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Socio-Economic Aspects of Water Shortage in Uzbekistan

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Abstract: This article analyzes the economic basis of diversion of Siberian rivers. Considering climate change, water scarcity and environmental problems in Central Asia, the effectiveness of water transfer projects from Siberia has been studied.

Keywords: Siberia, irrigation, ecology, economic development, climate change.

Introduction

Economically developing countries suffer more from the negative effects of climate. Uzbekistan is also among the countries that suffer more from the negative effects of climate change.

Environmental destruction caused by the drying up of the Aral Sea, droughts, extreme heat, variable precipitation and dust storms is having an increasingly serious impact on public health and the economy. Also, the problem caused by the construction of the Koshtepa Canal in Afghanistan, which began in March 2022, is particularly noteworthy. Its length is expected to be from 285 to 340 kilometers. According to the Taliban administration, the canal will be built in two stages without outside technical and financial support and will draw 10 km3 of water from Amudarya every year. Depletion of water in the Amudarya will inevitably lead to an increase in the withdrawal of water from the Syrdarya for agriculture and other needs.

In the period from 1950 to 2020, the average temperature in our country increased by 2.9 degrees Celsius. In Uzbekistan, 76% of greenhouse gases released into nature are accounted for by the energy sector, 18% by agriculture, and 6% by other sectors. According to the UN report on climate change, the average temperature of the globe in the last decade has increased by more than 1 degree Celsius compared to the average temperature of the post-industrial period of 1850-1900. Global temperature increase has negative effects on food and water security, human health, society and economy in general.

Review of relevant literature.

Due to expert conclusions of five departments of the USSR Academy of Sciences, the project was postponed to 2000 in 1984. A group of academic scientists wrote a letter to the Central Committee “On the catastrophic consequences of diverting part of the flow of the Northern rivers”. In their appeal to the country's leadership, the academics demanded to stop the project.

In response, an expert commission was created on the behalf of the General Secretary of the CPSU Central Committee Mikhail Gorbachev on the problems of increasing the efficiency of land reclamation. As a result, on August 14, 1986, the resolution of the CPSU Central Committee “On the suspension of work on diverting part of the flow of the Northern and Siberian rivers” and the proposed phased project in accordance with it were published. The transfer of water from the Ob and Irtysh to the economic regions of Western Siberia, the Urals, Central Asia and Kazakhstan through the construction of a 2,550-kilometer canal was stopped.

Analysis and results

The World Bank (WB) estimates that 60% of the world's population experiences water scarcity at some point in the year. Even without further degradation of water resources, the world's poorest and driest regions face the most severe water scarcity and water-related problems.

