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THE ROLE OF INTERNATIONAL ORGANIZATIONS IN PROMOTING WATER DIPLOMACY IN CENTRAL ASIA

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Abstract. The transboundary water resources of Central Asia serve as a fundamental element for maintaining regional stability and achieving sustainable development in modern times. The research evaluates international organizations including the UN, World Bank, EU, OSCE and IFAS to develop water diplomacy for managing Amudarya and Syrdarya river basins. Content analysis of regulatory legal acts together with expert reports and comparative statistics on financing and water security have been used to identify three main areas of their activity which include developing a legal framework and financing infrastructure projects and mediating water disputes. The quantitative analysis reveals that infrastructure modernization receives more than 70% of funding but institutional development programs and local specialist training receive less than 10% of the total funds. The large discrepancies in water resources between Tajikistan at 8,500 m^3/year per person and Uzbekistan at less than 3,000 m^3/year create intensified inter-state conflicts which proves the necessity of effective diplomatic efforts. The EU-Central Asia Water Cooperation initiatives and OSCE mediation activities show that project success depends heavily on political party commitment and strategic alignment. The development of human potential receives special focus through training initiatives and negotiation platforms establishment. The research data allows to suggest improvements for the legal framework alongside funding diversification that focuses on educational programs and enhanced international organization coordination with regional governments. The research findings provide essential information to develop sustainable long-term strategies for climate change adaptation and water resources management in Central Asia.

Key words: water diplomacy, international organizations, transboundary water resources, Central Asia, international cooperation, stakeholder engagement, basin commissions, environmental risks

Introduction

A literature review on the topic of water diplomacy in Central Asia demonstrates the importance of international organizations in managing the region's water resources. Research shows that transboundary rivers such as the Amudarya and Syrdarya are a source of both cooperation and conflict between the countries of the region. International organizations play a key role in shaping legal norms, providing financial support and platforms for negotiations.

The influence of international organizations on water diplomacy According to a study by Allouche (2007), international organizations, including the United Nations, the World Bank, the European Union and the OSCE, contribute to the development of water diplomacy in the region. They provide financial support, contribute to the modernization of infrastructure and provide technical advice [1]. For example, the European Union, through the EU-Central Asia Water Cooperation Program, supports regional initiatives to improve water resources management [3].

Regional initiatives and their analysis studies by Dukhovny and De Schutter (2011) show that regional organizations such as the International Fund for Saving the Aral Sea (IFAS) operate in Central Asia, which seek to coordinate the efforts of countries on water resources management. However, their effectiveness is often limited by political differences and lack of funding [4].

International organizations as intermediaries in the settlement of water conflicts - Schmeier (2013) emphasizes that international organizations play a key role in preventing conflicts related to the allocation of water resources. The OSCE and the World Bank have repeatedly acted as intermediaries in negotiations between the Central Asian countries, which contributed to the conclusion of a number of agreements and the modernization of hydraulic structures [4]. Empirical data and comparative analysis - According to the UNDP (2019), water availability per capita in Tajikistan is about 8,500 cubic meters per year, while in Uzbekistan it is less than 3,000 cubic meters. This imbalance leads to inter-state tensions [5]. In a comparative analysis of the approaches of international organizations, it is noted that the UN focuses on legal norms, the World Bank on infrastructure projects, and the European Union supports regional cooperation through financial programs [7].

According to the World Bank report (2019), one of the main challenges in the region is the uneven distribution of water resources: Tajikistan and Kyrgyzstan have major water reserves, while Uzbekistan, Kazakhstan and Turkmenistan are experiencing water shortages. This creates the basis for potential conflicts and makes water diplomacy an important tool for crisis prevention [6].

In addition, the impact of climate change on the water balance in Central Asia continues to grow. According to ADB (2021), the reduction of glaciers in the region leads to a decrease in the flow of large rivers such as the Amudarya and Syrdarya, which increases competition for water resources [8]. International organizations such as the UNDP and the GEF are actively developing projects on adaptation to a changing climate and sustainable use of water resources [9].

