognosis of challenge formation can be received due to the calculation of a level of the region's stability to potential risks and threats.

On the current stage, to develop long-term plans of the steppe region's development in the frame of the economic-geographical and socio-economic researches, it is necessary: to detect and actualize principal challenges for stable ecological and socio-economic development in the steppe and forest-steppe regions of Russia; to identify socio-economic preconditions of steady spatial development in the steppe and forest-steppe areas of Russia in conditions of current challenges; to select directions and methods for leveling of inter-regional contrasts caused by the irregularity of the Russian regions development and the high degree of inter-regional socio-economic asymmetry; to estimate a degree of integration of the socio-economic and natural-ecological frameworks; to work out directions for convergent evolution of the socio-economic and natural-ecological frameworks.

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