REASONABLE USE OF LAND RESOURCES OF KASHKADARYA REGION UNDER CLIMATE CHANGE

G.f.n.dots R.Usmanova

Karshi State University

S.SH.Toshboyev

4th year student of Karshi State University

Abstract: the article describes the current issues of climate change and the use of land resources, which have arisen in the example of Kashkadarya region. Geographical-ecological problems of the use of irrigated lands of the region under the influence of climate change, the use of land in the process of secondary salinization have been considered. The role of natural and anthropogenic factors in the formation of these problems is highlighted.

Key words: land fund, irrigated agriculture, desertification, arid, degradation, salinization, landscape.

РАЗУМНОЕ ИСПОЛЬЗОВАНИЕ ЗЕМЕЛЬНЫХ РЕСУРСОВ КАШКАДАРЬИНСКОЙ ОБЛАСТИ В УСЛОВИЯХ ИЗМЕНЕНИЯ КЛИМАТА

Аннотация: в статье описаны актуальные проблемы изменения климата и использования земельных ресурсов, возникшие на примере Кашкадарьинской области. Рассмотрены географо-экологические проблемы использования орошаемых земель региона под влиянием изменения климата, использования земель в процессе вторичного засоления. Выделена роль природных и антропогенных факторов в формировании этих проблем.

Ключевые слова: земельный фонд, орошаемое земледелие, опустынивание, аридность, деградация, засоление, ландшафт.

IQLIM O`ZGARISHI SHAROITIDA QASHQADARYO VILOYATI YER RESURSLARIDAN OQILONA FOYDALANISH

Annotatsiya: maqolada iqlim o`zgarishining yer resurslaridan foydalanishning bugungi kunda yuzaga kelgan dolzarb masalalari Qashqadaryo viloyati misolida bayon etilgan. Viloyat iqlim o`zgarishi ta`sirida sug‘oriladigan yerlaridan foydalanish, ikkilamchi sho‘rlanish jarayonida yerdan foydalanishning geografik-ekologik muammolari qarab chiqilgan. Ushbu muammolarni shakllanishida tabiiy hamda antropogen omillarning roli yoritilgan.

Tayanch so‘zlar: yer fondi, sug‘orma dehqonchilik,.cho‘llanish, arid, degradatsiya, sho‘rlanish, landshaft.

Enter. During the next 150 years, climate change will be caused by demographic growth, the rapid development of production, the release of toxic waste from factories and factories into the environment exceeding the norm, the increase in the number of cars, the decrease in the area of forests, and the increase in air temperature under the influence of other factors. being observed. After all, according to experts' calculations, the global gross domestic product may decrease by more than 20 percent by the year 2100 due to the greenhouse effect.

An intergovernmental panel of experts reports that the Earth is warming faster than previously estimated. The average global temperature has increased by 1.10 degrees Celsius. This means that the average temperature will increase by 1.50 degrees by 2040. Especially in the coming years, it is possible to observe that forest fires, floods, anomalous changes, and the formation of the greenhouse effect are taking place. As a result, the main problems of today are processes such as sharp reduction of forest areas, depletion of the ozone layer, desertification of natural landscapes, reduction of agricultural land, and decrease in soil fertility. This affects not only nature, but also the socio-economic development of each country.

In the conditions of climate change, water shortage and drought, which have long been a threat to the population and agricultural activities of the region, are characteristic of arid climate regions, but today threaten the future activities of all mankind.

Goals and tasks of work. The main goal of this research is to determine the extent to which the ongoing climatic changes in the Kashkadarya oasis affect the use of land resources.

In order to fulfill the purpose of the study, it was chosen to highlight the importance of air temperature and humidity in the use of land resources. Historical and geographical comparison, mathematical statistics, mapping, modern methods and computer technologies were used during the research.

In order to achieve the aim of the research, it is to study the average annual values of air temperature and precipitation in the meteorological stations located in the Kashkadarya basin and to assess the state of land resources use of the Kashkadarya oasis.

