

# THE USE OF MODERN AUTOMATED INFORMATION SYSTEMS AS THE MOST IMPORTANT MECHANISM FOR THE USE OF WATER RESOURCES IN THE REGION

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**Annotation:** *This article considers the analysis of agroclusters and the application of modern automated water use systems in the agricultural sector in Uzbekistan using the example of the Jizzakh region to introduce water-saving technologies in the form of agroclusters to save water resources in the region, as well as an insufficient level of education to meet the growing demand for qualified personnel in a modern, technologically rapidly changing world. The issues of effective training that require highly integrated practice-oriented methods for solving water use problems, including water supply and sanitation systems, as well as the use of outdated water use technologies are considered.*

**Keywords:** *agrocluster, water resources, tools, clustering of the region, entrepreneurship, profitability, steppe areas, irrigated area, agriculture, automated system, hydro resources, aquatronics, water treatment system, water user associations, analysis, database management system.*

## I. INTRODUCTION

In scientific language, agroklaster is a union of economically and geographically close to each other companies that contribute to the overall development and growth of competitiveness of each of them.

It is also an informal association of leading firms with medium and small enterprises, technology developers, necessary market institutions, consumers and suppliers that interact with each other within a single chain of additional value creation. It is important that all of them are concentrated in a limited area for the implementation of joint activities in the process of production and supply of a certain type of products and services.

Clusters initially began to develop in Europe and the United States as research and production associations. For example, one company could not make this or that detail, knot or technology. Therefore, she connected other enterprises to work. In case of successful fulfillment of orders, they merged into a single joint production center, while remaining independent enterprises that retain their know-how and customer information resource base. On this basis, a lot of information technology projects were born. Clusters were able to carry out such complex production projects, since they had a powerful scientific base for new developments and the production of radically new products. Cluster successes in information and communication technologies and in the industrial sphere attracted farmers who successfully merged into new centers and jointly defended their interests in world markets.

## II. LITERATURE REVIEW

Nikolenko I.V. dr.tech. sciences, prof. "Aquatronika is a new line of staffing for the water management complex" The article examines the issues of staffing the water management complex through improving the management system of personnel training, re-equipping the educational and laboratory base of educational

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institutions. Attention is paid to aquatronics, based on the methodology of systemic pooling of knowledge in various fields of science and technology for the rational use of water resources.

Ch.Murodov. "Prospects for the development of agro-clusters in Uzbekistan" The article discusses the basis for the development of agro-clusters, the purpose of which is to create an industrial basis for improving the competitiveness and productivity of the food sector based on industrial and agricultural production in the region. The advantages of agroclusters and the implementation of clustering measures in order to ensure sustainable food supply of the population of the republic and exports of agricultural products are also presented.

### III.METHODOLOGY

In the course of the study it became clear that the use of this method makes it possible to save water resources. On the basis of these studies, a methodology has been created for determining the effectiveness of the application, the automated management of the flow of water resources in agro-clustering in different regions. In order to study the possibilities of applying this method to practice in 2019 in Uzbekistan, German specialists equipped a new hydrolaboratory. The purpose of this laboratory is to formulate a proposal on the optimal use of hydro resources in water-deficient Uzbekistan.

### IV.MAIN PART

The profitability of agro-clusters in the information society can be listed to infinity. But we will dwell in detail on how the cluster works at the stage of formation. For its creation it is necessary to unite the efforts of three participants - enterprises, investors and the state. Enterprises unite into a single holding, provide funding for various programs, maintenance, agricultural and industrial infrastructure, a single service center. Investors come to the already constructed infrastructure, with which agroklasters offers various investment opportunities and equity participation in modern business. The Agrocluster forces include a control service and a certification service, which strictly monitors the compliance of food products with standards, including world standards. The opening up of world markets within the framework of the agreement on a free trade zone allows, the reduction of costs for the transition of world standards is extremely important for enterprises focused on export.

Invest in the project can not only private investors, but also the state, as well as international financial organizations, which thus support entrepreneurship in any region. State and international assistance has several goals: to adapt domestic products to world standards, reduce unemployment in the regions, and develop competition in the field of the regional agro-industrial complex. It is much more convenient for the state to work with agro-clusters than with each individual subject. In this case, they conduct a dialogue with a single structure, rather than multiple enterprises.

