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Problems of Water Resource Management in Central Asian States and Environmental Solutions to Water Use

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Abstract:

The article coordinates the policy of Interstate Water Resources Management, water distribution, water monitoring, support of Water Resources activities at the state level, making decisions agreed by Central Asian countries, reducing the level of confrontation, improving nature protection, sustainable use of nature, developing and implementing national strategies and programs to fulfill the established tasks for Environmental Protection, Ways have been shown to increase the capacity of Central Asian countries to use their water resources effectively.

Keywords. Water Resources, Water Resources Management, groundwater, management methods, management process, management mechanism, limited water resources, distribution level, Bashkir functions, environmental conditions, water demand, vertical management.

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Introduction

In the context of the over-acceleration of globalization processes in the world, the growth of production scales and population numbers are the main factors that led to a sharp increase in anthropogenic influence on nature, which is increasingly bringing modern society closer to the ecological crisis. The need for comprehensive, complete and comprehensive assessment and management of Natural Resources and waste coming into the environment, which are spent on economic activities to overcome the environmental crisis, is growing. «Obviously, the topic of ecology is extremely important in the modern world: the global problem with environmental pollution can only be solved by the collaborative efforts of the absolute majority of countries in the world. EU to bring production and consumption to the required standard in this case, Is an example of a coordinated policy in achieving a reduction of emissions by no less than 55% in 2030 compared to the level of 1990 under

the «European Green agreement»».[1] Although the countries that allocate more budgetary funds to these goals have strictly advantages, but there are not so many preventive programs that apply to the future of all mankind. While some countries or regions (such as the European Union) have such programs, they so far have a local description, and the creation of a scientific concept of sustainable development aimed at solving environmental problems of important but not unified aspects of more sustainable development remains relevant.

In the world, research is being carried out aimed at ensuring environmental balance, which is an important condition for socio-economic development in the current conditions, increasing the effectiveness of Environmental Management, which is becoming a significant factor in production. The components of the processes of environmental management of the economy, the interconnections and conflicts between them, their functioning as a holistic mechanism, the concept of environmentalization of the national economy, the economic and organizational mechanisms of stimulating environmental entrepreneurship, characterized by a system of institutional-environmental norms, the development of a quota market for environmental pollution, are among the priorities of research in this regard.

He pointed out the inevitability of environmentalization of the economy in Uzbekistan, the need to link reforms with the pace of economic growth and the restoration of Environmental Quality. Because, «... currently, due to the island tragedy, an island sand desert has appeared on an area of more than 5.5 million hectares. Every year, 100 million tons of sand and salt rise into the air. This proves once again that the island disaster is a global problem ...»[2].

The role of environmentally oriented management as a means of implementing sustainable development programs, first of all, the national economy, is growing in conditions of increasing economic and environmental security of the country.

The existing aquaculture complex of the amudarya and Syrdarya basins sets out to some extent the ways of economic development of the Central Asian region. The Aquatic Complex consists of a complex of natural and economic objects. It includes facilities that ensure the formation of water resources, transportation, flow changes, the water intake and supply of water users, the production of yelektre yenergy, control and accounting for Water Resources and their quality. All interstate (transchegara) water resources in the amudarya Basin are managed, including upstream and backwater.

The creation of a single automated control system in the amudarya and Syrdarya basins later made it possible to improve the specific tasks for water management and distribution to the associations of basin water farms «Amudarya«, «Syrdarya» and «Zerdolvodkhoz». This gave yesa a good effect and profit. First, a simple procedure for accounting and monitoring the use of Water Resources was introduced. Secondly, water wastage that was not accounted for in the river as well as in the inter-Republican canals decreased. The very facilitation of the management system favored all parties and ensured mutual understanding in relations between the states of the region as well as a land of trust. To assess the efficiency of water distribution, the minimum sleeve amount of total water deficit in the basin and the sleeve slight damage seen from the lack of supply of water to the national economy were taken as criteria.

