

Received: 14.09.2025. Accepted: 18.09.2025. Available online: 30.09.2025.

MPHTI 10.59.01

DOI: <https://www.doi.org/10.32523/2791-0954-2025-15-3-18-26>

Legal aspects of sustainable water governance for achieving sustainable development goals, with a focus on Central Asia

Karlygash B. Baiganatova

doctorate student of the International Law Department, Law Faculty, L.N. Gumilyov Eurasian National University

Astana, Kazakhstan

e-mail: baiganatova_kb_1@enu.kz

ORCID: 0009-0002-9490-2795

Abstract: Water governance is a key issue requiring international cooperation. This article examines the role of international water law and the Sustainable Development Goals (SDGs) in sustainable water management. Particular attention is paid to the provisions of the 1992 Helsinki Convention on the Protection and Use of Transboundary Watercourses and International Lakes and the 1997 UN Convention on the Law of the Non-navigational Uses of International Watercourses, as well as to the legal and institutional challenges of equitable and sustainable use of transboundary basins within the framework of the SDGs. The current state of regional cooperation is analysed using the example of the Chu and Talas river basins in Central Asia. Reforms are proposed to bring the region's national legal systems into line with the norms and principles of international law and the requirements of SDG 6 in order to improve sustainable water management.

Key words: water resources management; transboundary cooperation; international water law; Sustainable Development Goals; Helsinki Convention; UN Convention on Watercourses; Central Asia.

Халықаралық қылмыстық соттың қызметіндегі кінәлі екендігі туралы шешімдер мен өзге де шешімдерге шағымдану институты

Карлыгаш Б. Байганатова

Л. Н. Гумилев атындағы Еуразия ұлттық университеті Заң факультетінің халықаралық құқық кафедрасының докторанты

Астана, Қазақстан

e-mail: baiganatova_kb_1@enu.kz

ORCID: 0009-0002-9490-2795

Андатпа: Су ресурстарын басқару халықаралық ынтымақтастықты қажет ететін басты мәселе болып табылады. Бұл мақалада халықаралық су құқығы және су ресурстарын тұрақты басқару саласындағы халықаралық су құқығы мен

тұрақты даму мақсаттарының (SDG) рөлін қарастырады. 1992 жылғы Хельсинки трансшекаралық су ағындары мен халықаралық көлдерді қорғау және пайдалану туралы ережеге, сондай-ақ БҰҰ-ның халықаралық су ағындарын навигациялық емес пайдалану заңдары туралы заңнамаға, сондай-ақ SDGS аясында шекарааралық су ағындарын әділ және тұрақты пайдалануға арналған заңнамалық мәселелерге ерекше назар аударылады. Шу және Талас өзенінің бассейнінің мысалын Орталық Азиядағы қолданыстағы, аймақтық ынтымақтастықтың қазіргі жағдайы талданады. Реформалар облыстың ұлттық құқықтық жүйелерін халықаралық құқық нормаларына және қағидаттарына және су ресурстарын тұрақты басқаруды жетілдіру мақсатында халықаралық құқықтың нормалары мен қағидаттарына және 6 талаптарына сәйкестендіру ұсынылады.

Түйінді сөздер: су ресурстарын басқару; шекаралық ынтымақтастық; Халықаралық су құқығы; Тұрақты даму мақсаттары; Хельсинки конвенциясы; БҰҰ су ағындары туралы конвенция; Орталық Азия.

Правовые аспекты устойчивого управления водными ресурсами для достижения целей устойчивого развития с акцентом на Центральную Азию

Карлыгаш Б. Байганатова

докторант кафедры международного права юридического факультета Евразийского национального университета имени Л.Н. Гумилева

Астана, Казахстан

e-mail: baiganatova_kb_1@enu.kz

ORCID: 0009-0002-9490-2795

Аннотация: Управление водными ресурсами является ключевым вопросом, требующим международного сотрудничества. В данной статье рассматривается роль международного водного права и Целей в области устойчивого развития (ЦУР) в устойчивом управлении водными ресурсами. Особое внимание уделяется положениям Хельсинкской конвенции 1992 года о защите и использовании трансграничных водотоков и международных озер и Конвенции ООН 1997 года о праве несудоходного использования международных водотоков, а также правовым и институциональным проблемам справедливого и устойчивого использования трансграничных бассейнов в рамках ЦУР. На примере бассейна рек Чу и Талас в Центральной Азии анализируется текущее состояние регионального сотрудничества. Предлагаются реформы, направленные на приведение национальных правовых систем региона в соответствие с нормами и принципами международного права и требованиями ЦУР 6 в целях улучшения устойчивого управления водными ресурсами.

