

mustahkamlash kichik biznesning innovatsion faolligini oshiradi. Shu bilan birga, moliyaviy resurslarga kirishni yengillashtirish maqsadida muqobil moliyalashtirish instrumentlari, jumladan lizing, faktoring va kraudmoliyalashtirish mexanizmlarini rivojlantirish muhim ahamiyat kasb etadi.

Shuningdek, klasterlashuv va qiymat zanjirlariga integratsiya kichik biznes subyektlarining raqobatbardoshligini oshiradi. Institutsional muhitni takomillashtirish, mulk huquqlarini ishonchli himoya qilish, tartibga solish jarayonlarini soddalashtirish va raqamli davlat xizmatlarini kengaytirish tadbirkorlik faolligining barqaror o'sishi uchun zarur shart hisoblanadi.

Umuman olganda, kichik biznes subyektlarining tadbirkorlik faolligini oshirish innovatsiyalar, moliyaviy qo'llab-quvvatlash, klasterlashuv va qulay institutsional muhitni uyg'un rivojlantirish orqali ta'minlanadi. Mazkur yo'nalishlar bo'yicha izchil va kompleks siyosat olib borilishi kichik biznesning iqtisodiy va ijtimoiy salohiyatini yanada kuchaytirishga xizmat qiladi.

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## **SCIENTIFIC FOUNDATIONS FOR THE DEVELOPMENT OF INNOVATIONS IN THE FIELD OF WATER MANAGEMENT: FINANCING**

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***Abstract.*** *This article is devoted to the problems of sustainable development of water management, considers its main directions, taking into account innovative solutions in the field, and discusses its scientific foundations. In addition to the tasks of solving water problems in our country, an important condition for the further development of water economy is the creation of an innovative economy system and the coordination of participants in the innovation process. A method for comparing the optimal direction for developing water-based innovations at the national level is considered. It is advisable to work with an innovative development program that scientifically and integrally unites qualified, highly experienced scientists in the water system. It is necessary to develop an effective system that will link the*

*production and scientific spheres within the system, attract the creators of innovative ideas and the main consumers, as well as introduce innovative scientific developments into practice. In the proposed system, the main place is given to the center of scientific support, which serves as the main link between theory and practice.*

**Keywords:** *water management, irrigation and melioration, scientific research, innovation, scientific development, financing, improvement, economy.*

Research in the field of water management is the result of scientific research and serves as an important basis for the implementation of effective product development and the creation of scientific products. It is important to consider innovations in water management enterprises as a single scientific direction.

The scientific basis for the development of innovations in water management includes research aimed at rational use of water resources, water conservation, and the introduction of modern technologies.

The innovation process in water management includes several stages: scientific and theoretical justification of practical problems, creation of practical recommendations, and implementation of solutions into practice.

State funding of priority innovative developments is important for innovative activities in the water sector. Forms of state support: awarding special grants; establishment of a preferential tax on income from innovation activities; provision of state guarantees for loans for the development and implementation of innovative projects. It is also important to attract private capital to develop innovative processes in water management enterprises through public-private partnerships.

In modernizing water management, it is necessary to implement measures such as specialization of production, taking into account the level of soil salinity and climatic conditions of each region, economic development in the regions, and the introduction of scientific developments in science and technology. One of the main reasons why the modernization of water resources cannot achieve the expected results is its purely technical and technological renewal.

Investments are an important condition for innovation, and investments without innovation can lead to the continuation of the production of inefficient and uncompetitive products [1].

Innovations in water management are a set of organizational, legal, financial and economic documents necessary for the implementation of scientific developments in specific irrigation and land reclamation areas or production enterprises.

It is known that innovations in water management connect the economy with science. Also, the weakest link in scientific research has been the implementation of scientific developments into practice, and even today this problem has not found an effective solution.

Given this situation, it is important to develop a mechanism to increase the

efficiency of funds allocated to research in the water sector and a mechanism to encourage the implementation of scientific results into practice. These circumstances determine the relevance of the selected research.

