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THE MAIN TASKS FOR STRATEGIC DEVELOPMENT OF WATER SECTOR IN UKRAINE

ОСНОВНІ ЗАВДАННЯ СТРАТЕГІЧНОГО РОЗВИТКУ ВОДНОГО ГОСПОДАРСТВА ТЕРИТОРІЙ В УКРАЇНІ

Svitlana S. Sviridova, PhD in Economics, Associate Professor
Odesa Polytechnic State University, Odesa, Ukraine
 Email: s.s.sviridova@opu.ua

Mariia Nekrylova
Odesa Polytechnic State University, Odesa, Ukraine

Oleksii O. Stepanchenko, Doctor of Juridical Science, Professor
Odesa Polytechnic State University, Odesa, Ukraine
 ORCID: 0000-0003-2742-6813
 Email: stepanchenko.o.o@op.edu.ua

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Свірідова С.С., Некрилова М., Степанченко О.О. Основні завдання стратегічного розвитку водного господарства територій в Україні. Оглядова стаття.

У статті досліджується один з секторів економіки, який потребує особливої уваги - водне господарство. Розглянуто спрощена структура формування водного господарства, вказано організації, пов'язані з використанням та охороною водних ресурсів. Наведено, що водне господарство є основним фундаментом сільського господарства, завдяки якому формується близько 14% ВВП країни, 31% експорту та створюється 17,5% робочих місць. З метою ефективного використання водних ресурсів та стимулювання гідротехнічної меліорації земель створена організація водокористувачів (ОВК), яка контролює використання, експлуатацію та технічне обслуговування об'єктів інженерної інфраструктури меліоративних систем на території обслуговування організації. Визначено основні завдання стратегічного розвитку водного господарства.

Ключові слова: водне господарство, меліорація, зрошення, водні ресурси, стратегія розвитку, організація водокористувачів

Sviridova S.S., Nekrylova M., Stepanchenko O.O. The main tasks for strategic development of water sector in Ukraine. Review article.

The article examines one of the economy sectors that requires special attention, i.e. the water sector. The simplified structure of water sector formation has been considered, and organizations connected with using and protecting water resources have been specified. It has been pointed out that the water industry is a mainstay of agriculture that accounts for 14% of national GDP, 31% of export and accounts for 17.5% of jobs creation.

In order to use water resources efficiently and stimulate hydrotechnical land reclamation an organization of water users has been established to control the use, operation and maintenance of engineering infrastructure of land reclamation systems on the territory of the organization. The main objectives for the strategic development of the water sector have been defined.

Keywords: water management, reclamation, irrigation, water resources, agricultural development strategy, water users' organization

In order to increase food security and make the state one of the world leaders in food production, the renewal and development of the land-growing system is important [1]. Agricultural production develops in Ukraine in different climatic conditions. In the area of insufficient moisturizing is about 65% of the eagle land. The complex climatic conditions, repeated once for three to four years of drought, on a significant territory leads to instability of agricultural production in most territory of the country.

But the issues related to the define the strategic development of the country's water sector are not fully formulated and will require further consideration.

Analysis of recent research and publications

The impact of water sector development in Ukraine was investigated by I.P. Aidarov, I.I. Andrusenko, O.V. Kokovikhin, P.I. Kukoba, E.P. Karabelesh, B.I. Laktionov and many other scientists.

Scientists note the positive socio-economic consequences of the water sector growing lands. In irrigation lands, which occupied about 24.6% of the arable land in 1991, more than 60% of agricultural production was produced, and the productivity of the growing hectare was from 2 to 2.5 times higher than the boar lands. An important economic factor, which makes it necessary to grow, is the need of the state for raw materials and food products, which production without watering is impossible or ineffective.

The main aim of article is to study the condition of the water sector of the country and to define the main tasks for strategic development of water sector with the purpose of its efficiency improvement.

The main part

The growth development is aimed at obtaining high yields regardless of weather conditions. The mechanization problems of agricultural crops irrigation go far beyond the limits of increasing production productivity, they affect the whole technological process of growing farming, technical level of irrigation systems, level of effective use of natural and material resources, the environment preservation.