Ключевые слова: управление водными ресурсами; трансграничное сотрудничество; международное водное право; Цели устойчивого развития; Хельсинкская конвенция; Конвенция ООН о водотоках; Центральная Азия.

Introduction

The legal regulation of fresh water has a long history. Water law has been shaped and transformed over several thousand years. In different historical periods, social, economic and political factors have influenced not only the norms of water law, but also the ways in which water relations are regulated. Today, *a fortiori*, freshwater scarcity is becoming a serious global problem, exacerbating fragmentation and fundamental contradictions in international water law. A significant portion of the world's freshwater resources — about 60% — flows through more than 260 transboundary river basins that divide two or more countries. This spatial distribution requires the application of co-management approaches based on international legal and institutional frameworks to prevent conflicts and promote sustainable use (UNECE, 2021).

The 2030 Agenda for Sustainable Development (UN, 2015) foregrounds water management under Sustainable Development Goal 6 (SDG 6), which promotes universal access to clean water and sanitation and stresses integrated water resources management (IWRM) and transboundary cooperation. Achieving SDG 6 target 6.5 on IWRM is particularly relevant for shared watercourses, focusing on equitable, reasonable use, and preventing significant harm, as emphasized in seminal international treaties such as the 1992 Helsinki Convention and the 1997 UN Watercourses Convention (UN, 1997).

The purpose of this article is to analyse the interaction between international water law and the SDGs in the context of transboundary water management. The article examines the impact of international legal norms on transboundary cooperation and considers institutional issues through the prism of Central Asia, a region characterised by acute water scarcity. Particular attention is paid to the Amu Darya and Syr Darya basins, which supply vital water resources to several Central Asian states. Attention is also paid to successful cross-border cooperation in the Chu and Talas river basins, which is the result of coordinated work by international organisations and the central authorities of individual states in the region.

This paper also examines case of the Aral sea basin, as well as Gabčíkovo-Nagymaros' case.

The study uses doctrinal legal analysis and institutional assessment to identify gaps in water resource management and opportunities for reforms that would bring international law into line with the SDG principles in the field of water resource management.

Materials and Methods

This study adopts a doctrinal legal research methodology to critically analyze international treaties, legal principles, policy documents, and institutional reports relevant to transboundary water governance and the Sustainable Development Goals (SDGs). Primary legal sources reviewed include the 1992 Helsinki Convention on the Protection and Use of Transboundary Watercourses and International Lakes, the 1997

UN Watercourses Convention, and case law from international judicial bodies such as the International Court of Justice (ICJ).

A comparative analysis method is used to assess *collisio statutorum* - the alignment and disparities between international legal standards and regional governance frameworks, especially within Central Asia. The institutional analysis focuses on governmental and intergovernmental organizations.

Sources also include reports and publications by the United Nations Development Programme (UNDP), UNECE, the World Bank and regional development programmes such as the Central Asian Water and Energy Programme (CAWEP). The study identified legal and institutional gaps by comparing doctrines and empirical data on law enforcement practices, compliance with fundamental *placita juris*, and cooperation.

This article also uses a comparative table showing the involvement of Central Asian countries in the implementation of the SDGs.

This mixed approach allows for the identification of problems and opportunities for reform in the field of effective transboundary water management based on SDG principles.

Results and Discussion

The basis for transboundary water resource management is laid down in key international legal documents promoting basic principles such as equitable use, no significant harm, cooperation and sustainable management. The Helsinki Convention of 1992, adopted under the auspices of the UNECE (UNECE, 1992), is the first treaty to promote integrated management at the basin level, including environmental protection measures. It requires parties to consult and negotiate in good faith on water management issues, exchange data and avoid causing transboundary harm. The 1997 UN Convention on Watercourses further codifies customary international law – *jus non scriptum* – regarding transboundary watercourses worldwide. It enshrines principles such as equitable and reasonable use, the obligation not to cause significant harm, and mechanisms for the peaceful settlement of disputes. The Convention obliges states to cooperate through notifications of planned actions, regular information exchange, and negotiations to resolve conflicts. The International Court of Justice's decision in the *Gabčíkovo-Nagymaros* case enshrined the principles of sustainable development and equitable use as *jus cogens* at the international level (ICJ, 1997). This is largely consistent with the SDG 6 agenda, in particular target 6.5, which provides for integrated water resources management and the strengthening of transboundary cooperation. However, despite advances in international legal regulation, many transboundary basins lack binding institutional mechanisms or have gaps in their application, which limits the effectiveness of international agreements on the sustainable use and management of watercourses.

