UDC 504.61:355.01:627.8:69.059.28(477)

ASSESSMENT OF THE CONSEQUENCES OF THE DESTRUCTION OF THE KAKHOVSKA HPP DAM ON IRRIGATED LANDS IN THE ZONE OF INFLUENCE OF THE KAKHOVSKY WATER RESERVOIR

Y. Dorosh, *Doctor of Economic Sciences, Professor, Corresponding Member of NAAS,*

Land Management Institute of NAAS of Ukraine

e-mail: landukrainenaas@gmail.com

Sh. Ibatullin, *Doctor of Economic Sciences, Professor, Academician of NAAS,*

Land Management Institute of NAAS of Ukraine,

Institute of Rural and Agricultural development of the Polish Academy of Sciences (IRWiR PAN)

e-mail: shamilibatullin@gmail.com

O. Dorosh, *Doctor of Economic Sciences, Professor,*

National University of Life and Environmental Sciences of Ukraine, Kyiv

e-mail: dorosh_o@nubip.edu.ua

O. Sakal, *Doctor of Economic Sciences, Senior Researcher,*

Land Management Institute of NAAS of Ukraine,

Institute of Rural and Agricultural development of the Polish Academy of Sciences (IRWiR PAN)

e-mail: o_sakal@ukr.net

A. Dorosh, *PhD in Economics*

e-mail: doroshandriy1@gmail.com

Land Management Institute of NAAS of Ukraine

A. Tarasenko,

e-mail: antargisgeo@gmail.com

SE Center of the State Land Cadastre

Abstract. *According to preliminary estimates by scientists of the Land Management Institute of the National Academy of Agrarian Sciences of Ukraine, it was established that the area of irrigated agricultural land, which is in the zone of influence of the Kakhovsky reservoir, including the occupied territories, amounted to 1,267.8 thousand hectares, of which about 500 thousand hectares had potential irrigation. The need for a more detailed study of the spatial identification of irrigated lands has been proven. The area of irrigated land in the area of influence of the Kakhovsky reservoir was clarified by spatial comparison and digitization of: irrigation schemes, boundaries of land plots, boundaries of irrigated fields accordingly that indices of vegetation and soil moisture using GIS technologies and remote sensing of the Earth. This makes it possible that calculate the area of agricultural land, the irrigation of which will be complicated due that the destruction of the dam of the Kakhovska HPP and changes in the Kakhovsky reservoir. In the future, it is important to determine and evaluate the impact of hostilities and other negative phenomena of armed aggression in this region on the land use and infrastructure.*

Based on a preliminary analysis of hydrography and water channels, the scientists of the Land Management Institute of the National Academy of Agrarian Sciences of Ukraine determined administrative districts whose land irrigation dependent on the Kakhovsky reservoir.

It is proposed to introduce the accounting of reclaimed land, as well as land affected by hostilities in the cadastre.

We believe that monitoring of irrigated and drained lands, and lands that will be returned that circulation after the elimination of the effects of hostilities, should be an element of land monitoring.

Key words: *Kakhovska HPP, the zone of influence of the Kakhovsky reservoir, reclaimed lands, irrigated lands, occupied territories, geo-information technologies, monitoring of irrigated and drained lands, artificial intelligence*

Formulation of the problem. Irrigation is an important factor in the intensification of the crop industry in areas with insufficient natural moisture, which

includes the Steppe zone and the Crimean Peninsula in Ukraine. Despite this, the development of irrigated agriculture has slowed down significantly over the past three decades. Accordingly, the Cabinet of Ministers of Ukraine approved the Irrigation and Drainage Strategy in Ukraine for the period up to 2030 dated August 14, 2019 No. 688 [1]. For its implementation, the Plan was approved by the order of the Government of the country dated October 21, 2020 No. 1567 “Measures to implement the Irrigation and Drainage Strategy in Ukraine for the period up to 2030” [2].

In general, as of January 24, 2022, 2.1 million hectares of irrigated land were accounted for in Ukraine, but in fact only 551.4 thousand hectares were irrigated in 2020, in 1990 – more than 2 million hectares [3]. This state is explained by the underfunding of this industry, which is characterized by multifaceted and complex processes and the lack of properly formed regulatory and legal support.