The agrocluster project, formed according to international standards, can be approved by the state, which actively develop programs of regional and small and medium rural entrepreneurship. Also these projects can be financed from the local and central as well as from the personal entrepreneurial budget. For the development of the cluster, it is necessary to create a reliable chain of three elements: producers - local authorities - an educational center. The stronger and more thoughtful this chain, the greater the chances of getting help and successfully developing clustering [5].

At the beginning of 2019 in Uzbekistan, specialists from Germany equipped a new hydrolaboratory. The goal and objectives of this laboratory is to make optimal use of water resources in water-deficient Uzbekistan. The TIA Portal V15.1 system is a new version of an automated system for using hydro complexes based on digital technology.

The above automated system works on software products developed in LAD, FBD, SCL.

LAD - (Ladder Diagram) is a language of relay logic and allows you to define the basis for a specialist in the field of water treatment and water treatment systems.

FBD - (Function Block Diagram) and SCL - (Structured Text (ST)) implements projects on a graphical standard basis.

Equipped with an automated system requires updating the fleet of computers in this area to more powerful ones. Because the work of technology requires at least 5 GB of RAM.

The proposed automated system in the field of water supply to the population allows:

1. Remove water from the source;
2. Purify the water to a standard amount;

3. Adding water reagents in the norm;
  4. Determination of the norm of chlorine in tanks.
- And in the field of hydroclusters, including agricultural agroclusters:

1. The volume of water transfer;
2. The optimal distribution of water throughout the region;
3. Automation of managerial and organizational work of hydraulic structures;
4. Works of opening and closing of water locks on an established schedule on a regulatory basis;
5. Compilation and development of a set of mathematical models that allow for the distribution of water resources.

In the management of water resources in Uzbekistan, there is a shortage of professional personnel in the water management complex.

Nowadays, new directions in the management of hydro resources are emerging in world practice.

According to this specialized universities need relevant areas and specialties. Proceeding from international practice, we offer Aquatronika as a new direction in the personnel potential of replenishing hydroclusters in Uzbekistan. Therefore, the above described system is a very important mechanism in the development of a complex of hydro resources. This will ensure the demand for personnel in the field of "Management and automation of production and technological processes of hydro resources"

The limited global reserves of fresh water are rapidly turning it into a scarce natural resource. The lack of energy resources, as well as environmental issues, make issues related to water use particularly relevant in the regions. The protection of water resources and the optimization of their use are becoming at the center of international and state policy with regulation at various levels of government. The main factors that have a negative impact on the rationality of the use and the creation of a shortage of water resources are the global growth of their consumption, irrational use and pollution. The level of education today is insufficient to meet the growing demand for qualified personnel in the modern, technologically rapidly changing world. As a rule, theoretical training is available for the component parts of specialties. Effective training requires highly integrated, practice-oriented methods for solving water-use problems, including water supply and sanitation systems, as well as the use of outdated water-use technologies [10].

The existing structure of water resources management in other countries of Central Asia and in Uzbekistan leads to the fact that most solutions to water-related problems focus on private technological and structural solutions, mainly focused on their commercialization. As a result, many problems and contradictions have accumulated in the use of water resources in various sectors in the energy sector, in agriculture and in the municipal sector.

The materials of the Water Congress, which took place in June 2017 in Moscow, indicate the need to join efforts to form a qualitatively new approach to the protection of water resources in accordance with modern environmental safety requirements and environmental standards, with the provision of integrated management, which is designed to coordinate water resources in all relevant management sectors [11]. One of the main tasks determining the development of the water management complex is its staffing based on the improvement of the training management system, Re-equipment of the educational and laboratory base of educational institutions, formation of new directions and specialties, development and implementation of new educational standards and training programs that meet the needs development of water management, as well as the creation of a system of incentives to attract and retain in the industry a specialist in higher and secondary vocational education [10]

## V.RESULTS

Consider the example of one region what benefit agroklusterizatsiya when saving water resources. As it is known, the main agricultural regions of Uzbekistan are located in steppe areas.