Main results and their discussion. In accordance with the goals and tasks defined above, at first, the change of air temperature and humidity in the use of land resources over the years was analyzed. Studies show that the average level of warming in Uzbekistan is higher than the global average. For example: if the global temperature trend increased by 0.7 degrees from 1890 to 2020, Uzgidromet may see an increase of 1.7 degrees according to observational data. It can be seen that a statistically significant increase in air temperature is observed in the territory of Uzbekistan. According to statistical data, in the last 60 years, the number of days with air temperature above 400 degrees Celsius has increased throughout the country, especially in the central region. Especially in the desert zone, the number of anomalous hot days is from 25 to 40 days, while the norm for this region is 15-30 days. The increase in temperature and decrease in humidity lead to drought in the region, as well as secondary salinization and desertification of land resources. Based on the analysis, it is possible to see such an indicator in Kashkadarya region (Table 1).

In recent years, the periodicity and scale of drought risk situations are becoming more complicated. Drought, in general, is a state of long-term shortage of atmospheric precipitation, surface or underground water. Depending on the occurrence and nature of drought, researchers (Alam et al., 2014; Panagoulia, 2015) divided it into meteorological drought, hydrological drought, agricultural drought, and socio-economic drought. Some researchers divide drought into atmospheric and soil drought. Atmospheric drought is characterized by a lack of precipitation, low humidity and high temperature. Drought occurs in years when the atmospheric circulation is especially strong. The cause of meteorological drought is a decrease in the amount of rain from a constant amount. During soil

drought, the soil dries up and plants die. Soil droughts may last for a shorter period of time than atmospheric (air) droughts due to spring moisture reserves in the soil or ground water. Since the Kashkadarya oasis is located in an arid climate region, the average amount of atmospheric precipitation is around 75-100 mm, and evaporation is very large. A hydrological drought is the result of a water shortage in a river or catchment.

(Table 1).

Average annual air temperature changes in Kashkadarya region weather stations

№	Meteorological stations	Years	Air temperature °C	Years	Air temperature °C	Air temperature change over period °C
1.	Akrabot	1951	10,7	2022	13,12	2,42
2.	Mingchukur	1950	6,9	2022	9,17	2,27
3.	Karshi	1960	14,8	2020	16,2	1,4
4.	Dehkanabad	1960	13,0	2020	14,9	1,9
5.	Seversev	1960	3,0	1993	2,3	0,7
6.	Thelake	1995	4,7	2022	8,02	3,32
	By region:		8,8		10,6	1,7

The table is compiled by the author based on the data.

According to the thermal resources of the flat part of the Kashkadarya oasis (the amount of active temperatures above 10°C is 5000-5300°C), it belongs to the very hot zone. The hydrothermal coefficient of GT Selyaninov is equal to 0.11 - 0.17. Since the hydrothermal coefficient of the agroclimatic region is 0.10, this region can be included in the very dry zone according to the moisture conditions. After all, based on the above, the plain part of the oasis is located in an arid region, and the agriculture was formed on the basis of irrigation farming.

The average air temperature at the existing weather station in Kashkadarya region was 8.8 °C between 1951 and 1995, and 10.6 °C from 1993 to 2022. The average change of air temperature in the studied meteorological stations between 1993 and 2020 was 1.7°C.

The monthly parameters of evaporation from the irrigated lands of the Kashkadarya oasis were calculated on the basis of the average monthly air

temperature and absolute humidity data observed at Kitab and Shakhrisabz meteorological stations. It was determined that the coefficient of land use of Kashkadarya region is equal to Kz = 0.90, evaporation is 771 mm per hectare [6; pp. 19-20].

High yield of agricultural crops in dry and hot climatic conditions is directly related to artificial irrigation. In such conditions, only irrigation is the most important and necessary method of increasing the productivity of land resources, as well as a necessary condition for agricultural management. In terms of moisture supply during the growing season of Kashkadarya region, the Karshi and Nishan steppes (the western plain in the lower part of the region) are less humid. Here, the influence of the Sandiqli desert is felt from the southwest, the amount of annual precipitation is 146-190 mm. Due to the long duration of the summer season, as a result of the high annual temperature in the region, evaporation reaches 1700 mm, which in turn creates a moisture deficit.