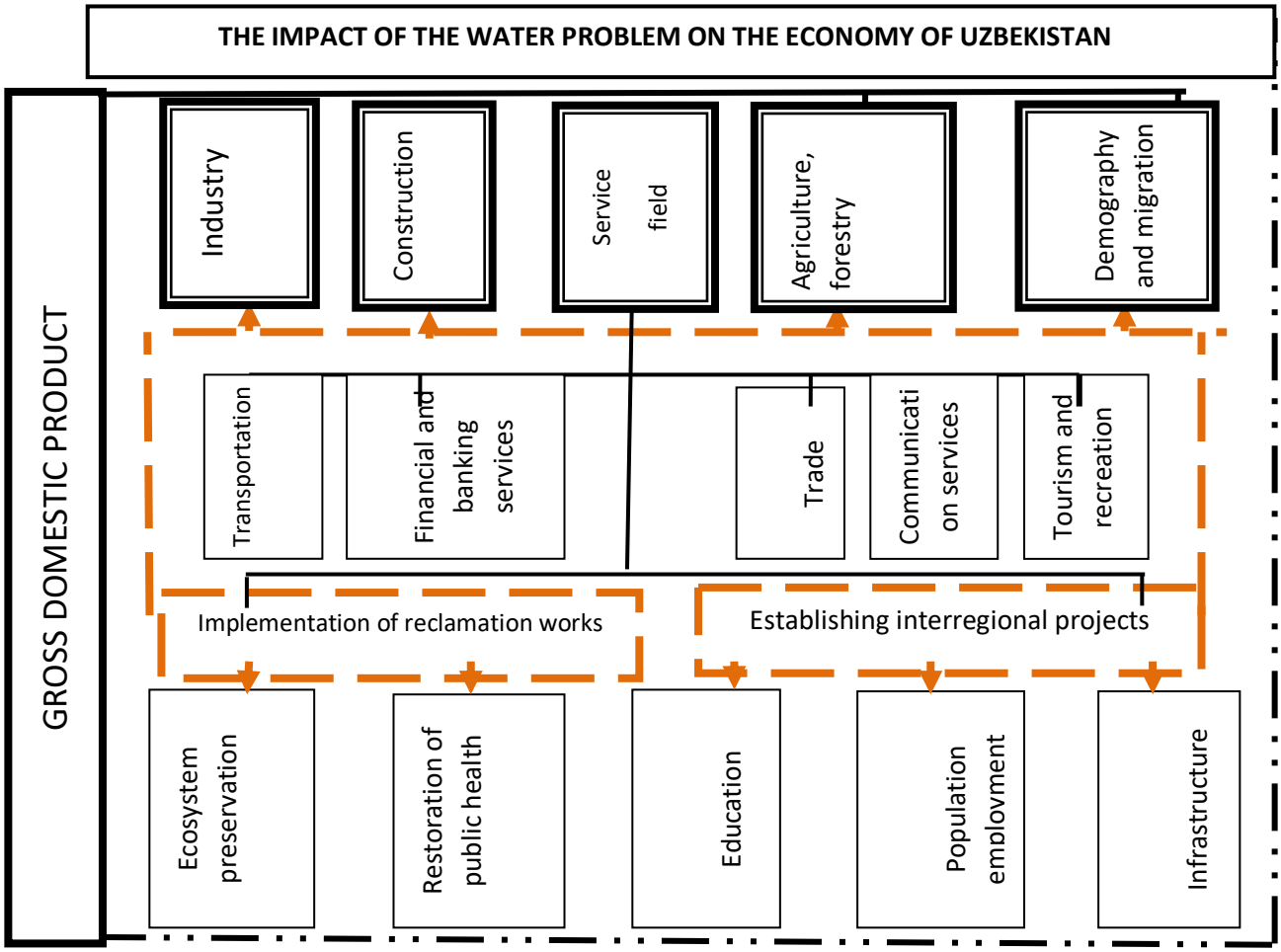

Figure 1. Impact of the water problem on the economy of Uzbekistan [1]

Uzbekistan ranks 25th among 164 countries in the world with high levels of water scarcity. According to the World Bank, the shortage of fresh water in Uzbekistan could reach 7 billion cubic meters by 2030, and double by 2050.

From the above figure (Figure 1), we can see the impact of water problems in the region on agriculture and forestry. Water scarcity can lead to reduced productivity and increased irrigation costs. This can have a significant impact on agricultural markets and product prices. Analyzing the impact on industry, it should be noted that production processes depend on water resources for cooling, cleaning and other technological needs. Water scarcity can affect production capacity and water prices. The impact on energy is determined by the direct dependence of

[1] Developed by the authors.

hydroelectric power on water resources. Water scarcity can lead to reduced hydropower production and increased energy prices. [2]

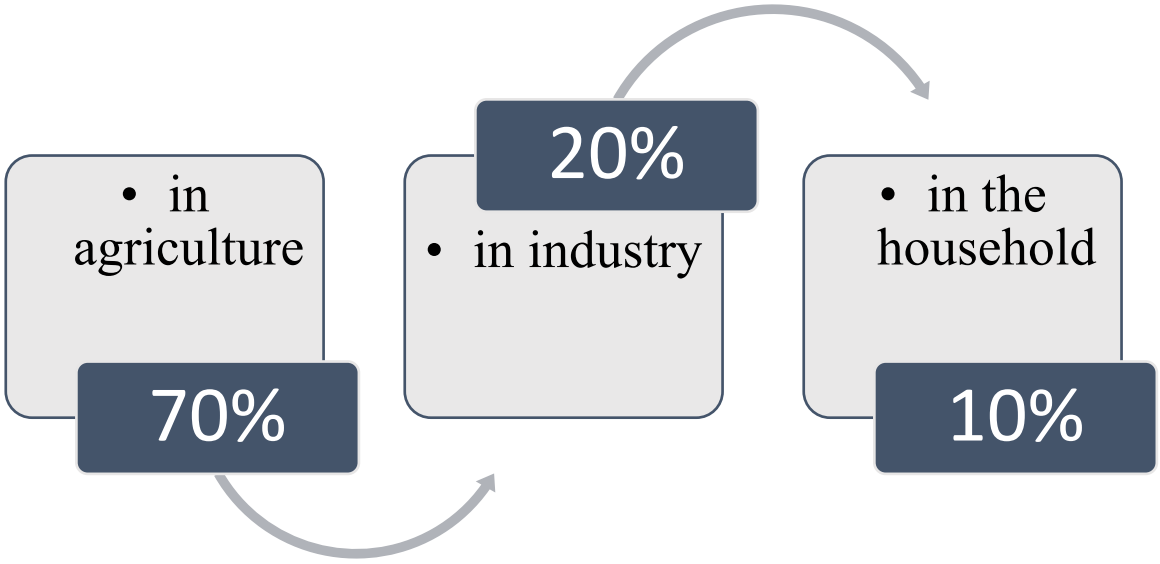

Figure 2. Use of water resources in the Republic of Uzbekistan [3]