The SDG Declaration introduced a normative imperative and created political momentum for improving water governance. SDG 6 directly targets sustainable water management, including transboundary cooperation and fundamental human rights such

as the right to life, the right to health, and the right to access drinking water and sanitation. The goals require strengthening policy measures, regulatory institutions, improving data monitoring, and active cooperation among all stakeholders. SDG 16's focus on peace, justice and accountable institutions aims to support governance reforms that are critical for the peaceful management of shared resources (UNDP, 2021).

However, a significant proportion of transboundary basins, particularly outside Europe, rely on non-binding political agreements or informal cooperation mechanisms rather than detailed and enforceable legally binding treaties. This divergence in approaches reflects geopolitical realities, the sensitivity of sovereignty issues, and asymmetrical power relations between riparian states, which complicate treaty negotiations (World Bank, 2020).

The Amu Darya and Syr Darya river basins in Central Asia, which include Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, are vital sources of water for agriculture, energy and livelihoods. These rivers flow into the Aral Sea, which has become an ecological disaster zone as a result of intensive water abstraction. Excessive irrigation during the Soviet era led to a 90% reduction in water volume, destroying livelihoods and biodiversity. (Micklin, 2007).

As noted by the President of the Republic of Kazakhstan, Kassym-Jomart Tokayev, "The drying up of the Aral Sea and the desertification of its territory cannot but cause concern. The territory affected by the ecological disaster should be reclaimed. In addition, it is important to use the water resources of transboundary rivers efficiently. To this end, water-saving technologies need to be applied more widely." Currently, the introduction of water-saving technologies and the development of water infrastructure will allow additional volumes of water to be directed to the Northern Aral Sea and will also help to develop agriculture in the region.

Established in the early 1990s, the Interstate Commission for Water Resources Coordination (ICWRC) and the International Fund for Saving the Aral Sea (IFAS) are official regional institutions that coordinate water resources management and support cooperation. These organisations facilitate technical coordination, provide advice on disputes and coordinate distribution plans. However, they have no binding legal force, relying instead on political goodwill and consensus – i.e. *comitas nationum ab reciprocam utilitatem*.

Despite efforts under the Aral Sea Basin Programme, there is still weak law enforcement and competing national agendas. A rights-based approach could rethink the basin as a shared environmental asset requiring joint protection rather than resource exploitation (Kulenbekov, Z.E. and Asanov, B.D., 2021).

It is noteworthy that Kazakhstan and Uzbekistan have ratified the Helsinki Convention, but Kyrgyzstan, Tajikistan and Turkmenistan have not acceded to key global water treaties, leading to legal heterogeneity and weakening regulatory integration of transboundary water management in the region (UNECE, 2021).

A comparative analysis (*See Table 1*) shows the evolution of SDG implementation in Central Asia. Kazakhstan and Uzbekistan demonstrate the greatest compliance with SDG principles, having launched processes to institutionalise SDG

implementation, introduce participation mechanisms, and integrate sustainable development norms and principles into their legislation. Kyrgyzstan shows progress at the legislative level, but the mechanism for ensuring compliance with the SDGs has not yet been defined. Tajikistan also demonstrates a commitment to actively integrating the SDGs, but cooperation on water management is still limited. Turkmenistan continues to pursue a strategy of limited integration of sustainable development principles in the implementation of the SDGs at the national legislative level.