The existing situation was further aggravated due to the destruction of the Kakhovska HPP dam. This is due to the fact that in the zone of influence of the Kakhovsky reservoir there were irrigation systems concentrated on arable lands of the Dnipropetrovsk, Zaporizhzhya and Kherson regions. According to a sample of data from the State Statistics Service in the indicated regions, the area of land of agricultural enterprises under irrigation in 2021 was 347.8 thousand hectares. This is 80.3% of the total area of irrigated land in agricultural enterprises of Ukraine in 2021.

The total actual annual losses of agriculture due to a decrease in the productivity of production of agricultural crops on irrigated lands due to the destruction of the dam of the Kakhovsky reservoir are preliminarily estimated at 720 million dollars.

We consider it necessary to carry out further research on the clarification of the area of irrigated land in the area of influence of the Kakhovsky reservoir and their agricultural use.

Analysis of the latest scientific research and publications. A number of scientists studied issues related to irrigated land reclamation and irrigated agriculture. In particular, S. Kokovikhin , N. Tanklevska and N. Kyrychenko suggested strategic directions for solving the problems of irrigated agriculture , in particular: creation of effective incentives at the legislative level to attract investments in the modernization

of irrigation systems and support agricultural producers, implementation of scientifically based measures aimed at rational use of water for irrigation and preservation of soil fertility; introduction of economic sanctions for inefficient use of water resources and irrigated land; ensuring sustainable functioning of intra-farm irrigation systems. They also proposed innovative approaches for the development of irrigated land reclamation at the local and regional levels [4].

Directions for increasing the productivity of irrigation water in agriculture and its economy in view of the progressive intensity of climatic changes in Ukraine and the economic and institutional shortage of water resources are revealed in the works of O. Nechyporenko. [5].

The group of researchers, which included P. Pysarenko, A. Maliarchuk, L. Myshukova and V. Maliarchuk, conducted studies on the impact of agrometeorological conditions in different years on the accumulation of precipitation in autumn and winter, as well as on moisture consumption during the growing season. They established optimal terms for irrigation, substantiated them biologically, and determined the share of the contribution of water balance components to the total volume of water consumption during sunflower cultivation under different methods of soil cultivation and cultivation depths in the irrigation conditions of the Southern Steppe of Ukraine [6].

Y. Dorosh, Sh. Ibatullin, O. Dorosh, O. Sakal, A. Dorosh, H. Kolisnyk and D. Melnyk developed a methodology for determining the area of flooded land affected by the destruction of the Kakhovska HPP dam, the territory under the Kakhovsky reservoir, the components of which are satellite images, geo-information technologies and artificial intelligence technologies [7, 8].

At the same time, issues related to the assessment of the impact on irrigated lands of hostilities and other negative phenomena in the zone of influence of the Kakhovsky reservoir are poorly studied.

The aim of the study. To clarify the area of irrigated land in the zone of influence of the Kakhovsky reservoir by means of spatial comparison and digitization: irrigation schemes, boundaries of land plots, boundaries of irrigated fields according

to indices of vegetation and soil moisture using GIS technologies and remote sensing of the Earth. This will make it possible to calculate the area of agricultural land, the irrigation of which will be complicated due to the destruction of the dam of the Kakhovska HPP and changes in the Kakhovsky reservoir. In the future, it is important to determine and assess the impact of hostilities and other negative phenomena of armed aggression in this region on land use and infrastructure.

Materials and methods of scientific research. The methodological base of scientific research consists of modern research methods: historical, monographic, systematic approach and analysis. The information base of scientific research is legislative and regulatory documents of Ukraine, data of state statistical observations, state authorities and local self-government bodies and other official open sources of information on irrigation and water use, as well as scientific achievements of domestic and foreign scientists.

Results and discussion. The terrorist attack on June 6, 2023, which caused the destruction of the Kakhovska HPP dam, affected land use in the Dnipropetrovsk, Zaporizhzhia, Mykolaiv, and Kherson regions.

After the terrorist attack at the Kakhovska HPP, there is no possibility of supplying water that the fields for irrigation, which will lead to a decrease in the harvest and farmers' refusal to grow vegetables and pumpkin crops, corn and soybeans.