Conclusions from the literature review - an analysis of the existing literature shows that international organizations have a significant impact on water diplomacy in Central Asia. They contribute to the development of strategies, conflict prevention and modernization of water management systems [10]. However, the effectiveness of these efforts depends on the political will of

the countries of the region, the level of coordination between the organizations and the availability of financial resources.

Materials and methods

This study uses an interdisciplinary approach combining both qualitative and quantitative methods of analysis. The main focus is on the study of documentary sources, including regulatory legal acts, international agreements, official reports of international organizations (UN, World Bank, OSCE, European Union, etc.), as well as strategic programs regulating transboundary water resources management in Central Asia. The use of content analysis made it possible to identify the key areas of activity of these organizations, as well as to determine the degree of their influence on the processes of water diplomacy in the region. A comparative analysis was used to identify differences and similar trends in the strategies of international organizations. Special attention is paid to various approaches to the legal regulation of water resources, financial support mechanisms, institutional cooperation and infrastructural initiatives. In addition, individual examples of international cooperation in this field have been studied. The case study method allowed us to consider specific cases of participation of international organizations in water resources management, including the activities of the International Fund for Saving the Aral Sea, as well as mediation and coordination functions performed by the OSCE and the World Bank. To substantiate the revealed patterns, quantitative methods were used, including the analysis of statistical data characterizing the level of water availability in the countries of the region, the volume of international financing and the effectiveness of implemented programs. Additionally, a qualitative analysis of expert opinions presented in analytical reports, scientific publications and conference materials on water diplomacy and cross-border cooperation was carried out. The integrated application of these methods provided a holistic assessment of the contribution of international organizations to the development of water diplomacy in Central Asia. The revealed patterns and factors influencing the effectiveness of international cooperation make it possible to identify promising areas for further development of this area.

Results

An analysis of the collected data showed that international organizations have a significant impact on water diplomacy in Central Asia. The study revealed that such structures as the UN, the World Bank, the OSCE and the European Union are most active. Their activities cover three key areas: regulatory and legal regulation, financial support and mediation in the settlement of water conflicts.

International organizations have both direct and indirect influence on the water policy of the countries of the region. For example, the World Bank plays a leading role in the modernization of hydraulic structures, financing major

infrastructure projects. At the same time, the UN, through its UN-Water program, coordinates the development of water resources management strategies at the global level, which helps strengthen the international legal framework. The OSCE, in turn, promotes the peaceful resolution of water conflicts by organizing negotiation platforms and diplomatic initiatives.

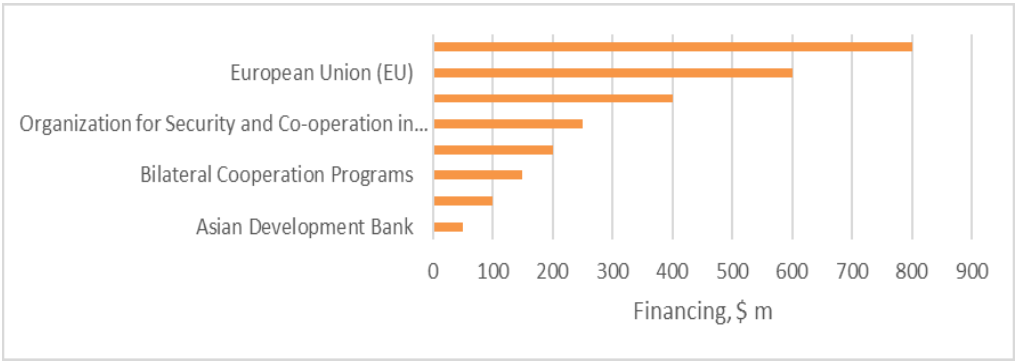

Figure-1. Distribution of international project financing [7, 11]