Analysis of thematic literature. In the first stage of the behavior of the Central Asian states agreed on the path of a specific goal, in 1992 year (Almaty city) according to the Interstate lashtiruvchi the Water Management Commission (DMSXK) and its two bodies, the basin water management associations «Amudarya» and «Syrdarya», were established. The meeting of the leaders of the five

Central Asian states in the Red horde (March 26, 1993) laid the foundation for the organization of the organizational and legal structure of management.

Problems of economic relations in the system of yekological management T. from modern foreign scientists.Anopchenko, M.Guzeev, B.Porfirev, S.Tyaglov, A.Studied in the works of Cheshev and others, O. in the field of use of land resources.Botkin, I.Buzdalov, A.Yemelyanov, Ch.Ionov, S.Kiselev, V.Kuznesov, O.Lepke, M.Lugachev, V.Miloserdov, A.Mindrin, N.Pashkevich, N.Shagayda, V.Scientists such as Filonich have conducted fundamental research.

M. As Lvovich noted, «for us, the principle of» protection of Water Resources and other components of nature from use «is something that is not at all right. Conservation is not some kind of thing that is separated from production, it must lie on the basis of the technology itself. In other words, Environmental Protection is a component of the reproduction process» [3].

If there is no mechanism for the compensation (compensation) of environmental and economic damage by the victim himself, (implementation of the principle «polluter pays»), then the loss corresponding to it is real to other economic agents and the population. The annual loss of agricultural production due to land degradation in Uzbekistan is estimated at 31 million. Makes us dollars. [4]

In international practice, the main approaches to effective water resource management are based on the concept of Integrated Water resources management (IWRM).[5] This concept recognizes water circulation in all its natural aspects, as well as the interests of water users in different sectors of society (or the entire region); therefore, it refers to both the natural and Human Dimensions of water. Provides periodic measurements in terms of geographic variation in water availability and the point of possible interactions in the upstream and downstream, as well as separate measurement tools to account for time scales such as natural seasonal, annual, and long-term fluctuations in water availability.[6,7,8]

System of Environmental-economic accounting of Water Resources (System of Environmental-. Economic Accounting for Water-(SEEA-Water) of consistent and organization of hydrological and economic information provides a conceptual framework. The «SEEA-Water» Guide to national accounts is the main United Nations guide that defines the norms of integrated environmental and economic accounting in 2003. It is best known for its abbreviated name, «SEEA-2003», which describes the interaction between economics and the environment and covers the full spectrum of natural factors. It is a standard system for compiling economic statistics and calculating economic indicators. [9]

Zhaoyang Yang et al. in their research, however, serious research has been conducted on the water resources carrying capacity-WRCC concept. This study created a sumulation model of water resource transfer capability based on analytic hierarchy process (analytic hierarchy process-AHP) and System Dynamics (SD) models. Based on this simulation model, options in 5 Scenarios for the effective allocation of water resources by country areas are proposed.[10]

On an equal basis, the decision to establish the Interstate Council on the Aral Sea (ODDK) and the regularly functioning Executive Committee (IQ), and the approval of the principles of water distribution on the “available water use” quoted in the master plans, was the main result of the meeting of the Red horde. In addition, under the Interstate Council on Aral Sea problems, the Interstate Commission on Sustainable Development (BRDK) and the Interstate coordinating Water Management Commission (DMSXK) were established, the regulation “on the International Fund for the rescue of the island” was adopted. At a forum in Tashkent with the participation of five heads of state (July 13, 1993), the regulations on the Interstate Council on the problems of the Aral Sea basin of heads of State, which

carries out its activities through the Executive Committee and Interstate commissions (BRDK, DMSXK), were approved.

Research methodology. The paper made extensive use of comparative comparison of efficient use of Water Resources, statistical data study and economic comparison and analysis, logical reasoning, scientific abstraction, analysis and synthesis, induction, and deduction techniques.