Information on the consequences of the destruction Kakhovska HPP dam (see research materials) turned out to be rather approximate and inaccurate, especially in the absence of land use records of reclaimed lands. In this regards, scientists of the Land Management Institute of the National Academy of Agrarian Sciences of Ukraine have developed a methodology for determining the area of irrigated land and the territory under the Kakhovsky reservoir that was affected by the destruction of the Kakhovska HPP dam, the components of which are geo-information technologies and artificial intelligence.

The zone of influence of the Kakhovsky reservoir included irrigation systems that operated in the Dnipropetrovsk, Zaporizhzhia, and Kherson regions and the

Autonomous Republic of Crimea. Thus, a total of 320,000 hectares of irrigated land were used in the territory of the Kherson region.

According to official data of the Ministry of Agriculture, as of June 9, 2023, the disaster at the Kakhovska HPP will stop the water supply of 31 field irrigation systems in the Dnipropetrovsk, Kherson, and Zaporizhzhia regions [9]. In 2021, these systems provided irrigation for 584 thousand hectares (Tables 1, 2, Fig. 1). Estimated areas of berries and perennial plantations made up about 10% of irrigated land – 60,000 hectares; vegetables – 20% of irrigated land – 120 thousand ha; grain, leguminous and oil crops – about 70% of irrigated land – 404 thousand ha.

Table 1.

Areas of agricultural crops in enterprises, including on irrigated lands by year, thousand ha

Group of agricultural crops	**2017**	**2018**	**2019**	**2020**	**2021**	**2021 to 2017, %**
Cereal and leguminous crops	10509,8	10740,7	11175,6	11037,5	11745,2	112%
Including on irrigated lands	120,7	135,7	162,5	188,6	200,5	166%
Technical cultures	7954,4	7990,1	7821,5	7840,5	7953,3	100%
Including on irrigated lands	200,9	209,5	187,6	189,5	184,5	92%
Root crops and tubers, vegetable and melon food crops	57,5	53,2	55,0	57,6	55,8	97%
Including on irrigated lands	24,0	25,5	26,4	27,8	27,0	112%
Forage crops	269,7	241,1	228,6	248,1	200,7	74%
Including on irrigated lands	3,2	3,8	4,1	4,5	3,8	120%
Perennial crops*	85,3	85,9	80,2	70,5	69,8	82%
Including on irrigated lands	14,4	15,9	17,6	16,5	17,5	121%
In total	**18876,8**	**19111,0**	**19361,0**	**19254,2**	**20024,8**	**106%**
Including on irrigated lands	363,3	390,3	398,3	426,9	433,3	119%

Table 2.

Areas of agricultural crops in enterprises, including on irrigated lands by regions of Ukraine, thousands of hectares

Region	Total area of agricultural crops			Including on irrigated lands			
	2019	2020	2021	2019	2020	2021	2021 in %
Vinnytsia	1186695,5	1173407,2	1205340,2	3755,7	3776,5	2780,8	0,6%
Volyn	271076,5	282 281,4	307682,4	435,7	351,5	703,1	0,2%
Dnipropetrovsk	1316735,1	1306781,7	1322948,1	19947,0	16854,6	19541,6	4,5%
Donetsk	700617,7	677750,0	729 187,0	3244,5	3219,8	3080,2	0,7%
Zhytomyr	688866,5	733396,5	764 413,0	1253,7	1812,2	1938,5	0,4%
Zakarpattia	37142,4	35460,8	37139,6	508,7	313,9	303,2	0,1%
Zaporizhzhia	1185818,9	1212964,7	1222483,3	42169,1	50870,9	57400,7	13,2%
Ivano-Frankivsk	165448,7	175329,1	182574,6	29,0	80,5	95,9	0,0%
Kyiv	906 445,6	890630,7	934328,9	3629,2	2218,0	3603,9	0,8%
Kirovohrad	1201130,2	1205015,6	1202516,0	574,4	467,4	719,7	0,2%
Luhansk	639065,2	664553,3	682 148,0	579,8	448,5	380,1	0,1%
Lviv	373971,4	390 201,1	400083,6	435,9	507,0	507,3	0,1%
Mykolayiv	1027597,8	1027786,0	1083358,2	21009,7	22270,2	21506,2	5,0%
Odesa	1354029,3	1091031,0	1349500,3	19126,0	28167,7	22518,9	5,2%
Poltava	1269498,3	1278125,4	1289440,0	2503,1	3248,1	4209,3	1,0%
Rivne	289493,0	309722,2	332384,5	54,4	54,1	68,4	0,0%
Sumy	968659,5	984 231,8	1006649,7	1266,0	273,0	502,0	0,1%
Ternopil	578 515,2	587894,9	596 410,7	513,2	498,6	802,7	0,2%
Kharkiv	1294753,0	1325111,9	1341143,2	3211,3	3848,5	2864,6	0,7%
Kherson	885502,6	881946,3	928745,4	263741,4	275876,9	270898,4	62,5%
Khmelnytsk	912666,8	938245,3	940783,0	165,8	198,4	1202,9	0,3%
Cherkasy	923811,0	911776,8	926 147,0	8433,7	10073,6	16324,3	3,8%
Chernivtsi	111506,1	110341,4	113 108,2	1214,6	846,8	859,9	0,2%
Chernihiv	1071938,0	1060231,2	1126310,9	449,0	583,3	534,4	0,1%
In total	**19360984,0**	**19254216,4**	**20024825,6**	**398250,9**	**426859,8**	**433347,2**	**100,0%**