The presented diagram (Figure 1) shows the distribution of financial resources allocated by various international organizations for the implementation of projects. The leading position is occupied by the World Bank, whose contribution amounts to USD 750 million, which significantly exceeds the funding of other organizations. The European Union has provided $500 million, and the United Nations (UN) has provided $300 million, making them the second and third largest donors. Comparatively smaller amounts were provided by the Organization for Security and Co–operation in Europe (OSCE) – $ 200 million and the International Fund for Saving the Aral Sea (IFAS) - $ 150 million. An even smaller amount of funding was recorded for bilateral cooperation programs ($100 million), the Global Environment Facility (GEF) ($90 million) and the Asian Development Bank ($80 million). The analysis of the presented data allows us to conclude that the most significant financing is provided by the World Bank and the European Union, which underlines their leading role in supporting international initiatives. At the same time, the amount of funding from other organizations indicates a significant variety of sources involved in the development of these projects.

Financing from international organizations is crucial for the sustainable management of water resources. However, the analysis shows that most of the funds are allocated to infrastructure projects, while institutional development and educational programs receive less than 10% of the total funding.

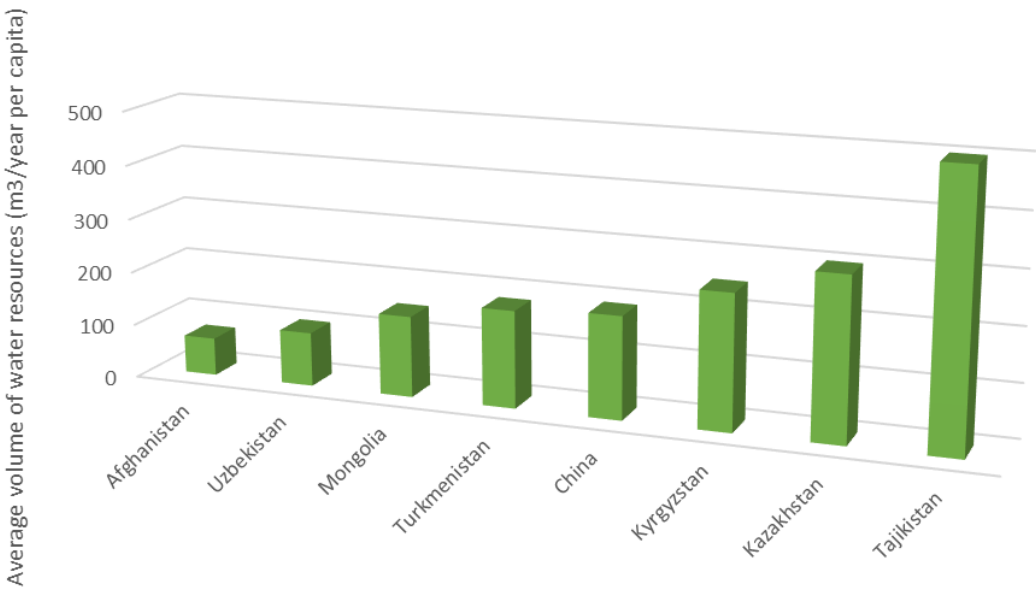

Figure-2. Distribution of water resources per capita in the countries of the region [3, 12]

Figure 2 illustrates the average volume of available water resources per capita in various countries (m^3/year). Tajikistan is the leader in water resources (8,500 m^3/year), which is due to significant glacial reserves and mountain rivers. Kazakhstan (6,000 m^3/year) and Kyrgyzstan (5,500 m^3/year) also have relatively high rates due to the presence of large reservoirs and mountain springs. Turkmenistan (4,000 m^3/year) and China (Xinjiang) (4,200 m^3/year) are in the middle range, but face the problem of uneven distribution of water resources. Mongolia (3,500 m^3/year), Uzbekistan (2,800 m^3/year) and Afghanistan (2,500 m^3/year) have the lowest water reserves per capita, which indicates a higher water burden and the need for effective water resources management. Thus, the data confirm that water resources are unevenly distributed, which can have an impact on the economy, agriculture and ecosystem sustainability in the region. Differences in water availability create significant imbalances in access to water resources and affect the economic development of countries in the region. For example, in Uzbekistan, where per capita water availability is one of the lowest, high dependence on transboundary water sources reinforces the need for international cooperation. Figure 3 presents a comparative analysis of the effectiveness of various international programs, expressed in the percentage of successfully implemented initiatives. The World Bank's programs demonstrate the highest effectiveness (72%), which indicates a high level of project planning and implementation. The programs of the European Union (65%) and the