Artificial soil irrigation moisture for high and stable crops. Along with the soil, plants and the soil layer of the air are moistened to some extent during irrigation, depending on the irrigation technology. In production conditions, the irrigation is fulfilled by means of a complex of hydrotechnical and engineering facilities, which is called the irrigation system. Growing melioration is a complex of economic, engineering and organizational measures aimed at the delivery and uniform water distribution on agricultural lands, where water is not enough in natural conditions. Hydrotechnical methods of water supply and its transformation into soil moisture [1] are used as the basis for irrigation melioration.

Water sector is an industry whose task is to meet the needs of the population and national economy in water resources, to preserve, protect and reproduce the water fund, to prevent harmful effects of water and to eliminate its consequences [2].

The water sector of Ukraine includes water resources (surface and soil) and buildings that carry out the fence, transportation and use of these resources [3]. Objects of water management are the objects, which include industrial water pipes, means of water purification and cooling, water pipes of mud farms, hydro-technical constructions, water transport,

warehouses of reagents and chlorine, pump stations [4].

From the viewpoint of the management organizational structure, the existing system of water resources management in Ukraine is rather expensive from the vieweconomic point and has unbalanced mechanism of financial support distribution, protection and restoration of water resources quality. The functions of water resources management are divided between the State Agency for Water Resources, the Ministry of Ecology and Natural Resources and the basin water resources management.

In the absence of a single state body responsible for the state of water resources in the basin, the right of such management is transferred to a number of state structures for which this task is not the urgent. As a result, there are parallel and duplication of management functions.

One of the main consumers of water resources in Ukraine is agriculture, which accounts for about 14% of the country's GDP. 31% of exports and 17.5% of jobs are created. In order to further improving the agricultural sector of the economy and state support for agricultural producers in Ukraine, in 2015, the "United Integrated Strategy for Agriculture and Rural Areas Development for 2015-2020" was adopted.

The strategy forms a comprehensive approach for the agricultural sector development in general provides directions for improving the financial support instruments for the agricultural sector of the economy: crediting, taxation, agricultural research and education, i.e. product safety and environmental protection. "The only comprehensive strategy for agricultural and agricultural development in 2015-2020" was adopted.

On the basis of this, the water sector structure is formed (Figure 1).