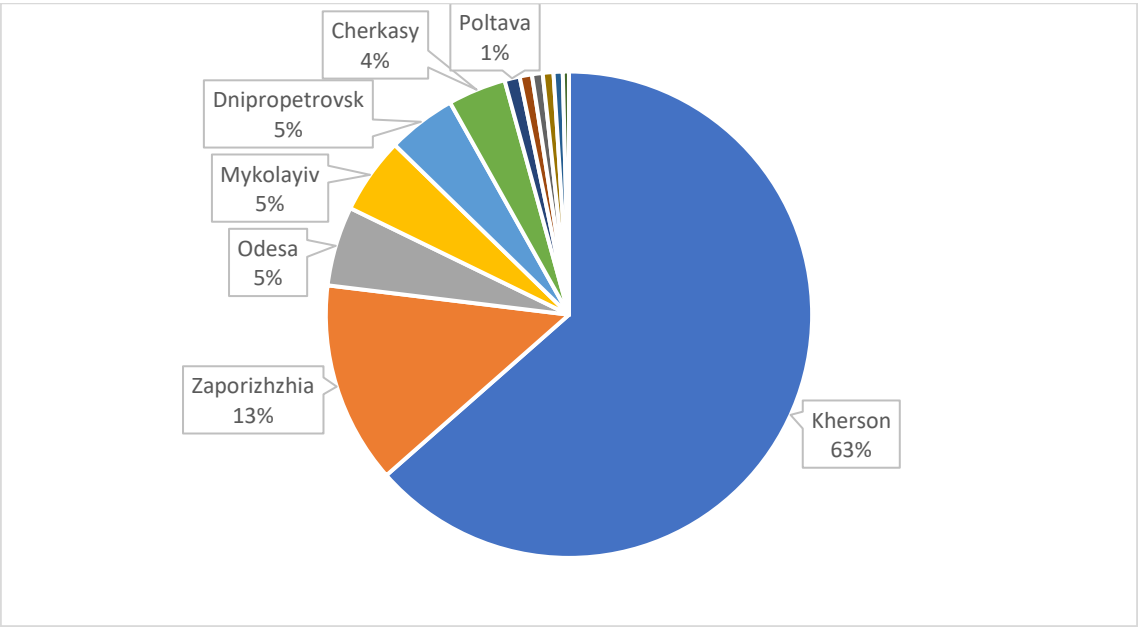

Figure 1. Share of irrigated land areas in 2021 by region of Ukraine, %

The destruction of the Kakhovska HPP dam caused damage and losses not only in agriculture, but also affected the drinking water supply potential of settlements located in the area of influence of the reservoir. The Kakhovsky reservoir served as a source of water for two irrigation and water supply systems: the Kakhov system and the North Crimean Canal. In 2023, only 13 irrigation systems were active on the right bank of the Dnipro River. The terrorist act at the Kakhovska HPP led to the loss of water sources for 94% of irrigation systems in the Kherson region, 74% in Zaporizhzhya, and 30% in Dnipropetrovsk [10].