initiatives of the United Nations (60%) also demonstrate a significant level of success. OSCE mediation (55%) and regional initiatives of the International Fund for Saving the Aral Sea (50%) have moderate effectiveness, which may be due to the complexity of coordination and specific regional challenges. Bilateral cooperation programs (45%) and initiatives of the Global Environment Facility (48%) have a relatively low percentage of successful projects, which may indicate the need to improve control mechanisms and adapt strategies. The Asian Development Bank's water initiatives demonstrate 52% efficiency, reflecting the complexity of water resources management in the region. In general, the data emphasize that the success of international programs varies depending on the organizational structure, field of activity and implementation mechanisms.

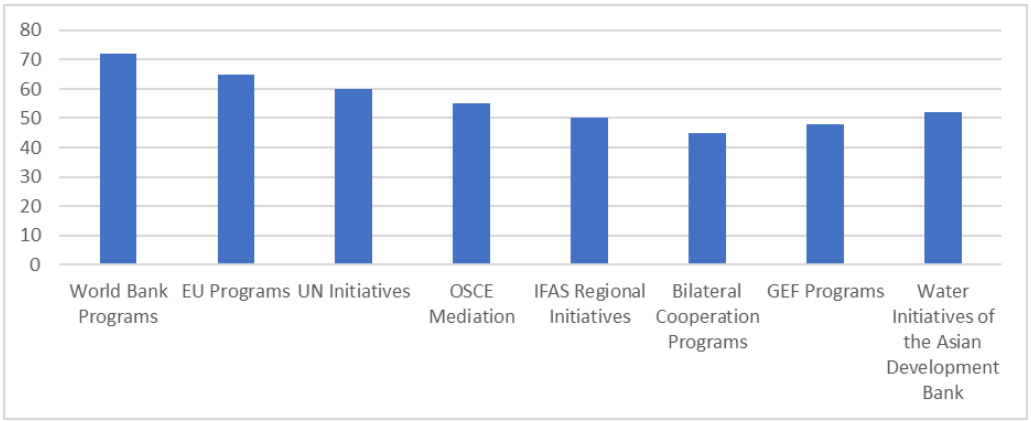

Figure-3. Effectiveness of international initiatives [13, 14]

Table -1. Main directions of investments in water management (in millions of US dollars) [15, 18]

Investment direction	Investment volume ($million)
Infrastructure projects	800
Legal regulation	200
Research and monitoring	150
Environmental initiatives	120
Educational programs	100
Development of new water treatment technologies	180
Development of a system for collecting and analyzing hydrological data	140

Table-1 shows the distribution of investments in various areas of water management. The largest investments are directed to infrastructure projects (USD 800 million), which underlines the priority of developing water management facilities such as dams, reservoirs and irrigation systems. Legal regulation ($200 million) and development of new water treatment technologies ($180 million)

They also receive significant funding, which indicates the need to modernize legislation and introduce innovative solutions to improve the quality of water resources. Comparatively smaller but important investments are aimed at research and monitoring ($150 million), the development of a system for collecting and analyzing hydrological data ($140 million), environmental initiatives ($120 million) and educational programs ($100 million). These areas provide an integrated approach to water management, including environmental protection, improved monitoring of water resources, and increased public awareness. Overall, the data show that water management requires comprehensive financing combining infrastructural development, scientific research, legal mechanisms and educational programs to achieve sustainable use of water resources.

Discussion

The case study of the International Fund for Saving the Aral Sea (IFAS) has demonstrated that, despite significant funding from international structures, its effectiveness is limited by political differences between the countries of the region and insufficient coordination between stakeholders. At the same time, the OSCE's mediation role in the water negotiations between Tajikistan and Uzbekistan has shown positive results, contributing to the conclusion of a number of agreements on joint water resources management.

