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THE IMPACT OF IMPROVING REGULATION OF CLIMATE CHANGE AND WATER RESOURCES IN AGRICULTURE PROBLEMS.

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Abstract.

Global climate change is one of the urgent problems of today, and it is not only the average annual temperature increase on our planet, but also the change of the entire geosystem, the rise of the world ocean level, the melting of glaciers in the mountains, the increase of drought due to the lack of precipitation, the change of the river flow regime and the instability of the climate. other changes are also considered. As a result of global climate change, the area of glaciers in Central Asia has decreased by about 30 percent over the past 50-60 years. According to Uzgidromet, there will be no significant changes in water resources in the Amudarya and Syrdarya basins by 2030, and by 2050, water resources in the Syrdarya basin will decrease by 5% and in the Amudarya basin by 15%. The total water deficit in Uzbekistan until 2015 is 3 billion. if it was over 15 billion cubic meters by 2050. can be a cubic meter.[1]

Introduction. In recent years, the number of years of low water in the Aral Sea basin has been increasing. For example, until 2000, water deficit years were repeated every 6-8 years, but recently they are observed every 3-4 years. According to the above analysis, until 2030, water resources will remain at their current level. With the further increase in air temperature, river flow will decrease, the effect of climate warming on the rivers and small streams of the Amudarya basin will be relatively significant, and the flow variability will increase in all basins.

None of the climatological studies reviewed on climate warming predict an increase in available water resources, as expected climate change will increase total evapotranspiration, increase the amount of water lost from irrigated fields, which will require additional water use. [1].

In the current situation of irrigated land, it is inevitable that climate change will increase water scarcity. Also, other sectors of the economy may have serious difficulties in meeting their needs for water resources. In the next 15 years, water

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supply per capita decreased from 3048 m3 to 1589 m3. At the same time, the population of the republic will increase by an average of 650-700 thousand people per year by 2030, and their quality

demand for water is 2.3 bln. 2.7-3.0 billion from m3. m3, that is, it is expected to increase by 18–20%. In recent years, industrial and energy sectors have developed rapidly, their demand for water is increasing year by year, and the total annual water consumption of these sectors is 1.9 billion today. cubic meter, by 2030 it will increase by 1.8 times to 3.5 billion. is m3 [4].

In the world, global climate change is becoming a factor that can have a significant impact on all areas of human activity. It has a negative impact on the environment of our planet, the life and health of people in various sectors of the economy. The impact of climate change on agriculture is especially high, because agriculture is one of the sectors of the economy that are affected by climate change. Climate change will lead to 10–15% more evaporation from water surfaces and 10–20% more water use due to increased plant transpiration and irrigation rates. This leads to an average increase of 18% in water consumption without recovery. Assessment of the possible increase in water consumption in irrigated lands due to changes in climate conditions (water consumption of various crops, losses, changes in land reclamation) is an urgent problem today.

Level of study of the problem. One of the important means of solving these problems is to reduce 92.5% of the water of transboundary rivers - Amudarya, Syrdarya and Zarafshan rivers, which are used in the field of agriculture, due to the introduction of new economical techniques and technologies as much as possible. effective use of legal tools in directing development is extremely important.

The Republic of Uzbekistan is located in the Aral Sea basin, its main water source is the Amudarya and Syrdarya rivers, as well as 143 internal 35 large and medium, 118 small rivers and streams, as well as underground waters. The average long-term water flow of all sources in the Aral Sea basin is 114.4 billion m3, of which 78.34 m3 is formed in the Amudarya basin and 36.06 m3 in the Syrdarya basin. The total reserve of underground water is 31.2 billion m3, 47.2% of it is in the Amudarya basin, and 52.8% is in the Syrdarya basin.

The territory of the republic has its own soil and climatic conditions, as a result of the lack of natural ditches, high level of mineralization of underground water, improper use of water resources, low economic efficiency of irrigation systems and the negative effects of other anthropogenic factors, 45.7 percent of the irrigated land area is saline to varying degrees. . In order to reliably supply agriculture and economic sectors with water resources and to improve land reclamation, a unique