Analysis and results. At a meeting of the heads of Central Asian states in Nukus in January 1994, the World Bank's Aral Sea Basin Program (ODHD) was adopted. The first phase of the program (ODHD-1) included the task of implementing a set of programs in the field of Environmental Protection in the Aral Sea basin, including: establishing a regional system for monitoring water resources and their use in the Aral Sea; developing water quality improvement procedures and limiting all types of water damage; Implementation of Interstate programs" clean water "and" health"; conducting research and implementation of measures for the recovery of a h vol in the H ududs where flows are formed; equipping the water management associations" Syrdarya "and" Amudarya " with technical means. The second phase of the Aral Sea Basin Program, which determined the priorities for the development of the region until 2017, was approved by the heads of state at the International Water Forum, which was held in Dushanbe in August 2013. The main areas of activity of ODHD - 2 included:

- Development of agreed mechanisms for the joint management of Water Resources in the Aral Sea basin; restoration of water farm facilities and improvement of the use of water-land resources;

- improvement of the environmental monitoring system and implementation of disaster response programs; strengthening the material and technical and legal base of Interstate organizations;

- to solve the social problems of the region and develop a set of projects for the rational use of water in the sectors of the economy of the countries of Central Asia; to carry out programs for the protection of the nature of the regions where flows are formed, including the sanitary-ecological recovery of settlements and natural ecosystems, etc;

- Development of a sustainable development concept in the Aral Sea basin;

- assistance in the implementation of regional action programs to combat desertification;

Development of water-swamp lands in the amudarya and Syrdarya areas; rational organization of the use of mineralized collector-drainage waters.

The International Fund for the rescue of the island sea, considered a component of the odhd, was established as the main organization for the implementation of this program in order to coordinate the implementation of the world community, attract the world community to the yekological disaster caused by the decrease in the water level of the Aral Sea, and to spend funds

While the International Fund for the rescue of the island sea initially worked relatively efficiently with the direct partial support of the international community (EU-Tasis, UNDP, World Bank, etc.), since mid-1999 its activities at the regional level have greatly decreased, and international financial support has also decreased.

According to Interstate lashtiruvchi the Water Resources Commission is the advisory body responsible for the management of Interstate Water Resources, water distribution, water monitoring, support of water resources related activities at the state level. Its activities contribute to the adoption of decisions agreed by the five member states, to reduce the level of confrontation. The Sustainable Development Commission coordinates the conservation policy aimed at yesa sustainable development land, responsible for the development and implementation of national strategies and programs for sustainable use of nature, implementation of designated environmental protection tasks. Scientific and

information centers help relevant structures in Scientific, Analytical and metrological issues, increase the possibility and awareness of all interested parties, promote the exchange of information between them.

Organizations under the formation of a new structure of the International Fund for the rescue of the island play a positive role in the calculation of legal entities, their division into the status of international organizations. This also fully applies to the Interstate coordinating Water Management Commission and its executive bodies responsible for managing the basin's Water Resources. The fundamental changes that have been carried out can be assessed as the advance towards strengthening and improving the organizational and legal base of the Interstate coordinating Water Management Commission and its organizations.

Status and infrastructure of watershed farm associations. The management of the property rights and infrastructure of the Aral Sea basin is shared between national governments and associations of basin water farms. The main structures in the region are the basin aquaculture associations «Amudaryo» and «Sirdaryo», which carry out the limitation of the interstate distribution of water under the direction of the Interstate coordinating aquaculture Commission. Its regional infrastructure was established by five states through the provision of Hydro-technical facilities, including major structures that draw water from the river, structured Hydro-tunnels, Interstate canals, hydroposts, and other water funds for temporary use. All other infrastructures, including up to the level of Manors, are subject to national status.

The Association of watershed farms entitles the Territorial Administration of the use of water intake facilities, Hydro-tunnels and Interstate canals to yega (figures 1 and 2). In its activities, the association acts on the basis of the Charter of the Association of Basin water farms, the current legislation of the member states of the Interstate coordinating Water Resources Commission, the decisions of the commission, as well as agreements, protocols and other regulatory documents.

The difficulties in managing the Aquatic Complex are due to the fact that the objects of management are located in the vast territories of the five sovereign states of Central Asia and are remote from each other. As a management object, the water farm complex has the following characteristics:

-large volumes of colorful information on the situation of the water farm complex;

- the abundance of governing bodies and sources of information, as well as its location in a wide area;

- abstract properties of hydrological information;

- contradiction of management requirements of participants of the water management complex;

- the existing non-eating of single economic criteria for the use of Water Resources.