According to the State Water Resources Agency of Ukraine, the area of irrigated land on which it was possible to use reclamation systems as of November 1, 2013, in the Dnipropetrovsk, Zaporizhia, and Kherson regions was 361,5 thousand hectares.

According to the data of the State Statistics Service of Ukraine, the area of land of agricultural enterprises under irrigation in the specified regions in 2021 was 347,8 thousand hectares. This is 80.3% of the total area of irrigated land in agricultural enterprises of Ukraine in 2021 (Tables 3, 4).

Table 3.

Irrigated lands of Ukraine, including in the area of influence of the Kakhovsky reservoir

Region	2017	2018	2019	2020	2021
Ukraine	363,3	390,3	398,3	426,9	433,3
Total for the region					
Dnipropetrovsk	17,0	17,2	19,9	16,9	19,5
Zaporizhzhia	40,6	44,6	42,2	50,9	57,4
Kherson	241,1	256,5	263,7	275,9	270,9
Together	298,8	318,3	325,9	343,6	347,8
in % to Ukraine	*82,2%*	*81,5%*	*81,8%*	*80,5%*	*80,3%*
In the zone of influence of the Kakhovsky reservoir					
Dnipropetrovsk	7,6	6,6	8,2	6,2	7,3
Zaporizhzhia	40,6	44,5	42,1	50,4	57,0
Kherson	235,3	249,8	255,1	267,1	261,1
Together	283,5	300,9	305,4	323,7	325,4
in % to Ukraine	*78,0%*	*77,1%*	*76,7%*	*75,8%*	*75,1%*

Table 4.

Areas and production of agricultural crops on irrigated lands in the zone of influence of the Kakhovsky reservoir at enterprises in 2021

Code	Cultures	Area		Production under irrigation, ts
		ha	% to the total	
	Cereal and leguminous crops	**144313,1**	**44,4%**	-
50	Winter wheat	54227,9	16,7%	2830140,0
80	Spring wheat	86,1	0,0%	3223,4
110	Corn for grain	51324,1	15,8%	5633024,2
130	Winter barley	26035,5	8,0%	1368468,6
140	Barley is hot	4904,3	1,5%	191996,5
160	Winter rye	146,0	0,0%	8782,4
210	Oat	97,0	0,0%	3625,0
220	Buckwheat	237,0	0,1%	2494,9
230	Sorghum	48,0	0,0%	3814,9
240	Millet	550,9	0,2%	8721,0

Code	Cultures	Area		Production under irrigation, ts
		ha	% to the total	
250	Fig	5669,0	1,7%	285373,6
270	Legume crops	987,3	0,3%	26537,3
	Cultures are technical	**165513,8**	**50,9%**	**-**
410	Soy	86885,3	26,7%	2988508,0
450	Flax curl (oily)	132,0	0,0%	2212,4
470	Mustard	419,4	0,1%	7078,6
490	Winter rape	28190,5	8,7%	872605,0
520	Sunflower	49886,7	15,3%	1345755,9
	Roots and tubers, vegetables and melons	**9415,7**	**2,9%**	**-**
1240	Root crops and tubers are edible	1078,3	0,3%	248410,0
1321	Vegetable crops in open soil	8028,2	2,5%	4016569,4
1960	Melon food crops	306,8	0,1%	53970,7
2000	Seeds of vegetable and melon crops	2,4	0,0%	22,8
	Forage crops	**2519,9**	**0,8%**	**-**
2230	Fodder corn	2519,9	0,8%	905723,2
	Crops are perennial	**3610,3**	**1,1%**	**-**
3210	Grain crops	1709,5	0,5%	293979,0
3260	Stone crops	1040,9	0,3%	19335,6
3480	Berry crops on a separate area	142,8	0,0%	0,0
3481	Open soil berry crops	162,8	0,1%	4963,7
3770	Grape	554,2	0,2%	7455,9
	In total	**325372,8**	**100,0%**	**-**

The area of irrigated agricultural land in the zone of influence of the Kakhovsky reservoir, including the occupied territories, according to preliminary estimates of the Land Management Institute of the National Academy of Agrarian Sciences, amounted to 1267,8 thousand hectares, of which about 500 thousand hectares had potential irrigation [11]. The above indicates the need to carry out a more detailed study for the spatial identification of irrigated lands, including the actual irrigation according to the

data of remote sensing of the Earth, state authorities and local governments, and other sources of information.