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huge water management system has been established in the republic. Today, the water management system includes 28,400 km of irrigation networks and 54,432 different hydrotechnical structures, 70 water and flood reservoirs with a total volume of 19.4 billion m3. About 60 percent of irrigated lands are supplied with water using 1,687 pumping stations. In addition, a total of 155,200 km of irrigation network and more than 10,280 pumping units are used in water user associations, farms and clusters. There are a total of 12,400 irrigation wells for irrigation needs. The total length of 142,900 km for the improvement of the reclamation condition of the irrigated lands, of which 106,200 km are open and 36,700 km are closed lying collector-water networks, as well as 172 reclamation pumping stations and 3,897 vertical drainage wells. is being used. There are 3,777 different types of reclamation machines and mechanisms, including 1,178 excavators and 320 bulldozers [4]. According to the above indicators, that is, the number and length of water management facilities per hectare of irrigated land (comparative indicator), our country ranks highest in the world. The first problem in water management is that most of the water management infrastructure facilities built in the republic need to be modernized. Because their service life has increased from 50 to 60 years, their technical condition is getting worse year by year. In particular, 66 percent of the irrigation system channels, 77 percent of the irrigation networks of water consumers' associations and farms are earthen, and the loss of water due to filtration remains high; The second problem is that most of the existing grids have been in service for more than 30 years, and 70% of them require reconstruction and replacement as a result of the fact that they have not been repaired on time, as well as their service life has passed; As a result, the efficiency of the irrigation system and irrigation networks is on average 0.63, and in a number of regions it is even lower, and 35-40 percent of water from the main sources is lost in irrigation networks. 45.3% of the irrigated lands in the republic are at different levels, of which 31.1% are weakly saline, 12.2% are moderately saline, and 2% are strongly saline, and 24.4% of the area has an underground water level of 2 m and above. [4]. The third important problem is that the average annual amount of water used today is 51-53 billion. 90-91 percent of m3 in agriculture or 45.9-48.2 billion. m3 (a total of 44 billion m3 in 2021, of which 32.6 billion m3 in the irrigation season [11]) water resources are used mainly for irrigation and salt washing of saline soils.

Fourthly, 36 percent of the water resources used for irrigation and salt washing are being taken out of the irrigation massifs through collector-water systems with a total length of 142.9 thousand km, established to improve the melioration of irrigated lands.

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In order to solve these problems, the development of the concept of the development of the water industry of the Republic of Uzbekistan for 2020-2030 has become of legal importance.

In the republic, in 2020-2030, the population and all sectors of the economy will be stably supplied with water, the improvement of the meliorization of irrigated lands, the wide introduction of market principles and mechanisms and digital technologies to water management, the reliable operation of water management facilities, and the improvement of the efficiency of the use of land and water resources. An important legal document, the Decree of the President of the Republic of Uzbekistan dated July 10, 2020 "On approval of the concept of water management development of the Republic of Uzbekistan for 2020-2030" was adopted. The main parameters to be achieved according to the concept are as follows: increasing the efficiency of irrigation systems from 0.63 to 0.73; reduction of irrigated land areas with low water supply from 560,000 hectares to 190,000 hectares; reduction of saline areas from 1,948,000 hectares to 1,722,000 hectares, medium and high salinity lands from 607,000 hectares to 430,000 hectares; reduction of irrigated land areas with problematic water levels (0-2 meters) from 1,051,000 hectares to 773,000 hectares; putting 298.5 thousand hectares of irrigated land out of use into agricultural use; reducing the annual electricity consumption of pumping stations in the ministry's system by 25%; installation of "Smart Water" water measurement and control devices in all irrigation system facilities, introduction of digital technologies in water accounting; automation of water management processes in 100 large water management facilities; increase the total area of land covered by water-saving technologies for irrigation of agricultural crops to 2 million hectares, including drip irrigation technology to 600 thousand hectares; implementation of 50 projects based on the principles of public-private partnership in water management; ensuring that up to 30 percent of the cost of water supply for irrigation is covered by water consumers, etc.

Improving and maintaining the melioration of irrigated lands, helping to increase land productivity, reducing and preventing soil salinity, first of all, improving the technical condition of collector and drainage networks and other melioration objects, modernizing them, implementing large-scale melioration measures within the framework of state programs increase is expected.

Based on the above conditions, the main idea for the development of the water management system in the future is: the continuation of global climate change, the reduction of the area of glaciers and the increase in the scarcity of fresh water resources; the growth of the country's population, the increase of water supply per

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capita, the decrease of irrigated land; limited natural and economic opportunities to increase the extent of irrigated land; attachment of land resources to producers of agricultural products with the right to bequeath them for a long period of time and absence of state enterprises in them; accurate accounting of water resources and digitization of the water management and use system; increasing the productivity of 1 m3 of water resources taken from the source, increasing the importance of introducing water-saving irrigation technologies; should consist of transitioning to the principle of "fundamental melioration" of irrigated lands.