The basin water management associations" amudarya "and" Syrdarya " adhere to three main principles in their activities: the correct distribution of Water Resources in accordance with the established water withdrawal limits; in any situation, following the principle of strengthening truthfulness and friendly relations between participants and water users; water is a stability factor that unites the efforts of all stakeholders and states in the region.

However, the possibility of the basin water farms Association, which is considered the executive body of the interstate distribution of water, is limited for the following reasons:

- part of yega water intake facilities of Interstate importance, as well as yega important hydropower complexes to reservoirs are under the management of national authorities;

- the aquifer farm association does not control the amount of groundwater and return effluent intake, schedule, as well as the quality of Water Resources;

- equipment and water intake facilities at the main landings of rivers;

- coordination of the Union of watershed agriculture and the mutual solidarity of national Hydrometeorological services does not eat at the level of requirements;

- there are no clear rules for the management and use of river basins; no protected areas of rivers of Interstate importance are designated, etc.

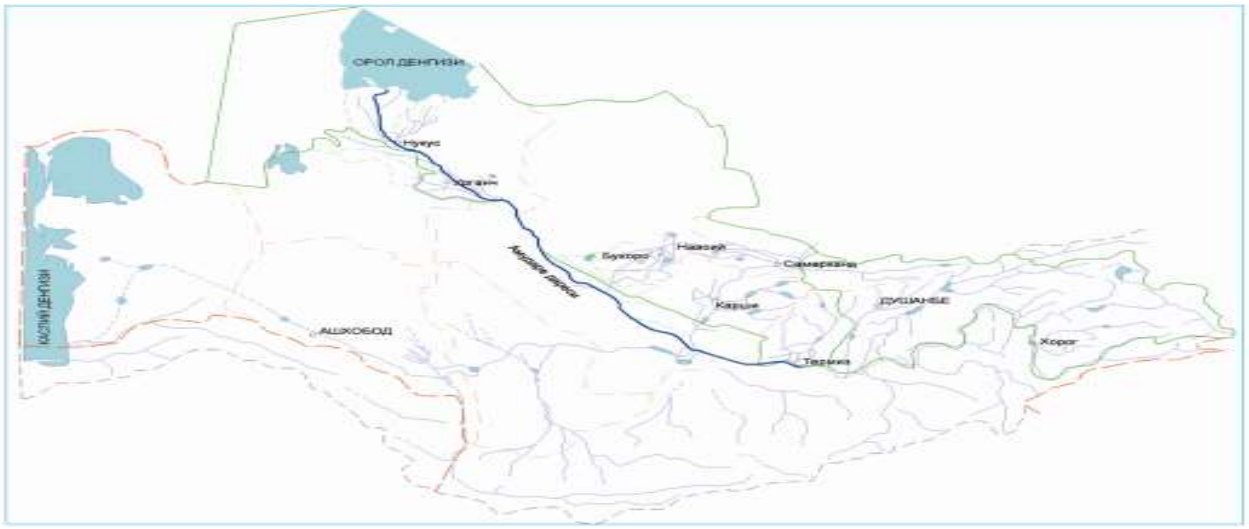

Figure 1. Amudarya watershed schematic plan

In the context of existing restrictions and changes, the difficulties in managing the aquaculture complex require an increase in the capabilities of this system in order to strengthen the role and authority of the basin aquaculture associations, to ensure the reliable use and management of the aquaculture complex, reducing damage and risks in floods, droughts and other emergencies.

Figure 2. Syrdarya Basin schematic plan

Collaborative activities related to stabilizing the situation on the islet. Five Central Asian nations recognize the islet as an independent water user. The dedication of the island to water is taken into account, as are the traditions of all states. Therefore, it should be established on the basis of an interstate concept for the rescue of the islet, taking into account the annual change in the flow of the river. At the moment, all states will appreciate the importance of coordinating the requirements for maintaining water quality, biodiversity and biodiversity in the Delta.