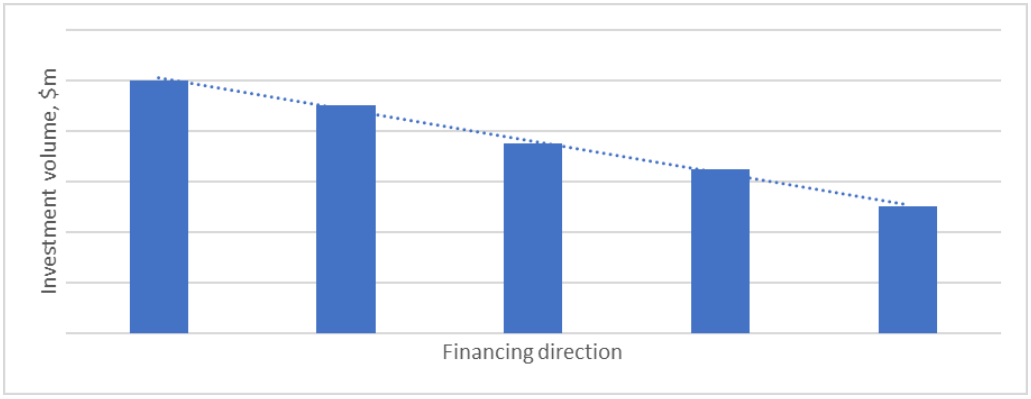

Figure-4. Financing of projects to improve water management [15]

Figure 4 shows the directions of financing projects aimed at improving water management. The largest investments (USD 130 million) are aimed at the development of a water conservation system, which underlines the urgency of the problem of rational use of water resources. Modern technologies for monitoring water resources ($115 million) They are also a priority area, as they help to track changes in water reserves and predict the water balance. Comparatively smaller but significant funds have been allocated for ecosystem services and restoration of reservoirs ($90 million), sustainable agricultural practices ($85 million) and

joint research programs of the countries of the region ($75 million). These areas contribute to the long-term conservation of aquatic ecosystems and the sustainable development of agriculture.

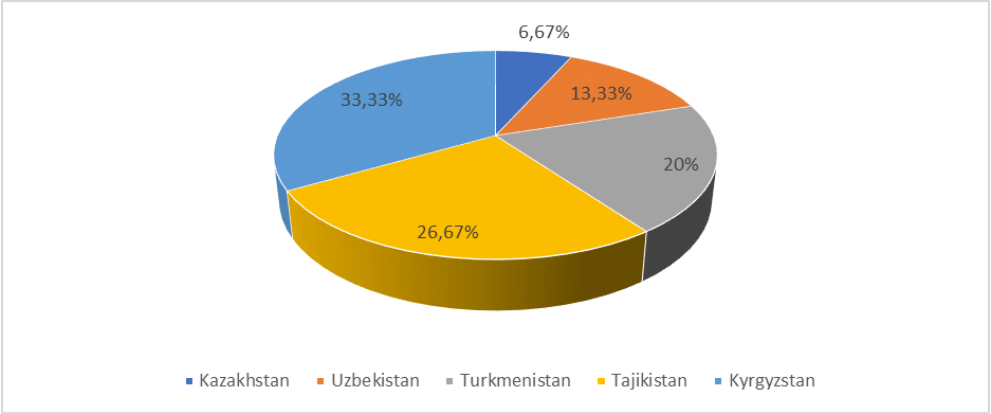

Figure-5. Dynamics of changes in water resources (decrease in reserves in % over 10 years) [16, 17]

Figure 5 shows data on the decline of water reserves in the countries of the region over the past 10 years. The largest decrease in water resources was recorded in Turkmenistan (15%) and Uzbekistan (12%), which indicates a high degree of water stress in these countries. The main reasons for this reduction are the intensification of agricultural water use, low efficiency of irrigation systems, and climate change. Kazakhstan (8%), Kyrgyzstan (6%) and Tajikistan (5%) are also experiencing a decrease in water resources, but the rate of decline in these countries is slightly lower. This may be due to more favorable climatic conditions, less stress on water systems, and more efficient water resource management methods. These tables emphasize the need to implement strategies for sustainable water use, such as upgrading irrigation systems, increasing water conservation in agriculture, and developing regional cooperation for the rational allocation of water resources.