In the implementation of the concept of the development of water management of the Republic of Uzbekistan for 2020-2030, it is necessary to improve the law "On Water and Water Use", the newly developed Water Code, the legal regulations regulating the field of rural management. In this case, it is necessary to write down and take into account the rules on the transition to the principle of "fundamental melioration" of irrigated lands by our scientists.

In this regard, it is especially important to include provisions on radical melioration of saline irrigated lands in the improvement of current legal norms in this field. Because any soil contains certain amount of water-soluble salts. When their amount is excessive, it has a harmful effect on the growth, development and productivity of crops. The main cause of salinity is the increase in the level of mineralized groundwater near the earth's surface, the evaporation of water from the soil structure due to climate change, i.e. temperature rise.

In this case, the salts gradually accumulate on the upper layers and surface of the soil. These salts increase the osmotic pressure of the soil solution and cause physiological "dryness", in such conditions plants cannot absorb the necessary water and nutrients, even if the soil is wet, as in dry soil [12]. In this regard, it is necessary to ensure that the level of seepage water does not exceed the "critical depth", because the level of mineralized seepage water above this level leads to salinization of the soil layer due to capillary rise and evaporation of water. In order to prevent this negative situation, very long collector-water networks have been established in the irrigated lands. In order to keep this system in working condition, huge funds are allocated from the state budget every year for operating expenses.

In the case of Khorezm region, it can be said that the main idea of establishment and development of the water management system and as a result, the relative length of the collector-water supply networks created to prevent and fight against salinity was 32.5 pog.m/ha by the 1990s. is As of today, the length of collector-source networks in the republic is 142.9 thousand km. information about

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the establishment of This length of collector-water networks, 172 reclamation pumping stations and 3,897 vertical wells serve to maintain the reclamation condition of irrigated lands at the required level. Considerable funds from the state budget are being spent to keep such a huge reclamation system in working order.

Only in 2021, within the framework of 85 projects on reclamation objects, 299.1 billion. 699.9 km of collector-drainage network, 50 hydrotechnical facilities, 17 drainage wells and 10 bridges were built and reconstructed. Also, within 220 reclamation projects, 365.2 bln. 17,000 km of collector-drainage network and 319 vertical drainage wells were repaired and restored [11]. In order to maintain the melioration condition of irrigated lands in an optimal regime, a large amount of funds are required for repair and reconstruction activities, and such activities are provided for in the concept of water management development of the Republic of Uzbekistan for 2020-2030. Such costs tend to increase rather than decrease in the future, as the number and condition of these facilities continue to deteriorate over time. A characteristic aspect of the exploitation of collector-zovor networks is that, depending on their level, repair and restoration activities are carried out again every 3-4 years. This justifies the fact that, taking into account the length of the collector-water supply networks in our republic, the funds spent on annual reclamation activities will increase in the future. The reclamation analysis of the irrigated lands of our republic shows that the saline soils are mostly distributed in hydromorphic (seepage water level 1-2 m) and partially semi-automorphic (seepage water level 2-3 m) lands in the melioration regime. In the example of Khorezm region, we can say that according to the distribution of irrigated land of the region by hydromodule regions in 1982, about 60 percent belonged to VII, VIII and IX (hydromorphic) hydromodule regions [13, 14, 15]. Up to now, 85% of the land of the region has been converted to hydromorphic land reclamation regime [16]. Similar situations are observed in other regions with saline soils.

Conclusion

Based on the above, it can be concluded that one of the urgent problems of climate change and improvement of the legal regulation of the use of water resources in agriculture is the introduction of norms on the transition to the principles of "radical reclamation" of saline lands into the current regulatory legal documents of significant economic, organizational, and legal importance: firstly, salinization of saline lands, i.e. improvement of soil conditions, to gradual reduction of the volume of water resources used for irrigation; secondly, that water resources will not be taken for salt washing in the future; thirdly, the relative length of the collector-source networks is sharply reduced and acceptable; fourthly, to

increase the value of the useful coefficient of the land; fifthly, it is possible to maintain and increase soil fertility; Sixth, environmental protection and environmental sustainability are achieved and spent funds

efficiency increases; secondly, the yield of crops will increase and the spending of funds from the country's budget and other sources for land reclamation facilities will decrease.