Based on a preliminary analysis of hydrography and water channels, the Land Management Institute of the National Academy of Agrarian Sciences determined the administrative districts whose land irrigation depended on the Kakhovsky reservoir (Fig. 2).

Figure 2. Areas of irrigated land of agricultural enterprises in 2021 by administrative regions of Ukraine

The area of agricultural crops on the lands of agricultural enterprises in administrative districts dependent on the Kakhovky reservoir amounted to 325,4 thousand hectares, or 75,1% of the total area of irrigated land in agricultural enterprises of Ukraine in 2021 (Fig. 3).

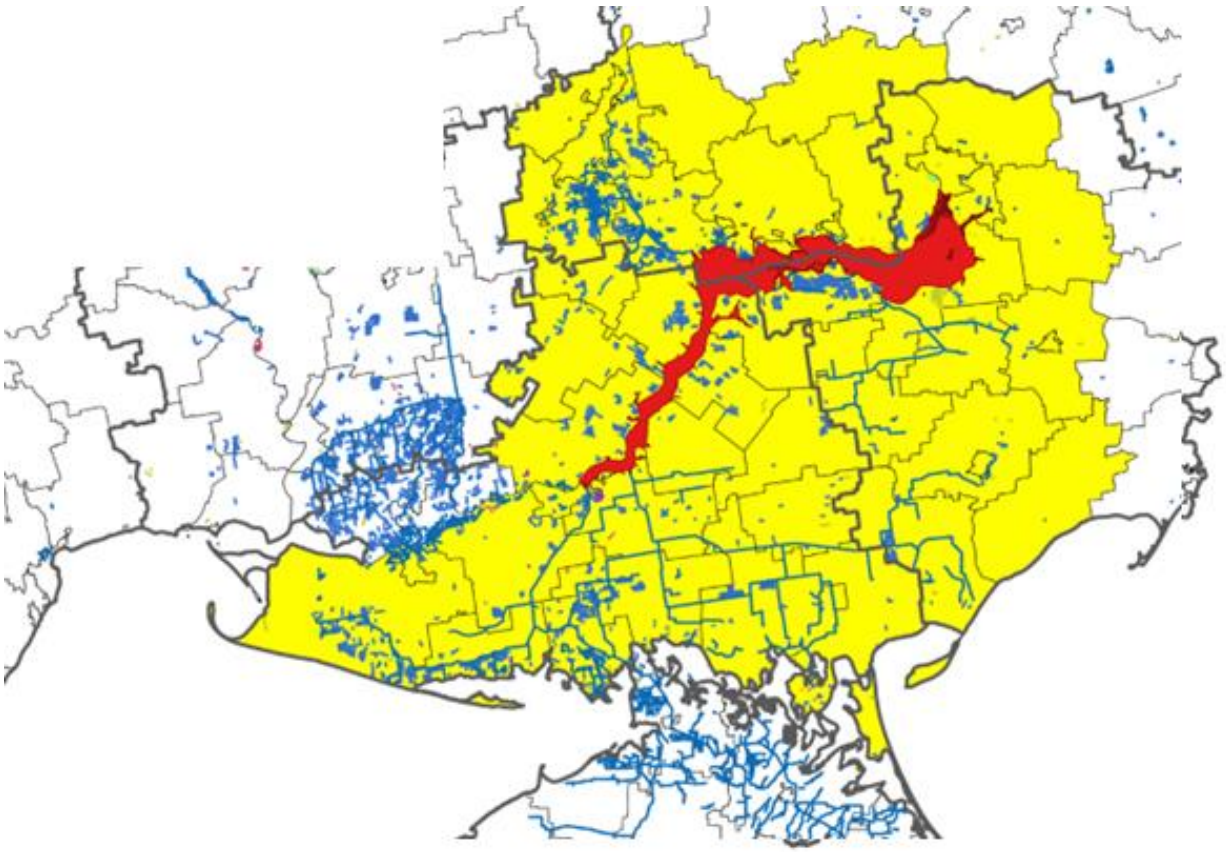

Figure 3. Administrative districts in the area of influence of the Kakhovsky reservoir according to the network of irrigation canals