The climate of Kashkadarya region is characterized by short and unstable winters, long and hot summers, decreasing drought from plains to mountains, and increasing rainfall. The average annual rainfall varies from 187 mm in Karshi to 850 mm in Hazrat Bashir in the mountains, and it can be observed that the rainfall is very unevenly distributed over the months. The most rainfall occurs in the plains in March, in the foothills and in the mountains in April-May. Only 2-2.5% of the annual precipitation falls in the summer months. Such an uneven distribution of the amount of precipitation causes soil washing and the formation of ravines to increase in the spring months. In Figure 1 below, when the amount of precipitation in Kashkadrya region is analyzed for the years 1990-2020, it can be seen that the amount of precipitation is decreasing in the following years. The highest amount of precipitation in the region was 370 mm in 1992. , in 2018, at least 140 mm of rain fell. In this situation, very little rain in the plains, high evaporation of moisture from the soil increases the salinization of the soil. Sudden changes in air temperature during the day and throughout the year increase weathering and

contribute to the formation of floods in mountainous regions. Biogenic factors together affect the development of natural geographical processes of vegetation, soils and fauna. The intensity of soil erosion and wind deflation in deserts depends on the thickness of the vegetation cover, and these processes are controlled by the vegetation cover.

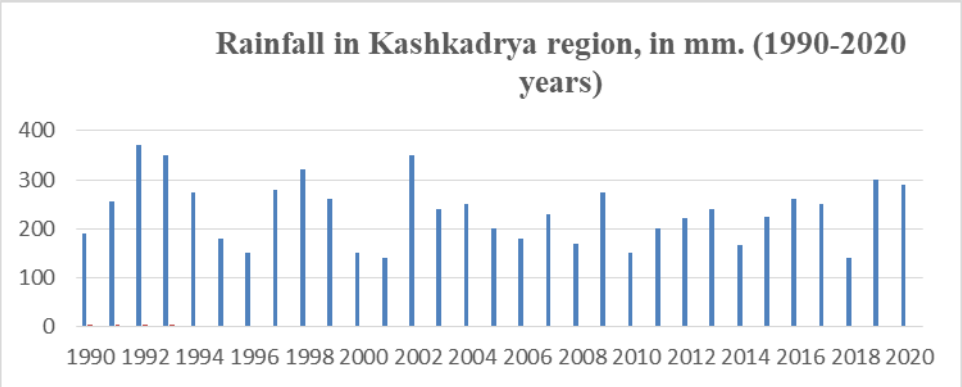

Figure 1. Rainfall in Kashkadrya region, in mm (1990-2020)
Compiled by the author based on the data.

Among the hydroclimatic factors, daily and seasonal temperature fluctuations, seasonal distribution of rainfall, surface and underground water, soil washing, formation of ravines, landslides and waterlogging determine the intensity.

In Kashkadarya, it is observed that small particles of soil are blown away as a result of warm, Afghan winds. The mechanical composition of the main soil types distributed in the flat part of the region is favorable for wind blowing the soil, as a result of which soil productivity is reduced. Correctly determining the irrigation regime and perfecting the irrigation technique in agriculture will prevent soil salinization and increase the crop yield.

About 8 percent of the irrigated lands in the Kashkadarya oasis, or 325,000 hectares, are considered poor lands. In particular, in Mirishkor district, the area of salted land to one degree or another is 30,300 hectares, in Koson district - 46,900 hectares, in Mubarak district - 28,800 hectares, and in Nishon district - 34,600 hectares, Kasbi - 31,300 hectares, 23,000 hectares of land in Karshi, 22,700 hectares in Guzor, and 16,200 hectares in Qamashi. Of these, the highly saline areas are 2,700 ha in Koson district, 2,840 ha in Mubarak district, and 1,834 ha in Nishon district. it's right. The salinity level of the irrigated soils also legally

increases towards the lower part of the Kashkadarya river. This, in turn, happened due to the high level of soil salinity and the rise of the underground water level.

The salinity level of the soil in desert areas, especially in Mubarak, Nishon and Koson districts is much higher than the average indicator of the region. The size of the saline areas in these regions is due to the location in the arid zone of the Karshi desert and the high level of evaporation in the soil. Consequently, the absence of constant surface flow, the presence of dry riverbeds, the high salinity of soil and soil, and much more evaporation compared to precipitation are typical for the Karshi desert. As a result of land development without taking into account the specific characteristics of the Kary desert, processes such as soil washing, various manifestations of erosion phenomena, and the rise of the underground water level are observed in large areas.