REFERENCES:

1. МаматовС., АбдуллаевУ. “Трансграничное бассейновое интегрированное управление водных ресурсов как основа повышения эффективности использования водных ресурсов региона”. //Водному сотрудничеству стран Центральной Азии –20 лет: опыт прошлого и задачи будущего. Тезисы докладов Центрально-Азиатской международной научно-практической конференции, 20-21 сентября 2012 г. Алматы, Республика Казахстан. С. 96-98.

2. МаматовС.“Разработка предложений по совершенствованию управления стоком трансграничных малых рек Ферганской долины”, ОТЧЕТ САНИИРИза 2010 год.

3.Temelsu International Engineering Services Inc.,“Управление водными ресурсами в Ферганской долине Фаза-II” (ПУВРФД-II). Заключительный отчет, Ташкент 2016, С. 74.

4.Солиев И.Р., Гуломжонов Д., “Реакция рек Ферганской долины на изменение климата”Наманганский государственный университет Наманган, 2019 5.Региональная программа КГМСХИ для Центральной Азии и Кавказа, ИКАРДА, Ташкент, Узбекистан, 20126.Э. И. Чембарисов, Т. Ю. Лесник,“Особенности использования стока малых рек ферганской долины для орошения”, Ташкент 2010

7.Бассейновое управление ирригационных систем “Сирьдаря-Сох”, г.Фергана8.Ю.Рысбеков, Проект«ИУВР-Фергана», Ташкент 2008 9.Официальный сайт Центра гидрометеорологической службы Республики Узбекистанwww.hydromet.uz

10.Ўзбекистон Республикаси Сув хўжалиги вазирлиги сайти www.water.gov.uz

11. Alimdjanov, A. A., Karimov, A. K., & Nasibov, B. R. (2020). INADEQUACY OF CURRENT WATER USE PLANNING AT THE LEVEL OF WATER USERS AND WUAS. Irrigation and Melioration, 2020(4), 12-18.

12. Nasibov, B. R., Polevshikova, Y. A., Xomidov, A. O., & Nasibova, M. R. (2023, March). Monitoring of land cover using satellite images on the example of the Fergana Valley of Uzbekistan. In AIP Conference Proceedings (Vol. 2612, No. 1, p. 020028). AIP Publishing LLC.

13. Ismailhodjaev, B., Kuatbekova, K., Kholmirzaeva, B., Boburbek, N., Mirzaqubulov, J., Eskaraev, N., & Abduraimova, N. (2022). Activity, patterns, and localization of carbonic acid enzymes in algae used in wastewater treatment. Texas Journal of Engineering and Technology, 14, 11-17.

14. Nasibov, B. R., Boliyeva, I. A., & Abduqodirova, K. B. (2022). MONITORING THE DECLINE OF PLANTS AND TREES IN ANDIJAN AND VALLEY REGIONS THROUGH ARTIFICIAL ROAD IMAGES, DETERMINING THE CHANGES IN GROUNDWATER CONDITIONS WITH THE HELP OF GIS TECHNOLOGIES. Talqin va tadqiqotlar ilmiy-uslubiy jurnali, 3(4), 202-213.

15. Sh, I. B., & Nasibov, B. R. (2022). Influence of algae on fur growth, development, physiological condition and fur quality. Texas Journal of Agriculture and Biological Sciences, 5, 67-70.

16. Muzafarov, S. M., Tursunov, O., Kodirov, D., Togaev, B. K., Balitskiy, V. E., Babayev, A. G., ... & Allenova, I. V. (2020, December). Features of streamer form of corona discharge in respect to electric gas purification. In IOP Conference Series: Earth and Environmental Science (Vol. 614, No. 1, p. 012050). IOP Publishing.

17. Shoturaev, B. S., & Nasibov, B. R. (2022). Study Of Efficiency Of Water And Energy Resources In Growing Agricultural Crops Through Drop Irrigation. In The Example Of Amarant Crop. Texas Journal of Agriculture and Biological Sciences, 5, 54-58.

18. Egamberdiev, N. B., Sharipjonova, Z., Nasibov, B., Khomidov, A. O., Alimova, M. I., & Abdumalikov, A. A. (2021). Biological treatment of industrial and domestic wastewater of a brewery in Uzbekistan. In E3S Web of Conferences (Vol. 264, p. 01055). EDP Sciences.