

ORGANIZATIONAL ISSUES OF RESTRUCTURING THE FRAMEWORK OF MELIORATIVE SYSTEMS

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Abstract: *The article discusses the organization of effective use of water resources, wide involvement of the use of modern technologies in the effective organization of the activities of existing reclamation systems, and the study of the issues of restructuring the existing system through cooperation with international financial institutions and public-private partnerships in the organization of the activities of reclamation systems.*

Keywords: *reclamation systems operation, water management, geoinformation technologies, remote sensing and public private partnership.*

I. Introduction

In recent years, when the water shortage has become acute, special measures have been developed in order to cover the amount of water required for irrigation of agricultural crops and its missing part. That is, according to estimations, a total of 5573.0 mln m³ is needed for agricultural production for the Republic of Karakalpakstan (RK), so the shortage consists of 727.0 mln. m³. In order to compensate this deficit, it is necessary to implement measures like the use of water-saving technologies, the installation of additional pumps in the collector-drainage networks, the optimal allocation of crops and the drilling of new irrigation wells. Of course, all this requires a great attention to the modernization of the industry and the use of advanced technologies.

Also, the tasks of organizing the effective use of water resources, the wide involvement of modern technologies in the effective organization of existing reclamation systems, and the establishment of cooperation with international financial institutions in the organization of the activities of reclamation systems, as well as the establishment of public-private partnerships .

II. Literature study

Within the framework of the problem of improving the effectiveness of meliorational systems in agriculture, large-scale research is being conducted by scientists of foreign countries, particularly, in the Russian Federation. Here the scientific results of V.S. Dmitriev, E.V. Kuznetsov, A.E. Khadjidi and similar scientists regarding the scientific-theoretical and methodological solutions of this problem are considered noteworthy.

This issue has been mainly studied in our republic, as a resource potential and within the framework of effective management and use of land and water resources. In particular, the researches of U.P. Umurzakov, Sh.Shokirov, I.Musaev are among them.

III. Research methods

In this article, methods such as statistical analysis, monographic observation, induction and deduction, abstract thinking, economic-mathematical modeling, expert and rating evaluation are widely used.

IV. Results and discussions

The monitoring of water reclamation objects, the state of the land as a natural resource, its quantitative and qualitative data, the organization of the effective use of agricultural land and the determination of future potential, based on geoinformation technologies, the formation of unified land information bases for the assessment of the organizational and economic levels of land resources, productivity, and productivity in the present and in the future includes leading technologies.

As a result of the development of geoinformation technologies and remote sensing of the earth, continuous communication and integration between them, effective experience in researching agricultural land is being put into practice. In this regard, today we propose to launch a special "Melioration systems geoinformation analysis service" within the framework of the Ministry of Water Management of the Republic of Karakalpakstan on the basis of public-private partnership in space monitoring of agricultural land (Fig. 1)*.

**Note: this service can be organized under other ministries and agencies based on their tasks and directions.*

This service "Reclamation systems geoinformation analysis service" is developed on the basis of ready-made geoinformation (GAT) and web-based geoinformation (web gis) systems, information resources that provide data, tools for the use of reclamation systems and are available as an independent product or service.