If we look at this issue at the level of Central Asia, the countries need investments for water and energy infrastructure in Central Asia, and in 2021-2030 at least 90 billion. dollars (about 9 billion dollars annually), which is much higher than the current level in the region. SEK's investment needs are 1% of GDP per year for Kazakhstan, 5.7% of GDP for Kyrgyzstan, 7.4% of GDP for Tajikistan, 3.5% of GDP for Uzbekistan and 1.7% of GDP for Turkmenistan.[4]

Water scarcity has a major impact on tourism and recreation development. Water resources often play a key role in the tourist attraction of regions. Water pollution or water scarcity can have a negative impact on the tourism industry and tourism revenues.

Water scarcity is directly and indirectly related to human health. Access to clean water affects public health. Problems with water supply can lead to the spread of infectious diseases and increased health care costs. Water problems can affect urban infrastructure, including water supply, drainage and flood control systems.

The water problem is also directly related to migration processes. Such a decrease in irrigated land per capita means a reduction in employment opportunities in their own countries and, accordingly, the number of labor migrants will exceed the current number of millions of labor migrants: 1.2 million from Kyrgyzstan, 0.8 million from Tajikistan, and about 3 million from Uzbekistan. person.[5] This will lead to an increase in the percentage of elderly people and children. Ultimately, all of this will affect the level of food security in the countries of the region.

[2] Салиев М. Обзор сектора водоснабжения и санитарии узбекистана Министр жилищно-коммунального обслуживания Республики Узбекистан. mjko.uz›newsite/ru/about/o-nas

[3] Салиев М. Обзор сектора водоснабжения и санитарии узбекистана Министр жилищно-коммунального обслуживания Республики Узбекистан. mjko.uz›newsite/ru/about/o-nas

[4] Developed by the authors.

[5] Жаҳон сув кенгаши а'зоси, Давлатлараро мувофиқлаштирувчи сув комиссияси илмий ахборот маркази директори В. А. Духовнийни интервьюсидан https://sreda.uz/rubriki/voda/povorot-chasti-sibirskih-rek

Empirical evidence suggests that, according to scientific projections, the total area of drought and the population exposed to extreme droughts could double from 3% in 1976-2005 to 7-8% by the end of 2099. [6]

In the long-term perspective, relatively high GDP growth rates are expected to be maintained in Central Asia (CA). This indicator reflects demographic growth, that is, the current population of the region is 74.4 million. 90 million per person by 2050. per capita (UN forecasts) increase, as well as rapid development of industry, services and agriculture.

As of June 1, 2024, the permanent population of Uzbekistan was 37,133,500 people. As of January 1, 2024, 50.1% of permanent residents in the city were men, and 49.9% were women. Also, 50.6% of permanent residents in rural areas were men, and 49.4% were women. [7]

The population growth rate of Uzbekistan is expected to be approximately 700 thousand in 2021-2023. By regions, the largest number of permanent residents is in Samarkand region - 4,208.5 thousand people, Fergana region - 4,061.5 thousand people, Kashkadarya region - 3,560.6 thousand people, the smallest number of residents is in Syrdarya region - 914.0 thousand people, Navoi region - 1,075.3 thousand people, and Jizzakh region - 1,507.4 thousand people..

As of January 1, 2024, the average population density in the Republic of Uzbekistan was 82.0 people per square kilometer. This is an increase of 1.8 people compared to the same period last year (as of January 1, 2023, it was 80.2 people per square kilometer). When analyzed by region, the highest population density was in Tashkent city with 6,787.5 people, in Andijan region with 789.4 people, in Fergana region with 600.8 people, while the lowest indicators were in Navoi region with 9.7 people, and in the Republic of Karakalpakstan with 12.0 people. [8]

As can be seen from the above, the need for water resources will increase. In this regard, the President of Uzbekistan Shavkat Mirziyoyev drew attention to serious water problems in the country. According to the president, losses due to moisture loss are 5 billion dollars, which is about 6% of GDP. In the coming years, the country will produce 15 billion cubic meters per year. m^3 is missing. The average annual consumption is about 50 billion cubic meters. is m3.[9]

In solving problems related to lack of water resources, anthropogenic desertification and other problems, in the experience of the world, the method of turning rivers into areas with water supply problems is very effectively used.