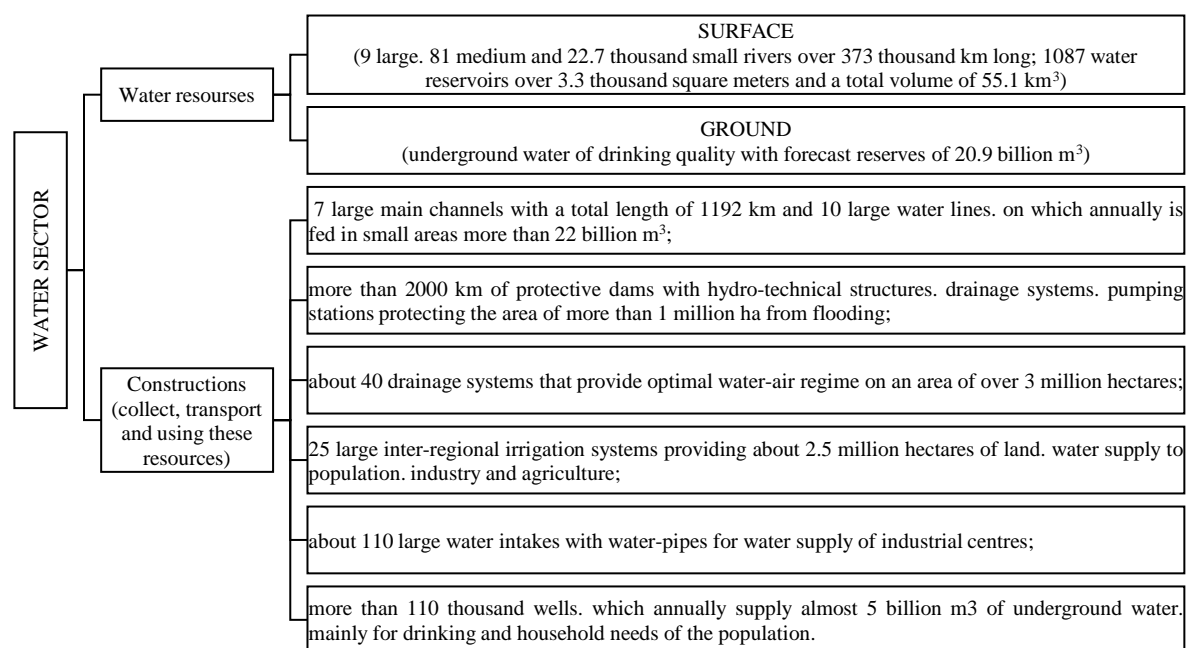


Figure 1. Structure of objects of water management

Source: compiled by authors on materials [1].

In Ukraine, the sources of funding for resource-saving programmes are the state budget and budgets of local self-government bodies. Own funds of enterprises, institutions and organizations can also be used for water treatment activities. Such measures should include innovative projects implementation, standards development, organizational and cultural measures implementation, of production projects modernization, energy resources replacement with ecologically clean energy, using renewable types of

natural resources for production purposes and replacing them with synthetic ones, etc.

Ministries and committees related to the use and protection of water resources, shown in Table 1. In particular, the projects of water sector development can be attributed to the agreement with the European Bank for Reconstruction and Development on provision of the sum of almost 100 million dollars for the purpose of melioration of at least 45 thousand hectares of the abovementioned system.

Table 1. Organizational Structure of Ministries and Water Committees

Name	Functions
State Committee on Geology and Using the Nars (State Committee on Geology)	<ol style="list-style-type: none"> 1. State registration of underground waters. 2. Control of quality and pollution of underground waters. 3. Monitoring of radioactive contamination. 4. Control of rational use and reproduction of underground waters. 5. Permits approval for the right to perform design and construction works on geological study of underground waters. 6. Geological control over prospecting and exploration works on geological exploration of underground waters.
Ministry of Ecology and Natural Resources	<ol style="list-style-type: none"> 1. Coordination of activities of ministries, departments, enterprises on use and protection of water resources. 2. Development of norms, standards and rules of expert examination of projects connected with using the water resources. 3. Control over rational use and reproduction of water resources. 4. Control over chemical pollution of surface waters. 5. Control over radioactive contamination of surface soil waters. 6. Control over the discharge of pollutants at river, lake, reservoir. 7. Making decisions on partial or complete stop of water-contaminated enterprises. 8. Development and approval of normative acts aimed at rational use of water resources and their protection. 9. Environmental expertise.
State Committee on Hydrometeorology	<ol style="list-style-type: none"> 1. Treatment of surface water resources. 2. Control over chemical pollution of surface waters. 3. Control over radioactive contamination of surface waters.
State Committee of Ukraine on Water Management (SCUWS)	<ol style="list-style-type: none"> 1. State administration in the field of water sector; implementing a single technical policy; introducing scientific, technical, new technologies and best practices in the water sector; 2. Development and establishment of operation modes of complex purpose reservoirs, water-saving systems and channels, the rules approval of their operation. 3. Development and participation in realization of state, interstate and regional programmes of use and protection of water and water resources reproduction. 4. Realization of radiological and hydrochemical monitoring of water objects of complex purpose, water-supply systems of inter-branch and agricultural water supply. 5. Design, construction, operation of water-supply systems and complex purpose. 6. Measures implementation on ecological improvement of surface waters and their care. 7. Maintenance of state record of water use and state water cadastre 8. Control over observance of operation modes of reservoirs and water-supply systems.

Source: compiled by authors on materials [2].

The agreement was announced on 21 October 2021, and the programme is valid for 4 years

At present, the project is at the preparation stage of the project-estimate documentation for 12 objects, shown in Table 2.

Note that business entities implement environmental protection measures provided that it is profitable and brings profit. The appropriate means development of economic stimulation and their legislative consolidation would allow to solve this problem taking into account, first of all, environmental priorities. However, the main share of money proceeds is spent by state funds [5].

The water sector reimbursement expenses is implemented in various forms, in particular:

- a charge for consumption of a certain water quantity;
- fee for water-consumption unit (person, user, growing hectare);
- payment for excess of water limit;
- payment for water pollution;
- sale of the right to water (license fee);
- a tax on the enterprise, which includes a fee for water;
- joint-stock declaration on water [7].