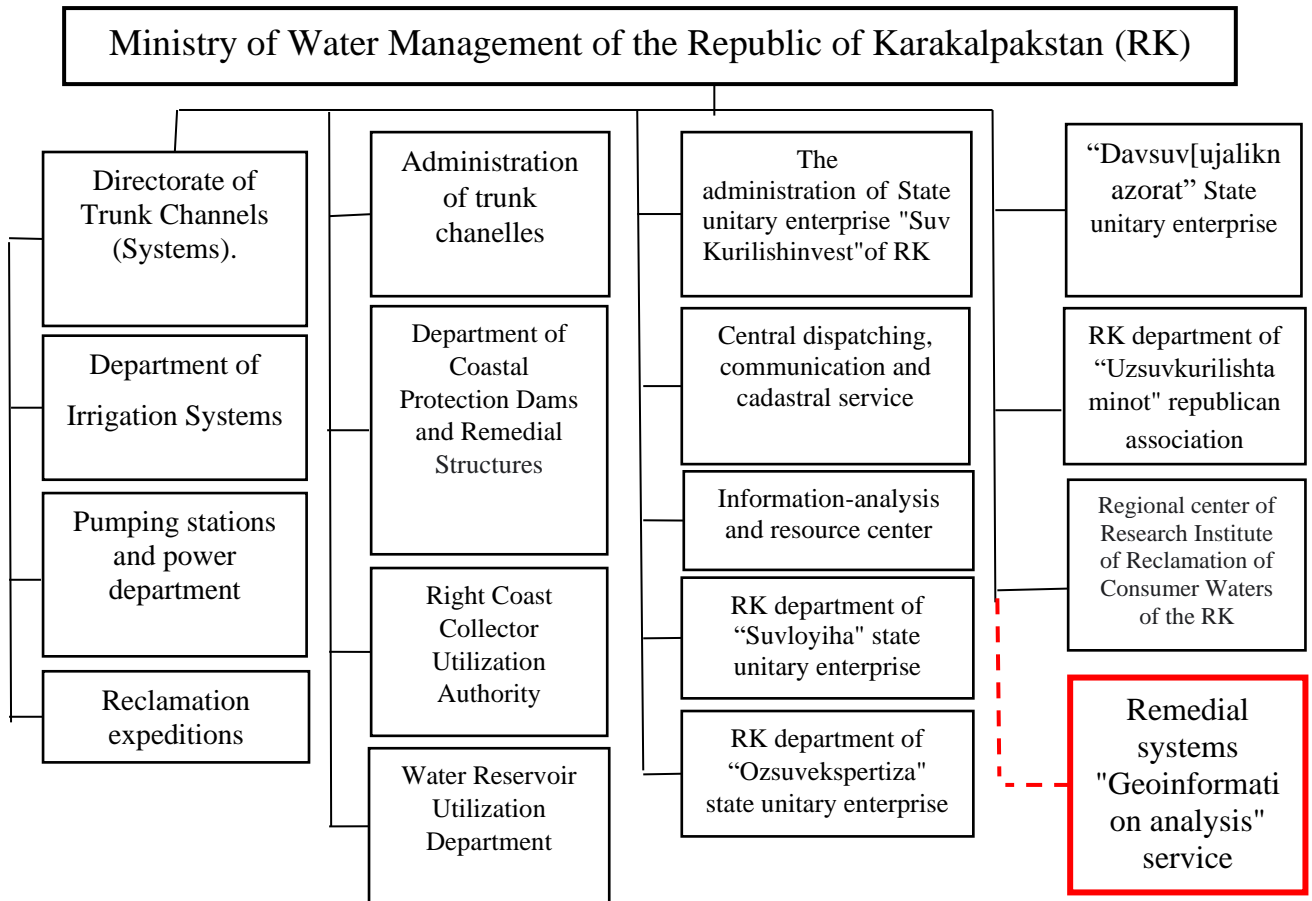


Figure 1. Special "Melioration systems geoinformation analysis service" within the Ministry of Water Management of the Republic of Karakalpakstan (proposal)**

** Proposal based on the authors' research.

Analytical comments: In our opinion, the structural structure of the special "Melioration systems geoinformation analysis service" within the Ministry of Water Management of the Republic of Karakalpakstan should be as follows in the performance of its assigned tasks.

Geoinformation analysis service of ameliorating systems is one of the modern ways of using today's information exchange technologies. It is known that irrigation networks are important because they are spread over the entire region and occupy large areas. Usually, the implementation of water services, such as management of irrigation systems of these areas, establishing their control, reducing water wastage in emergency situations, limits the field coverage of the observation.

For this reason, the state of water use, locating of hydrotechnical facilities, creating irrigation maps, controlling irrigation limits are complex processes. In addition, it is possible to realize the melioration systems, their density, the state of the density of irrigation networks, all this in a short period of time, reducing the labor force and costs through the "Melioration systems "Geoinformation analysis" service".

The structure of the service "Geoinformation analysis service of meliorational systems" includes, in our opinion, the following:

Each department in the structural structure of geoinformation analysis service of meliorational systems has its own task and is aimed at a specific goal.

Collecting space data and recording it into the database (MB) - space data refers to the images taken by satellites of the earth outside the earth's atmosphere. We can call the organization of the database the main part of GAT. This requires the formation of periodic data on single reclamation irrigation networks and their adaptation for GAT. Currently, various government services of countries such as USA, Europe, China, Russia, and other countries are providing the opportunity to get their base of free aerial photos from different purposes on the global network. These space photos are considered sufficient for the monitoring of reclamation systems in the conditions of our republic.

Data processing and interpretation - space pictures are taken based on remote sensing of objects on the surface of the earth. Here, the features of objects that cannot be seen by the human eye are depicted. It uses different data for different network objects. In particular, different images are used for reclamation objects, and these images make it possible to distinguish them exactly and the events when probing the reclamation systems. The process of transforming the images of the studied objects, which are not visible to the human eye, into a visible state, and the process of studying the objects is called data processing or interpretation.