*T*able-2. The main factors affecting the water balance of the region (% of total resource loss) [19, 20]

The influence factor	Contribution to the loss of water resources (%)
Climate change	40%
The growth of water consumption in agriculture	30%
Industrial use of water	15%
Demographic growth and urbanization	10%
Losses due to outdated infrastructure	5%

Table-2 shows the key factors affecting the water balance of the region, expressed as a percentage of the total loss of water resources. Climate change has the greatest impact (40%), causing a decrease in the level of rivers and reservoirs, a decrease in groundwater reserves and an increase in evaporation. The increase in agricultural water consumption (30%) is also a significant factor, as most of the region's water resources are used for irrigation, often with low efficiency. Industrial water use (15%) includes the needs of manufacturing, energy and mining industries, which increases the burden on water resources. Demographic growth and urbanization (10%) lead to an increase in domestic water consumption, an increase in the need for infrastructure and an increased burden on water treatment systems. The least contribution (5%) is due to water losses due to outdated infrastructure, including leaks in pipelines and low efficiency of water supply systems. The data highlight the need for comprehensive water resource management measures, including adaptation to climate change, improved water use in agriculture, and infrastructure modernization.

Conclusion

International organizations play an important role in shaping water diplomacy strategies in Central Asia, offering legal, financial and institutional mechanisms for managing transboundary water resources. The effectiveness of their work depends on the degree of coordination between organizations and national Governments, as well as on the political will of the countries of the region. The main areas of international engagement include regulatory frameworks (UN), financing of infrastructure projects (World Bank), support for regional cooperation (EU) and mediation in negotiations (OSCE). Despite some success, many initiatives face difficulties in implementation due to political differences and limited financial resources. In the future, it is necessary to strengthen coordination between the countries of the region and international organizations, as well as to develop long-term mechanisms for sustainable water resources management, taking into account economic and environmental factors. The expansion of educational programs and research is required to raise awareness of modern methods of water resources management and to increase the level of international cooperation. An important area of further research is to evaluate the effectiveness of existing international programs and develop new tools for more flexible and sustainable water resources management in a changing climate. The development of modern water treatment technologies and hydrological data monitoring systems should be considered as promising areas of investment in sustainable water resources management.

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ОРТАЛЫҚ АЗИЯДА СУ ДИПЛОМАТИЯСЫНЫҢ ДАМУЫНДАҒЫ ХАЛЫҚАРАЛЫҚ ҰЙЫМДАРДЫҢ РӨЛІ

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Аңдатпа. Орталық Азияның трансшекаралық су ресурстары өңірлік тұрақтылықты сақтау және біздің заманымызда орнықты дамуға қол жеткізу үшін іргелі элемент ретінде қызмет етеді. Зерттеу Амудария және Сырдария өзендерінің бассейндерін басқару үшін су дипломатиясын дамыту мақсатында БҰҰ, Дүниежүзілік банк, ЕО, ЕҚЫҰ және ХҚЕС қоса алғанда, Халықаралық ұйымдарға баға берді. Нормативтік құқықтық актілердің