The goals and objectives necessary for the development of innovations in the water sector have been identified. To achieve these goals, it will help increase labor productivity, save resources, reduce costs and reduce the cost of water sector products, increase production volume and efficiency. It is also necessary to harmonize science and production, support public collaboration, and international business relations.

Therefore, the scientific foundations of innovative development of water management, as well as issues of its financing, are partially covered in the research of foreign and domestic scientists.

In order to increase the efficiency of the management of a water-industrial complex enterprise, it is necessary to introduce innovative engineering and management solutions, taking into account the balance of interests of the economy and the environment. The main source of increasing the efficiency of the enterprises of the water-industrial complex is the rational and more complete use of resources [2].

The introduction of any innovation is associated with its use as a means of realizing the reserve or resource of the enterprise [3].

In this regard, it can be proposed to implement a water supply and sanitation management system based on frequency converters. The practice of using them at water lifting and sewage pumping stations has shown the advantage of their use [4].

A systematic analysis of domestic and foreign experience in water supply and sewerage management has been carried out, and the main models for the formation of tariffs for water and sewerage services have been presented [5].

The role of financial support in building an innovative type of economy, as well as the practice, main sources and directions of financing innovative activities in Uzbekistan, are considered, and a correlation-regression analysis of the factors of innovative development of the economy of this country is carried out [6].

Measures that can be taken to carry out specific tasks, such as ensuring water safety in the water management, can also be envisaged: the formation of an effective system of distribution of powers at all levels of water resource management, including the implementation of Administrative Reforms, the development of plans for the complex management of river basins; the creation of an organizational and economic mechanism for water management corresponding to market conditions, including the development of water market and watershed products taking into account environmental safety criteria; modernization of the water quality management mechanism of water bodies based on a combination of specific target devices and resource restrictions, including the development of special policies to limit the diffuse flow of pollutants, the development; development of a financial and socio-economic strategy for the

development of Water Resources taking into account the global water crisis; reduction of risk and damage from the water factor, including the development of a direct action law on the safety of water farm facilities, creation of flood risk maps; introduction of the best technologies and scientific developments available in the management of the water sector, including the creation of a competitive knowledge and high-tech economy in the water sector, as well as the use of digital economy technologies.

A distinctive feature of the modern era of Water Management Development is the efficiency of water supply, water resources, the provision of irrigation and reclamation system on the basis of innovative processes, the improvement of land reclamation and the use of modern irrigation technologies, scientific supply, research efficiency, quality product production, competitiveness, as well as the acceleration of scientific and technical progress.

More funds should be allocated to research and development costs to increase the export of high-tech products and to more effectively utilize the advantages of international trade markets, especially in developing countries [7].

The following methods are used in the implementation of innovative projects in the field of water management. They are:

- \* Program-targeted method: This method, taking into account the local economic and natural conditions of the development of water supply and sanitation facilities, ensures the coordination of the participants of the innovation process in key areas;

- \* A method of effectively using digital technologies to create smart water supply systems: This method includes installing sensors throughout the network, using artificial intelligence and technology learning, remote control, and automation;

- \* Variable speed pump implementation method: This method allows the pump to be precisely matched to the current water consumption, reducing electricity consumption.

- \* Method of integration of research institutes with production: This method should be aimed at improving the qualifications of specialists in developed countries, introducing scientific developments into practice and training scientific personnel who produce scientific products, as well as solving environmental problems.

These methods provide the innovative economy with high-quality products and specialists.

The methods of rational and economical use of Water Resources have a distinctive feature: technical, economic and legal. They are divided into three groups (table 1).

The need to use methodical and methods of water management, in general, consistency helps to achieve positive results significantly faster and at the lowest cost. It also ensures more dynamic and efficient innovative development of networks.

