Program-targeted land reclamation In Samara Oblast (Russia)

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Abstract. In the article, the authors consider the current state and a number of measures aimed at solving the problems of land reclamation of agricultural lands in Samara Oblast. A feature of the implementation of the land reclamation program on a regional scale is the use of the program-targeted method and issues of state stimulation of its development, as well as the possibility of attracting extrabudgetary funds for the implementation of investment projects. Such a program is ultimately aimed at increasing the volume of crop and livestock production, as well as preserving existing and creating new jobs. In the article, the authors assess the objectives, tactical indicators, resource support and the course of implementation of state programs for land reclamation support in Samara Oblast. The authors note that during the study period in Samara Region, modernization of existing reclamation systems was carried out, new irrigation systems were built, and previously abandoned agricultural land was restored. As part of targeted funding, the state provides grants for the development of design estimates for the implementation of investment projects in the field of land reclamation. The authors believe that, in general, the progress of the implementation of the state program of land reclamation should be considered very effective.

1. Introduction
Land reclamation is widespread in the world, especially in agriculture. This is a basic measure for the efficient and rational use of land resources to increase the productivity of agricultural land. Such measure acts as necessary infrastructure projects to ensure sustainable development of a region. Land reclamation is an effective means of overcoming negative processes prevalent in large areas.

At present, the regularities and mechanisms of increasing the use of reclaimed lands are being actively studied. In view of the fact that they are undergoing significant changes, important determinants are taken into account when choosing the most suitable reclamation zones [1, 2], the adaptive properties of lands are evaluated [3]. A fundamental shift towards service delivery as the main focus of institutional reform of large-scale irrigation, recognition and support of irrigation development at the systemic level is proposed [4], and a multi-criteria assessment of the implementation of irrigation systems is carried out [5].

State support for land reclamation, in view of its high efficiency, is widespread in developed countries [6]. In China, the share of reclaimed land reaches 44.4%, in the USA - 13.2%, in India - 35.9%. [7]. Land reclamation is an element of structural policy; in the EU countries it accounts for up...
to half of the funds allocated to support the agricultural sector [8, 9]. This area belongs to the WTO green box [10].

We suppose that land reclamation should be included in the list of priority infrastructure projects, along with the construction of roads, bridges, etc. Land reclamation must be addressed not only as an efficient agricultural sector, as a field of rational land management, but also from the standpoint of a favorable and vital important habitat, as well as means to ensure the sustainable development of a region.

In Russia, with its significant variety of natural and climatic conditions, large areas of excess and lack of soil moisture, repeated dry winds, bringing significant material losses on agricultural land, even at the best of times of reclamation development, the share of such lands did not exceed 10%. Currently, the area of reclaimed land is 7.9% of the area of arable land [7].

State support for land reclamation in the Russian Federation is clearly insufficient, and its comprehensive and systemic adjustment, proposed by some authors [11, 12], is hardly feasible in the medium term in the country as a whole and in the regions in particular.

The program-targeted method forms a specific planning and management scheme for state programs to stimulate economic activity with appropriate goals and objectives, justification and choice of development options, a list of activities, a mechanism for implementation and monitoring, etc.

2. Materials and Methods
The brief theoretical foundations formulated in the introductory part reveal the prevalence, development trends and the importance of land reclamation.

The aim of the study is to analyze development of agricultural land reclamation in Samara Oblast.

The general normative process of this scientific research is from hypothesis to analysis and interpretation of facts. To carry out this research work, we propose to use an interdisciplinary approach. The main methodological principles of research are the following: the principle of the diversity of research forms and complex assessments, the principle of taking into account regional specifics, the principle of information security of the research and the completeness of the data used, the principle of practical feasibility.

3. Results and discussion
At the end of the 80s of the last century, more than 190 thousand hectares of irrigated land or 6.3% of the total (3 million hectares) of arable land were used in Samara Oblast. At the beginning of the 2010s a little more than 140 thousand hectares remained. Moreover, 97.5 thousand hectares are included in the state irrigation system, represented by large objects: Togliatti, Zhigulevskaya, Spasskaya, Bezenchuskaya, Olginskaya, Severo-Chagrinskaya, Yuzhno-Chagrinskaya and other irrigation systems.

In Samara Oblast in 2014, a regional state program "Development of reclamation of agricultural land in Samara Oblast for the period up to 2020" was adopted, approved by Samara Oblast Government decree of 13.11.2013 No. 613 [13]. There was also a federal target program "Development of land reclamation of agricultural lands in Russia for 2014-2020", adopted by the Government of the Russian Federation on October 12, 2013, No. 922 [14]. The adoption of the regional program was due to the fact that in 2009 - 2010 in the territory of the region, an emergency situation (ES) was in effect because of an acute lack of precipitation, extremely high temperature and dry wind phenomena resulting in 33% crop failure in 2009 and 45% in 2010.