China's experience in river diversion

China: Middle Water Project.

The South-to-North Water Transfer Project consists of three water transfer zones in the lower, middle and upper reaches of the Yangtze River, forming three water channels, namely the eastern, middle and western channels. Through these three routes, the project will connect the Yangtze, Huai, Xuanyo and Hai rivers. Thus, a general pattern of water distribution in Central China was developed, including "flows that regulate and distribute water not only from south to north, but also from east to west." Estimated volume of water supply under the South-North Water Transfer Project is 44.8 billion m^3, including 14.8 billion m3 in the eastern direction, 13 billion m3 in the middle direction, and 17 billion m3 in the western direction. The first stage of construction of the eastern route was completed - water supply along it began on November 15,

[6] Марказий Осиёда сув-энергетика комплексига йўналтирилган инвестициялар //Иқтисодий шарҳ. Илмий журнал №2,2022. https://review.uz/oz/v8o, https://xabar.uz/mahalliy/ozbekiston-yil-davomida-suv-resurslarining-169-f

[7] https://www.UzStat. DEMOGRAFIK%20HOLAT.pdf

[8] https://www.UzStat. DEMOGRAFIK%20HOLAT.pdf

[9] В сухом остатке: как Узбекистан борется с водным кризисом. Президент Мирзиёев объявил о переходе к чрезвычайным мерам// газета «Известия» 10 декабря 2023, https://iz.ru/1615844/igor-karmazin/v-sukhom-ostatke-kak-uzbekistan-boretsia-s-vodnym-krizisom

2013. Water supply started on December 12, 2014 as part of the first phase of the middle route. [10]

Profit received

Great benefits of the South-North Water Transfer Project The South-North Water Transfer Project is an important strategic infrastructure to optimize the distribution of water resources in China and promote sustainable socio-economic development. The first phase of the Middle Road will provide water primarily for domestic and industrial needs, and secondly for agricultural needs, to 19 large and medium-sized cities, including Beijing and Tianjin, as well as more than 100 counties in the North China Plain. Beijing and Tianjin are important political, economic, and cultural centers, while Henan and Hebei provinces are grain-growing and industrial centers. Currently, the water supply of the region is not enough to ensure the development of the population, economy, cultivated areas and mineral resources.[11] The annual water shortage exceeds 6 billion m^3. Groundwater is being overexploited to support socio-economic development. So far, a total of more than 120 billion m^3 of groundwater has been extracted from the North China Plain, and its deep aquifer is being overexploited. In addition, the disparity in 65 water resources has not only seriously affected sustainable socio-economic development and people's livelihood, but also led to environmental and ecological deterioration and serious geological disasters. The South-to-North Water Transfer Project will significantly increase the "capacity" of the Yellow River, Huaihe and Haihe River basins, improve the supply of clean drinking water, and provide a comfortable living environment and beneficial ecological products for the population. It supports and ensures the implementation of the strategy of key national functional zones, optimizes land use, and promotes the coordinated development of people, resources, and the environment in the region.. [12]

The South-North Water Transfer Project has improved water supply in northern China. Industrial and agricultural output in the region has increased by 50 billion yuan per year. In addition, 500,000 to 600,000 new jobs are being created each year.

The implementation of the Chinese project has so far allowed the transfer of more than 68 billion m3 of water, which has benefited more than 176 million people. It should be noted that China's need for water resources remains today. This is why the USSR's mega-project "Diversion of the Siberian Rivers" has acquired new significance for China. Indeed, the need for this project is acute for Uzbekistan, Kazakhstan and the southern regions of Siberia.

Analysis results

Based on the above analytical data, it is advisable to continue reforms aimed at preventing water shortages in Central Asia, especially in the Republic of Uzbekistan, and in the future to increase water reserves. Also, in our country, the priority issues of ensuring the rational use of water for the needs of the population and sectors of the economy, protecting water from pollution, contamination and depletion, preventing and eliminating the harmful effects of water, improving the condition of water bodies, as well as protecting the rights and legitimate interests of

[10] Перевод с английского. Источник: The Middle Route Project / Construction and Administration Bureau of South-to-North Water Diversion Middle Route Project
[11] The Middle Route Project / Construction and Administration Bureau of South-to-North Water Diversion Middle Route Project
[12] The Middle Route Project / Construction and Administration Bureau of South-to-North Water Diversion Middle Route Project

enterprises, institutions, organizations, farmers, peasant farms and citizens in the field of water-related relations should be given priority in scientific and practical research.

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