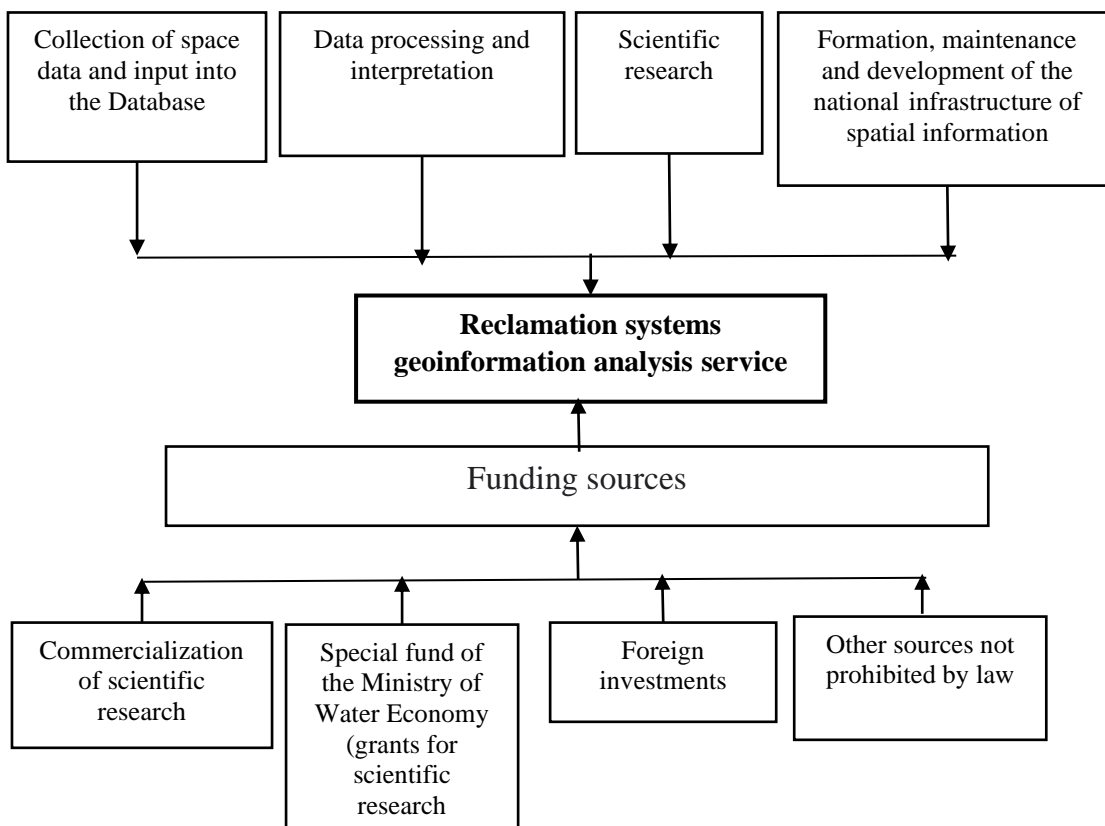


Figure 2. Structure and sources of financing of geoinformation analysis service of reclamation systems*

**Based on the author's research*

Scientific researches - in this part, it means scientific researches carried out based on new modern approaches to solving system problems, information and melioration systems through GAT.

Formation, maintenance and development of the national infrastructure of spatial information - spatial information is defined as objects with a location on the surface of the earth in an accepted coordinate system. Ameliorative systems are also linked to a specific area, and their activities represent regional impacts and associated characteristics. The national spatial information infrastructure of reclamation systems for GAT envisages the formation of a database representing geographical, non-geographical and technical and other characteristics of reclamation systems in national territorial units. It also involves ensuring that data is kept up to date.

V. Conclusion

We know that introducing modern technologies in every field and using them is accomplished through large financial resources. Funding of the service of geoinformation analysis of meliorational systems is also very important for its creation and effective operation, and we think that its mechanism should be as follows.

It envisages carrying out scientific research activities within the framework of the geo-information analytical service, as well as the organization of the melioration systems based on budget funds and public-private partnership. Based on the consistency of this research, modern software developments, their patenting, implementation and commercialization of developments create the opportunity to finance the system.

At the same time, scientific projects of the Ministry of Water Management can be funded through grants, foreign grants, investments, and sources not prohibited by law.

Geoinformation analysis as an advanced technology is one of the systems that are effectively used in the United States, European countries such as the Netherlands, Germany, Belgium, and China in assessing the effectiveness and quality of reclamation systems. If we consider the possibility of this system to provide the most reliable data in a systematic and real-time interval and the implementation of the activities of levers that encourage the effective use of land and water resources in agriculture in the future based on the data of the Geoinformation analytical service, the wide commercialization of data for entities that create goods on agricultural land opportunities will rise.

In short, the organization of this service provides certain scenarios for the use of general information on the status of objects in the system, data and functions for their reception, storage, processing and analysis, and solves the issues of modeling, planning and making calculations on this basis.

References:

1. Dmitriev V.S. Economic land reclamation. - M.: Ekonomika, 1984. - 180 p.;
2. Kuznetsov E.V., Khadjidi A.E. Сельскохозяйственный мелиоративный комплекс для устойчивого развития агроландшафтов: monograph / E.V. – Krasnodar: izd-vo EDVI, 2014. – 200 p. 3.
3. Chariev K.A. Проблемы аграрного ресурсного потенциала в условиях перехода к рынку. Т.: Izdatelstva "Fan", - 1992. - S 182.;
4. Umurzakov U.P. Пути повышения эффективности использования ресурсного потенциала аграрного сектора экономики: avt...d.e.n.– Т.: 2003, - S. 152. 5. Sh.
5. Shokirov, I. Musaev. Remote sensing, Tutorial, TIMMI, 2015. 48 p.