Контент-талдауы сараптамалық қорытындылармен және қаржыландыру және су қауіпсіздігі бойынша салыстырмалы статистикамен бірге құқықтық базаны әзірлеуді, инфрақұрылымдық жобаларды қаржыландыруды және су дауларында делдалдықты қамтитын олардың қызметінің үш негізгі бағытын анықтау үшін пайдаланылды. Сандық талдау көрсеткендей, қаржыландырудың 70% - дан астамы инфрақұрылымды жаңғыртуға бөлінеді, бірақ институционалдық даму бағдарламалары мен жергілікті мамандарды даярлауға қаражаттың жалпы көлемінің 10% - дан азы бөлінеді. Тәжікстан (бір адамға жылына 8500 м3) мен Өзбекстан (жылына 3000 м3-тен аз) арасындағы су ресурстарындағы үлкен айырмашылықтар мемлекетаралық қақтығыстардың шиеленісуіне әкеліп соғады, бұл тиімді дипломатиялық күш-жігердің қажеттілігін дәлелдейді. ЕО-ның Орталық Азия елдері арасындағы су ынтымақтастығы жөніндегі бастамалары мен ЕҚЫҰ-ның делдалдық қызметі жобаның табысы негізінен саяси партиялардың міндеттемелері мен стратегиялық келісімге байланысты екенін көрсетеді. Адами әлеуетті дамытуға оқыту және келіссөздер платформаларын құру жөніндегі бастамалар шеңберінде ерекше назар аударылады. Бұл зерттеулер құқықтық базаны жетілдіруді, сондай-ақ білім беру бағдарламаларына бағытталған қаржыландыруды әртараптандыруды және халықаралық ұйымдардың өңірлік үкіметтермен үйлестіруін күшейтуді ұсынуға мүмкіндік береді. Зерттеу нәтижелері Орталық Азиядағы климаттың өзгеруіне бейімделу мен су ресурстарын басқарудың тұрақты ұзақ мерзімді стратегияларын әзірлеу үшін маңызды ақпарат береді.

Тірек сөздер: су дипломатиясы, халықаралық ұйымдар, трансшекаралық су ресурстары, Орталық Азия, халықаралық ынтымақтастық, мүдделі тараптарды тарту, бассейндік комиссиялар, экологиялық тәуекелдер

РОЛЬ МЕЖДУНАРОДНЫХ ОРГАНИЗАЦИЙ В РАЗВИТИИ ВОДНОЙ ДИПЛОМАТИИ В ЦЕНТРАЛЬНОЙ АЗИИ

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Аннотация. Трансграничные водные ресурсы Центральной Азии служат фундаментальным элементом для поддержания региональной стабильности и достижения устойчивого развития в наше время. В исследовании дана оценка международным организациям, включая ООН, Всемирный банк, ЕС, ОБСЕ и МФСА, в целях развития водной дипломатии для управления бассейнами рек Амударья и Сырдарья. Контент-анализ нормативных правовых актов вместе с экспертными заключениями и сравнительной статистикой по финансированию и

водной безопасности был использован для определения трех основных направлений их деятельности, которые включают разработку правовой базы, финансирование инфраструктурных проектов и посредничество в водных спорах. Количественный анализ показывает, что на модернизацию инфраструктуры выделяется более 70% финансирования, но на программы институционального развития и подготовку местных специалистов выделяется менее 10% от общего объема средств. Большие различия в водных ресурсах между Таджикистаном (8500 м3/год на человека) и Узбекистаном (менее 3000 м3/год) приводят к обострению межгосударственных конфликтов, что доказывает необходимость эффективных дипломатических усилий. Инициативы ЕС по водному сотрудничеству между странами Центральной Азии и посредническая деятельность ОБСЕ показывают, что успех проекта в значительной степени зависит от приверженности политических партий и стратегического согласования. Развитию человеческого потенциала уделяется особое внимание в рамках инициатив по обучению и созданию переговорных платформ. Данные исследования позволяют предложить усовершенствования правовой базы, а также диверсификацию финансирования, направленную на образовательные программы и усиление координации международных организаций с региональными правительствами. Результаты исследования предоставляют важную информацию для разработки устойчивых долгосрочных стратегий адаптации к изменению климата и управления водными ресурсами в Центральной Азии.

Ключевые слова: водная дипломатия, международные организации, трансграничные водные ресурсы, Центральная Азия, международное сотрудничество, вовлечение заинтересованных сторон, бассейновые комиссии, экологические риски

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