**Table 1****Methods of using water resources in water management<sup>[63]</sup>.**

<b>Ways to use water resources</b>		
<b>First group</b>	<b>Second group</b>	<b>Third group</b>
Technical methods implementation of water-saving technologies: replacement of outdated equipment, installation of nozzles on taps, use of shower cabins with low water consumption; reconstruction and modernization of water supply systems. This reduces water losses during transportation; wastewater treatment and reuse. Treated wastewater is used for technical needs and irrigation; desalination of seawater. The technology of membrane filtration of seawater is used to obtain fresh water.	Introduction of economic methods, payment systems for water: stimulates the rational use of water; providing benefits for the introduction of water-saving technologies. This encourages enterprises and organizations to take care of water resources and invest in the development of water infrastructure. Construction of new sewage treatment plants, reservoirs and other facilities continues.	Legal methods for developing and improving legislation in the field of water use: establishing norms and rules for the use of water resources; strengthen control over compliance with environmental legislation. Thus, they are fighting pollution of water bodies; raising public awareness about the problems of rational use of water resources.

The most promising direction for developing water management innovations in the country is to develop an effective system that connects the production and scientific sectors. This system should be organized with the participation of creators of innovative ideas and the main consumers of scientific developments. In the proposed system, the main place is given to the “The Center for scientific supply of Water Management”, which serve as the main link between theory and practice.

Providing credit resources, including without interest payments (Sweden), gratuitous loans to cover 50% of the costs of innovation (Germany) [8].

Based on this system, the joint activities of scientists, researchers, and scientific advisors from higher education institutions, research institutes, and other scientific institutions are based on long-term agreements, and the issue of exchanging qualifications between them is positively resolved. In this regard, the ministries and departments responsible for water management will play a key role as the main financiers of innovative activities, based on the established policy direction.

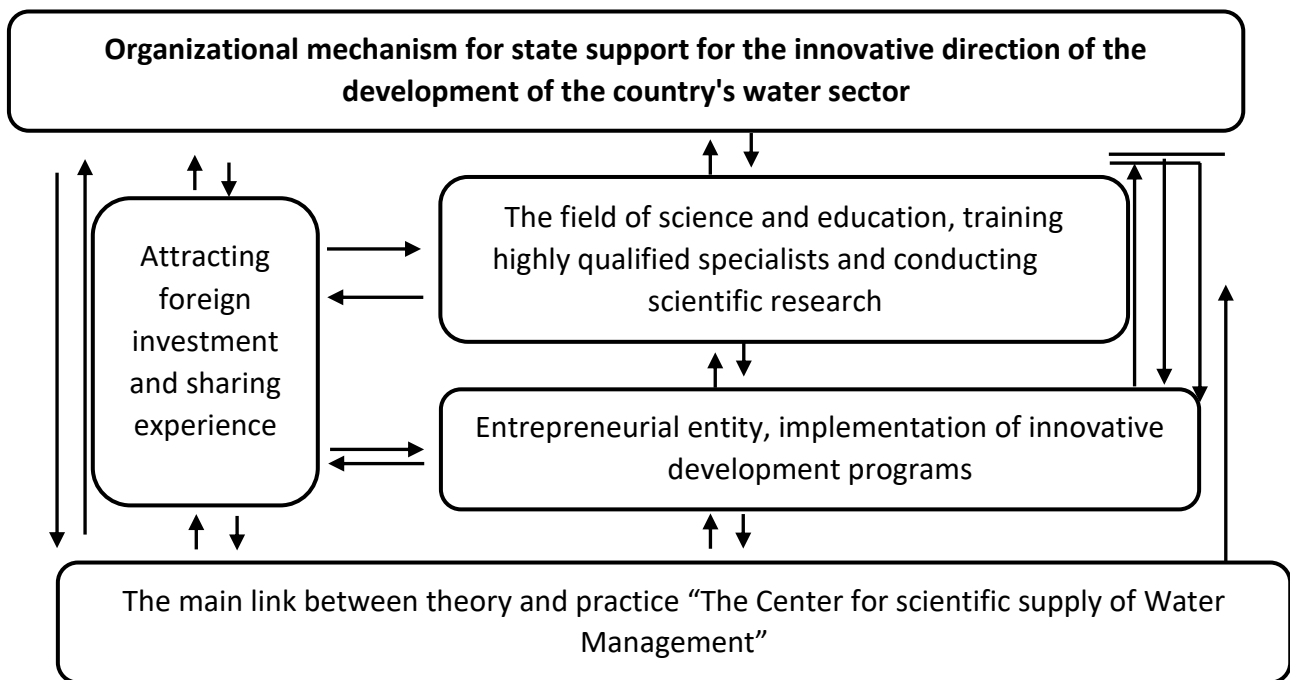
In other words, it is advisable to establish a coordinating and methodological council for the development of water management innovations, with the direct participation of representatives of water management production, to unite the activities of scientists, scientific consultants, and research institutes. Of course, this requires, first of all, the creation of an organizational and legal framework.