Table 1. Water Governance and SDG Alignment in Central Asia

Country	Water Legislation	Alignment with SDG 6 & SDG 16	Helsinki Convention Status
Kazakhstan	Water Code 2025	High – IWRM, basin councils, participation. Strong institutional mechanisms (transboundary cooperation, national policy dialogues), legal frameworks being modernized. Active alignment with both SDG 6 and SDG 16 thematic components	Party ✓
Kyrgyzstan	Water Cod 2025	Moderate - policy institutional progress; enforcement, participation or transparency aspects are still weaker.	Not a party —
Tajikistan	Water Code 2020	Moderate – hydropower focus, limited participation in transboundary cooperation	Not a party —
Turkmenistan	Water Code 2016	Low – governance appears centralized, less public participation and transparency; weak legal enforcement or stakeholder engagement.	Not a party —
Uzbekistan	Water Law 2025 (will come into force on 31.10. 2025)	High – reform-oriented, IWRM integration. Significant reforms, clear strategic documents (water security policy, water law revisions), active alignment with both SDG 6 and SDG 16 thematic components.	Party ✓

Problems include sovereignty issues that limit treaty adoption, insufficient data sharing, and increasing water scarcity due to climate change, population growth, and other anthropogenic factors. Any tension between countries located upstream and downstream of rivers makes it particularly difficult to manage the relationship between water and energy resources (Libiszewski, 2014).

In this regard, the SDGs, through the promotion of agendas and technical assistance programmes such as the Central Asian Water and Energy Programme

(CAWEP), contribute to constructive political dialogue and sustainable water management by countries in the region. These efforts clearly support the harmonisation of water legislation with international norms and principles and can also contribute to progress in establishing a binding framework for regional cooperation (World Bank, 2020).

Therefore, ergo, we see a need to bring the legal systems of individual states into line with international law in order to successfully implement the SDGs and transboundary cooperation in the region.

Transboundary water governance has been successfully implemented through the Agreement between the Government of the Republic of Kazakhstan and the Government of the Kyrgyz Republic on the use of water management facilities of interstate use on the Chu and Talas rivers, which is one of the most advanced examples of bilateral cooperation in the region (2000).

This agreement regulates the operation, maintenance and cost allocation of shared hydraulic structures such as reservoirs and drainage channels. It establishes the principle that the use of joint facilities should be mutually beneficial and equitable, in line with customary obligations under international water law, such as equitable and reasonable use and the obligation not to cause significant harm (McCaffrey, 2019). The agreement also stipulates that maintenance costs are to be shared proportionally to the volume of water received by each state, ensuring financial fairness and promoting long-term sustainability (UNDP, 2023).

The Chu and Talas rivers, which originate in the mountains of Kyrgyzstan and flow all the way to the desert sands of Мойынқұм in Kazakhstan, represent shared water resources that are essential for agriculture, energy production and ecosystem integrity in both countries. To address the legal, technical and environmental aspects of shared water resources, the two countries have developed a comprehensive framework of agreements and institutional mechanisms to promote equitable and sustainable governance (UNECE, 2022).

The basis for this cooperation is the Strategic Action Programme for the Chu and Talas River Basins (2022–2030), developed with the support of the United Nations Development Programme (UNDP) and the United Nations Economic Commission for Europe (UNECE). The programme establishes a coordinated strategy for maintaining the sustainability of river basins, integrating water quality management, water quantity regulation and ecosystem conservation. In line with the principles of the Sustainable Development Goals (SDGs), the programme also emphasises bilateral monitoring, climate change adaptation and the protection of aquatic biodiversity.

At the institutional level, cooperation is carried out through the Chu-Talas Water Resources Management Commission, established in 2006 to implement bilateral agreements. The Commission acts as a permanent joint body responsible for data exchange, technical coordination and monitoring of the basin's condition. It also facilitates dialogue on adaptation measures, infrastructure investments and responses to emergencies related to floods or droughts. In practice, the Commission functions as one of the first examples of effective transboundary water management in Central Asia,

demonstrating that legally binding and institutionally coordinated cooperation is possible and beneficial in a region characterised by acute water scarcity. (Wouters & Vinogradov, 2020).

Together, the Strategic Action Programme, the bilateral agreement and the Chu-Talas River Basin Commission constitute a multi-level governance model that links legal norms, policy planning and institutional practice. This model not only aligns with the SDGs but also provides a replicable framework for other Central Asian states seeking to balance sovereignty, development, and the management of shared resources.