Ukraine urgently needs the policy of water conservation and efficient water use. Currently, 31 million hectares of Ukrainian land are covered by 18 million hectares is the territory with a shortage of wet

provision, and 3 million hectares are in the zone with a critical shortage of moisture.

Since 2016-2021, global climate change has been observed, affecting the decline of agriculture. The critical situation in the South of Ukraine, in Odesa

region is the Bessarabia region, where the third year due to drought farmers have been losing their crops and the bankruptcy process of agricultural enterprises continues [8].

Table 2. Reconstruction and Development Objects

Object	Type of Repair
1. Michurinska Water Users Organization	Overhaul of inter-economic channels of hydraulic structures and technical re-equipment of pump station
2. Liskivska Water Users Organization	Overhaul of inter-economic channels of hydraulic structures and technical re-equipment of pump station
3. Tashbunary irrigation system	Overhaul of main pipeline
4. Suvorovsky pumping station	Reconstruction of pump stations NSP-1, NSP-2, NSP-3, NSP-6
5. Kiliya Water Users Organization	Overhaul of inter-economic channels of hydrotechnical facilities
6. Izmail pumping station	Reconstruction of the main channel
7. Tatarbunary irrigation system	Overhaul and technical re-equipment of pumping stations ZNS-7 and ZNS-6
8. Kotlovinsky water-filling system	Overhaul and technical re-equipment of NS-1 "Victory"
9. Banivska irrigation system	Overhaul of the pipeline NSOKP – "Bank" PE
10. Nagirnyansky irrigation system	The main channel reconstruction
11. Belgorod-Dnister irrigation system	Reconstruction of pumping stations and hydrotechnical structures
12. Troitsko-Gradenitsy irrigation system	Reconstruction of pumping stations NS-1 and NSP-2 and hydrotechnical facilities

Source: compiled by authors on materials [6].

The southern agrarians have long been waiting for the adopting the draft law 5202-d "On Organization of Water Separators and Stimulation of Hydrotechnical Land Reclamation".

According to the law № 5202 "On the Organization of Water Separators and Stimulation of Hydrotechnical Land Reclamation", the authors of the draft law note that for new infrastructure development and the new objects integration of meliorative systems should be implemented in practice fundamental changes to legislative acts that create preconditions for realization of both directions. Among the first steps that will help in this process are:

- the meliorative network allocation as a separate component of meliorative system, which includes technologically connected objects of lower level of meliorative system;
- inclusion into the State Land Cadastre (SLC) information about the reclamation network, its individual components and land plots (land massifs), reclamation of which the network can provide;
- inclusion in the Register of real property rights of information on the rights to certain components of the reclamation network (pumping station, in-house pipeline, etc.) [9].

Water Users Organization (WUO) Establishment. Water Users organization (WUO) need the control over the use, operation and maintenance of engineering infrastructure objects of meliorative systems near the organization service;

The submitted draft law provides that the WUO is prohibited to conduct any activity that not connected with hydrotechnical melioration, as well as a number of other preventive measures and regulation:

- the WUO founders and members may be owners of agricultural land plots that have not been transferred for use, and users of agricultural land plots;
- membership in the WUO is not necessary, but it is open – the WUO is obliged to accept in the members of any water-carrier from the territory of its service;
- the WUO is a non-profit organization and it is impossible to distribute profit or property among members, the purpose of its activity is to develop melioration, rather than to receive profit;
- the WUO is funded by its members through contributions and fees for services, but other sources of financing are not prohibited (loans, etc.) the nature and functions of the WUO.

The basic provisions concerning the WUO. WUO direction. Financing and investment.

Ways of financing and search for investments in meliorative infrastructure improvement provides for independent financing of the ITL and attraction of investments from other sources:

- at the expense of the funds received from the members of the WUO in the tariff for services and/or as entrance fees and/or as target contributions;
- with the help of credit funds. The WUO members may be charged for water users before the creditors. The funds necessary for credit repayment may be included in the tariff for services. Financing of investments by individual members of the regional water company in coordination with the general meeting of the water companies organization and further compensation

of the regional water company member of the investments made.