<sup>63</sup>Source: Developed by the author based on research.

The development of an innovative economy in the water sector is a mutually dependent process involving the interaction of the state, water sector, science, and business entities. This system is characterized by the involvement of all entities.

Active implementation of the mechanism of RADW organization through the state order according to the program-target principle using project management mechanisms [9].

The following organizational mechanisms should be used to support the state in the innovative direction of developing the country's water sector (figure 1).



**Figure 1. Organizational mechanism for state support for the innovative direction of the country's water sector development<sup>[64]</sup>.**

Stimulating innovation in water management is a set of measures aimed at creating an "innovation system" in the field of irrigation and land reclamation, stimulating the development of scientific and technical achievements, and increasing production efficiency. The goal is to strengthen financial and economic, scientific and technical progress throughout the entire chain: from fundamental research to the introduction of scientific developments into production.

State targeted programs of the financial and technical support for innovative public-private partnerships that carry out RADW on the topics of government organizations (USA, Japan, Great Britain, India, China, etc.) [10].

Support for the innovative direction of the country's development is a set of measures and mechanisms used by state authorities to stimulate the innovative development of the country and its individual regions. Also, support for innovative activities: allocation of financial resources for the implementation of

<sup>64</sup>Source: Developed by the author based on research.

innovative projects, state financing of projects of social and economic importance; material and technical support for innovative activities, property support for activities in the innovative direction; in the support of information, the formation of specialized information systems and sites on the internet that support the activities of innovative enterprises of small and medium-sized businesses; in the provision of consulting services, institutions and Centers for the support of innovation are being formed, which provide advice on various aspects of innovative activities and innovative development; to develop innovative programs for the development of specialists with scientific and technical knowledge and skills in the field of innovative activities in the development of education, in the basic and additional education system; to assist and support the implementation of foreign economic cooperation of innovative enterprises.

Establish cooperation with international innovation development organizations and plan to introduce innovative products to international markets.

The development of innovations is a complex and multifaceted process that requires the joint efforts of the state, business, the scientific community, and society as a whole.

In conclusion, it can be said that expanding and increasing innovative financing in the water sector, especially in irrigation, plays an important role in saving water resources, protecting the environment, and increasing the resilience of agriculture to climate change. New irrigation methods can not only increase food production, but also reduce water consumption, which is crucial in the face of increasing water scarcity. It is necessary to develop and implement new, more efficient and affordable irrigation methods through continuous development of scientific and technological progress and innovative projects in the field. The widespread use of digital technologies in irrigation will allow for process automation and improved resource management.

The main part of the proposed, fundamental and practical research is devoted to the field of service, with a focus on key aspects. It is important to raise awareness among farm owners about the benefits of innovative irrigation methods, strengthen international cooperation in this area, and achieve sustainable rural and water development in the future. Within the framework of sustainable water management, the main goal of innovations in the field of water supply, wastewater treatment, and water management should be the introduction of advanced technologies that ensure the rational use of natural resources for human needs based on the principles of a green economy.

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## **“BANK-RAQOBAT-MODEL” KONSEPSIYASINING IQTISODIY-MATEMATIK ASOSLARI**

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**Annotatsiya.** Maqolada zamonaviy bank tizimi faoliyatining nisbatan sodda va asosli tavsifi berilib, uni umumiy vaqtlararo muvozanat modelida qo'llash imkoniyatlari yoritilgan. “Bank-raqobat-model” konsepsiyasi oddiy pul multiplikatori munosabatlari bilan almashtirib bo'lmaydigan tizimli model sifatida asoslab beriladi. Bank tizimidagi moliyaviy vositalar harakatining ekonometrik tahlili asosida konsepsiyaning nazariy asoslari ishlab chiqilgan.