Degraded lands created in Kashkadarya region cause great damage to agricultural fields, pastures and ecosystems. Also, the intensity of anthropogenic influence on the nature of the area causes landscape-ecological problems and causes a disturbance in the exchange of substances and energy and the balance of ecosystems.

At the moment, the level of salinity of soils and waters is increasing as a result of unreasonable agrotechnical activities, i.e. excessive use of mineral fertilizers and the use of toxic chemicals to protect against pests. Especially in the arid plains of the oasis, very little precipitation, high evaporation of moisture from the soil, increases the salinization of the soil. Sudden changes in the daily and annual amplitude of air temperature increase weathering.

Especially in the arid plains, very little precipitation, high evaporation of moisture from the soil, increases the salinity of the soil. Sudden changes in the daily and annual amplitude of air temperature increase weathering. For example, the soils scattered in Karshi, Koson, and Nishon districts of the Karshi desert are very prone to salinity, and they are always in need of irrigation and drainage reclamation. In the center of the Karshi desert, underground seepage water belongs

to the non-flowing or very low-flowing type, and the concentration of salts in these waters is high compared to mountainous areas. In addition, as a result of the presence of Harmsel and Afghan winds, which are unique in these districts, small particles of the soil are blown away, resulting in a decrease in soil fertility, air pollution due to dust rising in the atmosphere, and dusty days lasting for weeks. observed.

In the regions located in the desert zone of the region, the rise of underground water requires improvement of land reclamation in irrigated areas. In particular, in the districts of Mubarak, Nishon and Koson, in order to prevent the increase in the concentration of salts in the soil, it is necessary to repair existing ditches and irrigation facilities and use them effectively.

Summarizing the above, the following recommendations can be made in order to improve the state of land resources: in the areas where saline soils are spread, it is necessary to improve the technique of carrying out agrotechnical activities in cultivated fields using organic and mineral fertilizers; such as crop rotation in these areas, adaptation to soil types and their development. As a result of the implementation of soil reclamation measures in arable and saline soils, it is desirable to improve the ecological condition of the irrigated fields, and to improve the quality of the products and the ecological efficiency of the harvest.

Foydalanilgan adabiyotlar

1. Suyunov A., Usmanova R., Kurbonov P., Khushmurodov F. Ecological and geographical aspects of land use in forming agrolandscapes (in the example of Kashkadarya region) // ISSN: 2350-0328 International Journal of Advanced Research in Science, Engineering and Technology Vol. 8, Issue 5, May 2021

2. Usmanova R.,Khushmurodov F.Ecological-geographical aspects of optimization of agriculture of Kashkadarya region // Zamini scientific-practical and innovative journal of Uzbekistan ISSN 2181-9955 № 2. 46-51

3. Usmanova R., Khushmurodov F. Socio-economic and ecological problems of the use of irradiated lands // IUSER Ekonomika i sotsium mejdunarodnyy nauchno-prakticheckiy zhurln №3(94)-2 2022 893-899

4. Усманова Р. Хушмуродов Ф. Қашқадарё вилояти қишлоқ хўжалигини оптималлаштиришнинг экологик-географик жиҳатлари // Ўзбекистон Замини Илмий – амалий ва инновацион журнал 2021 йил 2 – сон 33-36 б.

5. Usmanova R., Abdimuminova M. In Kashkadarya provincemeliorative - ecological condition of irrigated lands //Novateur Publications Journal NX- A Multidisciplinary Peer Reviewed Journal ISSN No: 2581 - 4230 Volume 10, ISSUE 2, February -2024. Published by Novateur Publication, M.S. India. 7-10 p.

6.Юнусов Г. Х. Суғориладиган ерларнинг сув баланси тенгламасини ва унинг ташкил этувчиларини миқдорий баҳолаш усулларини такомиллаштириш (Қашқадарё воҳаси мисолида) //Автореф. докт.геогр.наук. - Т: – 2022. 67 б.