The need to increase the land for growth every year is becoming more and more urgent. For example, already in 2022 they plan to increase by 600 hectares of such land [10]. On the basis of the research, the main objectives for strategic development of water sector can be:

- increase of the area of land where hydrotechnical melioration is applied;
- improving agricultural efficiency;
- reducing the cost of irrigation of land plots;
- minimizing risks of interruption of water supply/dischage during vegetation season;
- reducing state expenditures for the system administration of melioration;
- preventing degradation.

Heads of structural subdivisions and water-supply organizations have defined the main strategic goals of the State Water Agency for 2022.

As a result of the development, agreed priority areas for 2022 have been established, which envisage the achievement of the following strategic goals:

- economic, i.e. revenues increase to the State Budget of Ukraine from the using water resources and increasing efficiency of using budget funds by water-supply organizations;
- improved interaction with stakeholders, primarily water-supply companies;
- improving internal processes of realization of the state policy by means of results monitoring of fulfillment of tasks, management of processes of formation of cost of paid services, improvement of normative-legal base;
- conditions creation for attracting investments in infrastructure modernization and development.

This will help to create conditions for efficient functioning of water management, state policy implementation in the sphere of management, use and reproduction of water resources, provision of land reclamation and exploitation of state water-supply facilities of complex purpose.

This approach will allow to systematize the activity of the branch and to provide more coordinated work of all components of water-supply complex [11].

Conclusions

Summing up all the abovementioned, it is possible to conclude that, despite difficult climatic conditions, namely: 31 million ha of Ukrainian land 18 million hectares of the territory with deficit of water supply, and 3 million hectares are in zone with critical deficit of moisture, agricultural production needs to use water resources, which should be effective.

In order to increase the integrated management of water resources in Ukraine, in order to increase innovation in the development of water industry, the following steps should be taken: government, science, education, business, public organizations and innovation clusters.

In particular, the law No. 5202 "On Organization of Water Separators and Stimulation of Hydrotechnical Land Reclamation", creation of water users organization (WUO), which is necessary for control over use, operation and maintenance of engineering infrastructure facilities of meliorative systems on the territory of service of the organization, is directed to increase efficiency. And the tasks, which are formulated within the framework of the strategy of the development of the skin area should be fulfilled

Abstract

In order to increase food security and make the country one of the world leaders in food production, it is important to renew and develop the system of land irrigation.

Water sector is the sector that aims to meet the needs of the population and national economy in water resources, conservation, protection and reproduction of water resources, prevention of harmful effects of water and eliminating their consequences.

The water sector in Ukraine includes water resources (surface and ground) and facilities that take, transport and use these resources.

From the viewpoint of organizational management structure, the existing water resources management system in Ukraine is rather costly from the economic viewpoint and has unbalanced mechanism of financial provision, protection and water resources quality rehabilitation.

One of the main consumers of water resources in Ukraine is agriculture, which generates about 14% of the country's GDP is 31% of exports and 17.5% of jobs.

In Ukraine, the sources of financing the resource saving programmes are the state budget and budgets of the local authorities. Also, the own funds of enterprises, institutions and organizations may be used for water treatment activities.

Entrepreneurial entities implement environmental protection measures provided that it is profitable and profitable. The development of appropriate economic incentives and their legislative enshrinement would enable this problem to be solved taking into account, above all, environmental priorities. However, most of the money generated comes from public funds.

In spite of the difficult climatic conditions, about 31 million hectares of Ukrainian land 18 million hectares have a humidity deficit, and 3 million hectares are in a critical moisture deficit zone, agricultural production requires the use of water resources, which must be efficient.

As for the water management projects financing, particularly in the southern regions, an agreement has been reached with the European Bank for Reconstruction and Development on the allocation of almost 100 million dollars for the reclamation of at least 45,000 hectares of the aforementioned system. At present, the project is at the stage of preparing design and estimate documentation for 12 objects.

The Law No. 5202 "On the Organization of Water Separators and Stimulation of Hydrotechnical Land Reclamation", the establishment of a Water Users Organization (WUO), necessary to control the use, operation and maintenance of engineering infrastructure of land reclamation systems in the service area of the organization, in particular, is aimed at increasing efficiency. And the tasks formulated in the development strategy of each territory must be fulfilled.

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