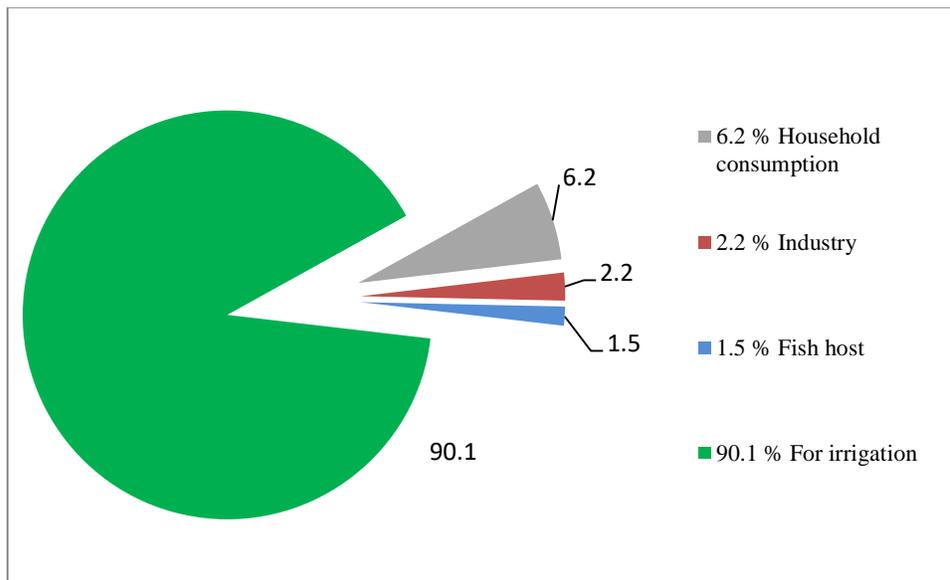
The average annual water use in the Republic of Uzbekistan is more than 60 billion m<sup>3</sup>. Of these, almost 50 billion m<sup>3</sup> is used in agriculture. From the above statistics it is clear that the use of agroclusters in the republic gives a powerful impetus to the effective use of water resources in the regions.

The average per hectare of irrigated area in Uzbekistan consumes about 12,000. m<sup>3</sup> of water. At the same time, the total volume of water of Uzbekistan itself is more than 10 billion m<sup>3</sup>, and the rest of the volume of water comes from the territory of neighboring states. The reason for this is that a large part of the territory of Uzbekistan makes up the steppe zone [4].

At the same time, about 8 soums in Uzbek currency is spent on 1 m<sup>3</sup> of irrigated area. On the whole, 4.2 million hectares of land is irrigated in the republic at this time. From this it turns out that the state spends 400 billion

of Uzbek currency only on irrigation, on agricultural land. The water resources of the republic are surface and underground waters that are used to supply the rural and urban population, industry, power generation, fish farming, recreation and recreation.

An analysis of the water resources used in Uzbekistan shows that irrigation of cultivated areas accounts for almost 90.1% of water. [2] (Chart-1)



**Chart-1: Distribution of water used resources of Uzbekistan**

## **VLDISCUSSION AND CONCLUSION**

In Uzbekistan, the Jizzakh region is considered one of the leading agricultural regions. The region has irrigated land of 232 thousand 800 hectares. To prevent the expenditure of water in the region, numerous regulatory and legal documents have been adopted.

In recent years, in order to improve the ameliorative state of irrigated lands, collectors have been built. Through collectors and sewage systems, wastewater from fields, industrial enterprises, livestock farms containing harmful chemical elements, oil products, and bacteria are discharged into rivers and lakes. Pollution of rivers of lakes affects living organisms living in them. [6]

Lake Aidarkul with a total water volume of 44.3 km<sup>3</sup>, with an area of 3478 km<sup>2</sup>, is located on the territory of the Jizzakh region. Salinity of water is 1.5 - 2%. This means that the processing of this water does not require large expenditures. By this year, 2018, together with Czech investors, it is planned to introduce high-tech water treatment hydro-clusters to provide irrigated areas of the region with technical water. And at the same time the volume of stocks of drinking water increases. In the future, it is planned to increase the level of economical water consumption of the lake with the help of newly created hydroclusters. In the conditions of Uzbekistan, the creation of such clusters can save water consumption several times.

Considering the above, analyzing the existing traditional type structure, the Ministry of Water Management of Uzbekistan proposed a new modern management structure that meets international standards.

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