Conclusions. The processed data, the analysis of open sources of information, the results of our preliminary assessment of the effects of the destruction of the Kakhovska HPP dam on irrigated lands in the area of influence of the Kakhovsky reservoir indicate the need for further research and detailed determination of the areas of land subject to irrigation through the Kakhovsky reservoir, in particular, through the use of GIS technologies and remote sensing of the Earth for the most accurate assessment and establishment of the boundaries of irrigated lands, including individual fields, by analysing vegetation indices and soil moisture. In general, the scale of the consequences of the destruction of the Kakhovska HPP dam confirm the need to assess the impact of hostilities and other negative factors of armed aggression on irrigated lands. An important factor that we propose to practically implement in this direction is the introduction of accounting, for which the object of the cadastre should be reclaimed land, as well as land affected by hostilities. The above gives reason to propose an additional structural element of land monitoring – monitoring of irrigated and drained

land, and land that will be returned to circulation after the elimination of the effects of hostilities.

This research has been conducted by Ibatullin Shamil and Sakal Oksana within the project “Substantiation and measures for implementation of a human rights-based integrated approach to rural development, food security and land policy in post-war rebuilding of Ukraine” financed under the “Long-term program of support of the Ukrainian research teams at the Polish Academy of Sciences carried out in collaboration with the U.S. National Academy of Sciences with the financial support of external partners”.

References

1. Pro skhvalennia Stratehii zroshennia ta drenazhu v Ukraini na period do 2030 roku: Rozporiadzhennia Kabinetu Ministriv Ukrainy vid 14 serpnia 2019 r. № 688-p [On the approval of the Irrigation and Drainage Strategy in Ukraine for the period until 2030: Decree of the Cabinet of Ministers of Ukraine dated August 14, 2019 No. 688-p]. (2019). Available at: https://zakon.rada.gov.ua/laws/show/688-2019-%D1%80#Text

2. Pro zatverdzhennia planu zakhodiv z realizatsii Stratehii zroshennia ta drenazhu v Ukraini na period do 2030 roku: Rozporiadzhennia Kabinetu Ministriv Ukrainy vid 21 zhovtnia 2020 r. № 1567-p [On the approval of the action plan for the implementation of the Irrigation and Drainage Strategy in Ukraine for the period until 2030: Decree of the Cabinet of Ministers of Ukraine of October 21, 2020 No. 1567-p]. (2020). Available at: https://zakon.rada.gov.ua/laws/show/1567-2020-%D1%80#Text.

3. Na zroshuvanykh zemliakh urozhainist silhospkultur zrostaie u 2-2,5 razy [On irrigated lands, the yield of agricultural crops increases by 2-2.5 times]. (2022). Agravery. Available at: https://agravery.com/uk/posts/show/na-zrosuvalnih-zemlah-urozajnist-silgospkultur-zrostae-u-2-25-razi

4. Kokovihin S., Tanklevska N., Kirichenko N. (2013). Innovative approaches to development reclamation on irrigated lands at local and regional levels. Efektyvna ekonomika, № 6, Available at: http://www.economy.nayka.com.ua/?op=1&z=2103

5. Nechyporenko O. (2017). Modern strategies of saving and productivity increase of irrigation water. Global and national problems of economics, № 17, 165-170. Available at: http://global-national.in.ua/issue-17-2017/26-vipusk-16-kviten-2017-r-2/3097-nechiporenko-o-m-suchasni-strategiji-ekonomiji-ta-pidvishchennya-produktivnosti-polivnoji-vodi

6. Pysarenko P., Maliarchyk A., Myshukova L., Maliarchyk V. (2020). Produktyvnist soniashnyku za riznykh sposobiv I hlybyny osnovnoho obrobitrku hruntu v sivizminakh na zroshenni [Productivity of sunflower under different methods and depth of main tillage in crop rotations with irrigation]. Irrigated agriculture. Collection of scientific papers, № 74, 143-148. DOI: https://doi.org/10.32848/0135-2369.2020.74.26

7. Dorosh Y., Ibatullin Sh., Dorosh O., Sakal O., Dorosh A. (2023). Application of geo-information technologies in determining the area of flooded lands as a result of the destruction of the Kakhovska HPP. Land management, cadastre and land monitoring, 3, 98-109. DOI: http://dx.doi.org/10.31548/zemleustriy2023.03.09