The most reclaimed municipal areas by the beginning of the 2010s were: Privolzhsky (42504 hectares), Stavropolsky (24148 hectares) and Bezenchusky (20626 hectares) districts. That is, these three districts together had 87278 hectares, or 63% of all regional irrigated land. At the same time, in 2013 only 8303 hectares of land in Privolzhsky district did not require the reconstruction of irrigation systems. And in the rest of the sub-regions, restoration work was necessary on all irrigated areas due to the almost complete depreciation of irrigation and drainage systems and a decrease in the culture of agriculture. The deterioration of the federal irrigation system reached over 70%.
For the seven-year (2014-2020) period, according to the state reclamation program in Samara Oblast, it was planned to reconstruct, technically re-equip and build new reclamation systems for general and individual use. These works were planned to be carried out on an area of 15,616 hectares, which would be only 12% of the required area (131,700 hectares) for restoration, or 0.4% of the total area of agricultural land. That is, if we follow the set rates, then it would take almost 60 (58.34) years to fully restore the entire reclamation fund in the region. Over the years, the regional state program has been repeatedly adjusted and changed: in 2014 - 3 times, in 2015 - 6 times, in 2016 - 4 times, in 2017 - 2 times.

The implementation of the reclamation program for the entire period, it was envisaged to allocate budgetary funds 642.63 million rubles. Regional budget was supposed to be the main source of the income - 521.13 million rubles (81% of expenditure obligations). The proposed form of investment are cost-recovery subsidies. Ehe federal budget would allocate funding of 121.50 million rubles. The number of subsidies should not have exceeded 50% of the costs incurred. The cost rates were determined by the responsible executor of the state program, the Ministry of Agriculture and Food of Samara Oblast. Subsequently, it was envisaged to compensate 20% of the cost of services for the supply of water for irrigation.

The reclamation program had high hopes for outside investment from agricultural producers in the region. In total, for the period of the program, outside investment were calculated in the amount of 2,182.92 million rubles or 78% of project costs. Large amounts of financing for this source were expected in 2014 (558.00 million rubles) and in the final years: in 2019 (400.65 million rubles) and 2020 (421.10 million rubles).

In total, planned budgetary and non-budgetary funds for the reclamation program amounted to 2,947.05 million rubles. However, the complete renewal of the reclaimed land would require 24 billion 854 million rubles, based on the calculation of average costs excluding inflation. Thus, the regional land reclamation program did not provide for the restoration of the entire previously existing reclamation fund, and did not have the character of a large-scale project.

This program was supposed to play a stimulating role to attract agricultural producers in the region to invest and restore the potential reclamation fund. Fulfillment of the economic task on agricultural land by 2020 - an increase in the volume of crop production by 128% and a social task - the preservation of existing and creation of new 882 jobs, which is about 1% of the number of people employed (about 88 thousand) in the agricultural sector subject of the Russian Federation.

The progress in the implementation of the state program of land reclamation was recognized as effective (table) [15].

**Table.** Implementation of state programs for the development of land reclamation in Samara Oblast in 2015-2019

| Years | Commissioning of reclaimed land (ha) | Disbursement of funds of the regional budget (million rubles) | Funds invested by agricultural producers (million rubles) | Performance indicator |
|-------|-------------------------------------|-------------------------------------------------------------|--------------------------------------------------------|----------------------|
|       | target | actual | target | actual | target | actual |                  |                      |
| State Program "Development of land reclamation of agricultural land in Samara Oblast for the period up to 2020" |
| 2015  | 2010   | 3162   | 109.80 | 109.80 | 230.34 |
| 2016  | 1532   | 1560   | 76.28  | 76.28  | 192.77 |
| 2017  | 1249   | 1209   | 75.77  | 75.77  | 150.05 |
| State Program "Development of agriculture and regulation of markets for agricultural products, raw materials and food in Samara Oblast" for 2014-2025, subprogram "Development of reclamation of agricultural land in Samara Oblast for the period up to 2021" |
| 2018  | 2311   | 2300   | 55.80  | 55.80  | 230.01 |
| 2019  | 3122   | 3650   | 55.80  | 55.80  | 400.65 |

According to 2015 data, instead of the planned 2010 hectares, 3162 hectares were actually commissioned, or almost 1.6 times more. Performance indicator of the state program can be considered high due to the full utilization of regional budget funds. The solution of the other two tasks of the state program is not mentioned in the reports: an increase in the volume of production of the main types of crop production and the creation of new jobs. The regional state program for land reclamation has ceased to be effective since 01.01.2018. At that time a similar federal target program was terminated.

However, Samara Oblast continues to operate the state program "Development of agriculture and regulation of agricultural products, raw materials and food in Samara Oblast" for 2014-2025, approved by Samara Oblast Government decree of November 14, 2013 No. 624 (as amended by Samara Oblast Government decree from 13.05.2020 No. 316), which includes the subprogram "Development of reclamation of agricultural land in Samara Oblast for the period until 2021". The purpose of the subprogram is "to increase the productivity and sustainability of agricultural production and soil fertility through the use of integrated land reclamation in the face of climate change and natural anomalies, increasing the productive potential of ameliorated lands and the efficient use of natural resources." The task of the subprogram is aimed at restoring the reclamation fund, including projects for reclamation lands and reclamation systems, irrigation activities. The subprogram provides for the implementation of three tactical indicators: commissioning of reclaimed lands through reconstruction, technical re-equipment and construction of new reclamation systems for general and individual use; involvement in turnover of retired agricultural land due to cultural and technical activities; the area of agricultural land, on which it is planned to create amelioration facilities, for the development of design estimates for which state support funds were provided.