According to the World Bank and other organizations, the recovery of the sea after 25 years requires 75 billion m3 of water annually (more than half of the total annual flow of Syrdarya and Amudarya). It is impossible to do this. Because of this, many irrigation systems in Central Asian countries have to be closed. In order to mitigate the catastrophic effects that would cause the Aral sea water level to decrease, the Aral Sea basin program was recommended to undertake extensive work and radical changes.

With the efforts of the International Fund for the rescue of the island and the states of the region, activities are being carried out to improve the socio-economic situation in coastal districts, chunonchi, Moynok and Island districts, and to promote health and drinking water supply. Part of this work was carried out with the support of various donor organizations, first of all, the World Bank, at the expense of the countries of the region. The Uzbek government, with the help of GEJ, undertook a project to reclaim the wetlands of Sudoche Lake. In addition, state funds are being developed and implemented projects to establish local water bodies in yevazi and to establish hydrotechnical facilities for the regulation of the water use system in the amudarya Delta. The German agency GTZ has contributed and is contributing significantly to ishla-Ri by establishing the ihota forest region on the dried-up bottom of the sea.

Of great yekological and socio-economic importance for the Aral Sea basin is reached by the construction of a large delta complex at the interstate level. To increase the efficiency and strength of operation of this complex, it is necessary to form a strict institutional and regulatory framework.

Conclusion. The Republic of Uzbekistan, like other countries located in the middle and lower reaches of rivers, suffers from environmental degradation and a sharp water deficit, in addition to the yekological and socio-economic problems associated with the consequences of the island tragedy. The total OSCE water needs to be covered almost completely (82%) at the expense of Interstate amudarya and Syrdarya resources. There is no alternative source of water for the inhabitants of the Fergana Valley, the middle reaches of Amudarya and Syrdarya, as well as the foothills, other than the flow of these rivers. Because not so many resources of groundwater, the quality of which is unsatisfactory, cannot meet the needs of the country's population of 26 million people. The water deficit is one of the main factors that monetize the development of the country's economy. This is especially noticeable in areas where the amudaryo mature and the water is immodest.

The lack of a good supply of Water Resources with modern equipment, technical Water Resources measurement and accounting tools of the catchment management unit infrastructure is one of the main problems of Water Resources Management. The low level of automation and centralization of management at control facilities and facilities is limiting the system of receiving and transmitting information, storing and processing them, reducing the exact control of the flow of water in the riverbed. The lack of consideration of existing underground resources and returning waters, the narrowness of the scale of Riverbed control and monitoring works are counted from other factors that hinder these works. At all levels of management, there is a lack of staff knowledge and experience, and personnel are not trained at the level of requirements. This is pushing back the introduction of new technologies and tools of yesa management. These shortcomings make it difficult to make accurate calculations, water distribution, and emergency decisions.

The introduction of asbom-like and other such systems into management practice will overcome existing technical, economic and institutional constraints. Overcoming such obstacles is primarily associated with strengthening coordination, relationship and cooperation between regional management

structures and the services responsible for monitoring, as well as providing a favorable opportunity for their integration into a single regional and global network.

In addition, with the introduction of SCADA systems, it is necessary to organize training centers and services, decision support tools for popularizing the experience, as well as to provide technical people's mutual assistance, invest in the automation and centralization of the infrastructure of basin water management associations (main facilities, Dispatch points, River hydroposts, etc.).

The development of a general behavioral plan for optimizing the Observation Network, improving the flow forecast and its recording in connection with the posts of Basin water management associations, obtaining information in the “on line” mode, pre-alert about q females, flood Ines, pollution protection system, including alert in yekstremal situations and the formation of a state of emergency It is also necessary to create a unified information system for all participants and the possibility of expanding the GIS/DZ database, improving the system for identifying indicators and wastewater that contaminates the flow of water. The implementation of these measures ensures the speed, continuity and reliability of monitoring work, accurate control of the amount and quality of water at all levels of management.

The experience of developed countries shows that the integration of efforts in order to ensure the exchange of ideas and the use of information is one of the main conditions for the development of cooperation based on the principles of hydrobundity and mutual trust, taking into account the interests and customs of all countries and regions.

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