8. Ibatullin Sh., Dorosh Y., Dorosh A., Kolisnyk H., Melnyk D. (2023). Assessment of the impact of flood caused by the destruction of Nova Kakhovka dam using remote sensing and GIS. International Conference of Young Professionals «GeoTerrace-2022», Lviv, October 2023, Volume 2022, 1-5. Available at: https://openreviewhub.org/geoterrace/paper-2023/assessment-impact-flood-caused-destruction-nova-kakhovka-dam-using-remote

9. Znyshchennia rosiianamy Kakhovskoii HES zavdalo znachnykh zbytkiv silskomu hospodarstvu Ukrainy [The destruction of the Kakhovska HPP by the russians caused significant damage to the agriculture of Ukraine]. (2023). Ministry of Agrarian Policy and Food of Ukraine. Available at: https://minagro.gov.ua/news/znyshchennia-rosiianamy-kakhovskoi-hes-zavdalo-znachnykh-zbytkiv-silskomu-hospodarstvu-ukrainy

10. Pidryv Kakhovskoii HES: naslidky dlia silskoho hospodarstva [Undermining Kakhovskaya HPP: consequences for agriculture]. (2023). AgroElita

All-Ukrainian agrarian magazine. Available at: https://agroelita.info/pidryv-kakhovskoi-hes-naslidky-dlia-silskoho-hospodarstva/

11. Dorosh A., Dorosh O., Sakal O., Saliuta V., Trokhymchuk A. (2023) Mapping of irrigated lands in the area of influence of the Kakhovsky Reservoir using GIS. International Conference of Young Professionals «GeoTerrace-2022», Lviv, October 2023, Volume 2022, 1-5. Available at: https://openreviewhub.org/geoterrace/paper-2023/mapping-irrigated-lands-area-influence-kakhovsky-reservoir-using-gis

Дорош Й.М., Ібатуллін Ш.І., Дорош О.С., Сакаль О.В., Дорош А.Й., Тарасенко А.В.

ОЦІНЮВАННЯ НАСЛІДКІВ РУЙНУВАННЯ ДАМБИ КАХОВСЬКОЇ ГЕС НА ЗРОШУВАНІ ЗЕМЛІ У ЗОНІ ВПЛИВУ КАХОВСЬКОГО ВОДОСХОВИЩА

Анотація. *За попередніми оцінками науковців Інституту землекористування НААН встановлено, що площі зрошуваних сільськогосподарських земель, які знаходяться у зоні впливу Каховського водосховища, включаючи окуповані території, становили 1267,8 тис. га, з яких близько 500 тис. га мали потенційне зрошення. Доведено потребу в проведенні детальнішого дослідження просторової ідентифікації зрошуваних земель. Здійснено уточнення площі зрошуваних земель у зоні впливу Каховського водосховища шляхом просторового співставлення та оцифрування: схем зрошення, меж земельних ділянок, меж зрошуваних полів за індексами вегетації та вологості ґрунту з використанням ГІС-технологій та дистанційного зондування Землі. Це дає змогу розрахувати площі сільськогосподарських земель, зрошення яких буде ускладнено через руйнування дамби Каховської ГЕС та зміни Каховського водосховища. У подальшому важливо визначити і оцінити вплив бойових дій та інших негативних явищ збройної агресії в даному регіоні на землекористування та інфраструктуру.*

За попереднім аналізом гідрографії та водних каналів науковцями Інституту землекористування НААН визначено адміністративні райони, зрошення земель яких залежало від Каховського водосховища.

Запропоновано запровадити облік, за якого об'єктом кадастру повинні стати меліоровані землі, а також землі, що зазнали впливу бойових дій.

Вважаємо, що елементом моніторингу земель має стати моніторинг зрошуваних та осушуваних земель, і земель, які будуть повернуті в оборот після ліквідації наслідків впливу бойових дій.

Ключові слова: *Каховська ГЕС, зона впливу Каховського водосховища, меліоровані землі, зрошувані землі, окуповані території, геоінформаційні технології, моніторинг зрошуваних та осушуваних земель, штучний інтелект*