In 2018-2019, 2.3 thousand hectares of reclaimed land were commissioned in the region with an investment size of 380 million rubles. Construction of new irrigation systems of LLC "Sev-07" (1,650 ha) and LLC "VAPK" (223 ha) was carried out. Peasant farm E.P. Tsiruleva and agricultural production cooperative "Novoe Zavolzhie" modernized the existing reclamation. In 2019, 3.65 thousand hectares of reclaimed land were commissioned with an investment size of 246.6 million rubles, of which 1.55 thousand hectares were commissioned as part of the activities of the regional component of the federal project "Export of agricultural products" [16]. The modernization of the existing amelioration systems (2035.9 hectares) has been carried out, new irrigation systems have been built (1615.7 hectares), the previously retired agricultural lands (5756 hectares) have been returned to circulation. The degree of achievement of tactical indicators ranged from 109 to 130%, which indicates the effective implementation of the subprogram. In 2019, previously unused measures of state support were introduced, such as the provision of grants for the development of design estimates for the implementation of investment projects in the field of land reclamation, which will contribute to the introduction of 7,527.2 hectares of land to be reclaimed.

4. Conclusions
The program-targeted method is an effective tool for the development of regional land reclamation, and the worked-out state support measures require their preservation and transformation into other tools for stimulating an important and effective agricultural sector.

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References
[1] Liu X, Zhao C and Song W 2017 Review of the evolution of cultivated land protection policies in the period following China’s reform and liberalization Land Use Policy 67 660–669
[2] Lin L, Jia H, Pan Y, Qiu L, Gan M, Lu S, Deng J, Yu Z and Wang K 2018 Exploring the Patterns and Mechanisms of Reclaimed Arable Land Utilization under the Requisition-Compensation Balance Policy in Wenzhou, China Sustainability 10(1) https://doi.org/10.3390/su10010075

[3] Kong X and Wen L 2020 The practice of reclaimed land be converted to arable land in China EGU General Assembly 2020 EGU2020-9067. https://doi.org/10.5194/egusphere-egu2020-9067

[4] Waalewijn P 2021 Reformulating the value proposition of water in agriculture under changing conditions Irrigation and Drainage 70(1). https://doi.org/10.1002/ird.2569

[5] Hadelan R, Rodelj M J, Gugic J, Crncan M and Zrakic M 2020 Multicriteria evaluation of locations for irrigation system implementation Irrigation and Drainage 69(5) 1022-1032 https://doi.org/10.1002/ird.2512.

[6] Kizyaev B M and Martynova N B 2015 Implementation of scientific projects in the field of development of the melioration complex in Russia Environmental management 5 13-17

[7] On the Concept of the Federal Target Program "Development of Land Reclamation of Agricultural Lands in Russia for 2014 - 2020" 2013 Order of the Government of the Russian Federation No. 37-r

[8] Aleshina V A 2015 The problem of import substitution and food security in the EEC countries Actual problems of economics and law 4 104-114

[9] Gordeeiv Yu. A 2014 Problems of adaptation of agriculture in Smolensk oblast to unfavorable natural stresses when introducing ecological-adaptive (anti-stress) agricultural technologies into production Technics and technology of food production 4 (35) 113-117

[10] Sayapin A V and Potapova E I 2013 On the issue of budget support for regional agro-industrial complexes Socio-economic phenomena and processes 4 163-169

[11] Grishaeva O Yu 2020 Dynamics of state support for land reclamation in the Russian Federation World science: problems and innovations (Penza) pp 144-147

[12] Chekunov A S 2019 State support for the implementation of reclamation measures in the Russian Federation Bulletin of the Baikal State University 29(3) 461–475

[13] On approval of the state program of Samara oblast "Development of land reclamation in the Samara region for the period up to 2020" 2017 URL: http://docs.cntd.ru/document/464005951

[14] On the federal target program "Development of land reclamation of agricultural lands in Russia for 2014-2020" 2017 URL: http://docs.cntd.ru/document/499051291

[15] Consolidated annual report on the implementation of state programs of the Ministry of Economic Development and Investments of Samara Oblast URL: https://economy.samregion.ru/programmy/gpso/svodnyy-godovoy-doklad-o-khode-realizatsii-gosudarstvennykh-programm/

[16] Development of agriculture and regulation of the markets of agricultural products, raw materials and food of the Samara Oblast for 2014-2025 2021 URL: http://mcx.samregion.ru/category/gosprogrammy-gospodderzhka/razvitie-selskogo-hozyaystva-i-regulirovanie-rynkov-selskohozyaystvennoj-produkcii-syrya-i-prodovolstviya-samarskoj-oblasti-na-2014-2025-gody/