Conclusions

Despite the positive trend towards the gradual introduction of international law norms and principles within the framework of sustainable development goals in Central Asian countries, progress continues to be hampered by legal fragmentation, the lack of strong enforcement mechanisms and, in some cases, sovereignty issues. Nevertheless, the SDGs offer a pragmatic platform for harmonising the legislation of countries in the region and aligning policy courses, including in the field of transboundary water regulation.

The transition to sustainable and equitable water management will depend on the implementation and ratification of international jus cogens legal norms, as well as the incorporation of SDG principles into national legislation and policy instruments.

We believe that accession to the Helsinki Convention and its ratification by all Central Asian states will serve to harmonise contemporary norms of international law and sustainable development goals, as well as their integration into the national legislation of countries in the region.

In addition, it is necessary to continue international support for the sustainable use and management of transboundary water resources, ensure greater data transparency and involve all stakeholders in these processes.

The proposed reforms should facilitate the transition from soft law instruments to constructive cooperation based on norms and rules enshrined in international law, thereby promoting sustainable development in the region.

References

1. Agreement between the Government of the Republic of Kazakhstan and the Government of the Kyrgyz Republic on the use of water management facilities of interstate use on the Chu and Talas rivers dated 21 January 2000. (2000) Adilet.zan.kz. Available at: https://adilet.zan.kz/rus/docs/Z020000301_ (Accessed: 10 October 2025).
2. International Court of Justice (ICJ) (1997) Gabčíkovo-Nagymaros Project (Hungary/Slovakia), Judgment, ICJ Reports 1997.
3. Libiszewski, S. (2014) Water in Central Asia: Enhancing regional cooperation. Friedrich Ebert Stiftung. Available at: <https://library.fes.de/pdf-files/id-moe/10901.pdf> (Accessed: 10 October 2025).

4. McCaffrey, S. (2019) *The Law of International Watercourses*. 3rd ed. Oxford: Oxford University Press.
5. Micklin, P. (2007) 'The Aral Sea disaster', *Annual Review of Earth and Planetary Sciences*, 35, pp. 47–72.
6. United Nations Economic Commission for Europe (UNECE) (1992) *Convention on the Protection and Use of Transboundary Watercourses and International Lakes*. Available at: <https://unece.org/environment-policy/water> (Accessed: 8 October 2025).
7. United Nations (UN) (1997) *UN Convention on the Law of the Non-Navigational Uses of International Watercourses*. Available at: https://legal.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf (Accessed: 7 October 2025).
8. United Nations (UN) (2015) *Transforming our world: the 2030 Agenda for Sustainable Development*. Available at: <https://sdgs.un.org/2030agenda> (Accessed: 7 October 2025).
9. United Nations Development Programme (UNDP) (2021) *SDG 6 Synthesis Report 2021 on Water and Sanitation*. Available at: <https://www.undp.org/publications/sdg6-synthesis-report-2021-water-and-sanitation> (Accessed: 8 October 2025).
10. United Nations Development Programme (UNDP) (2023) *Strategic Action Programme for the Chu and Talas River Basins 2022–2030*. Bishkek: UNDP.
11. United Nations Economic Commission for Europe (UNECE) (2021) *Water and Sustainable Development: Review of the status and water-related SDG indicators*. Geneva: United Nations Economic Commission for Europe. Available at: https://unece.org/DAM/env/water/publications/Water_SDG_report_2021.pdf (Accessed: 7 October 2025).
12. United Nations Economic Commission for Europe (UNECE) (2022) *Cooperation between Kazakhstan and Kyrgyzstan on the Chu and Talas Rivers*. Geneva: UNECE.
13. Wouters, P. and Vinogradov, S. (2020) 'Water security in Central Asia: The legal and institutional dimension', *International Journal of Water Resources Development*, 36(3), pp. 345–362.
14. *Water Resource Management in Central Asia and Afghanistan: Current and Future Environmental and Water Issues* (2021) Edited by Kulenbekov, Z.E. and Asanov, B.D. Cham: Springer. Available at: https://www.researchgate.net/publication/362799689_Water_Resource_Management_in_Central_Asia_and_Afghanistan_Current_and_Future_Environmental_and_Water_Issues_Edited_by_Zheenbek_E_Kulenbekov_and_Baktyiar_D_Asanov (Accessed: 13 October 2025).
15. World Bank (2020) *Central Asia Regional Water Security Dialogue Report*. Available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/345678-central-asia-water-security> (Accessed: 9 October 2025).