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Importance of water governance for enhancing water security in Europe and Central Asia

Executive Summary

The Europe and Central Asia region of the Food and Agriculture Organization (FAO) represents the longest single geographical region globally. This diverse region, comprising 54 Members, features a wide array of natural habitats, resource endowments and economic trajectories.

This paper underscores the pivotal role of inclusive water governance in achieving food and water security in the Europe and Central Asia region. It showcases the intimate links between effective water management, food systems and food security, particularly relevant given the region's economic and development disparities. Within this context, the paper situates itself firmly within the Sustainable Development Goal (SDG) framework, especially SDG 6 for Clean Water and Sanitation and SDG 2 for Zero Hunger, elucidating how their achievement is intertwined with effective water management. The document provides an analysis of water sector reforms inspired and driven by the principles of good governance, integrated water resources management and nexus-based approaches. The discourse draws from the varying experiences within the region – from the European Union, which has shown visible progress in harmonizing water governance reforms under the European Water Framework Directive, to transitional economies in Caucasus and Central Asia, which still grapple with operationalizing their water sector aspirations.

Despite the disparities, a common challenge resonates across the region: the need to balance competing water demands amid the increasing impacts of climate change and data requirements for informed decision-making. Recognizing these shared challenges, the document underscores the importance of fostering knowledge exchange and experience sharing across the region.

This paper, therefore, leverages distinctive cases and lessons from across the Europe and Central Asia region to provide specific insights and guidance that can facilitate more consistent, adaptable and scalable water governance practices. It aligns itself with FAO's strategic approach of promoting sustainable agriculture and food systems, recognizing the crucial role of effective water governance in this endeavour. By focusing on the integral connections among water management, food systems and food security, it aims to contribute to a more sustainable and food-secure future for the region.

I. Introduction

1. Water has, probably, never been so high and urgent on the global political and sustainable development agenda as in the last couple of years, with the seminal United Nations 2023 Water Conference held earlier this year being at the apex. The multiple events,¹ interactions, political statements and calls, including those at the highest political level, coupled with and informed by the latest cutting-edge analytical and research evidence on water and climate,² strongly re-emphasized the urgency and resolve that the world has attained to collectively step up the transformative thrust and change towards a more water-secure and smart future for all.

2. Water security is a growing global concern, exacerbated by climate change extremes and other factors like mismanagement and aging infrastructure. These issues pose significant challenges to both developed and developing nations. There is a clear need to embrace integrated water resources management, a holistic approach initiated in the early 2000s, to ensure water conservation and promote responsible and collaborative behaviours. Hence, enhancing water governance at various levels is vital (United Nations, 1993). It also increasingly calls for nurturing important behavioural changes in people and organizations to act more responsibly, responsively and collaboratively in the face of intensifying water pressures and climate change extremes. Therefore, enhancing and mainstreaming water governance across multiple levels, including through its more informal and voluntary water stewardship³ pathways, is crucial.

3. FAO plays a significant role in advancing water security and water governance through supporting important transformative changes in agrifood systems globally so that they are more adaptive and resilient to multiple pressures, challenges and shocks. This is explicitly embodied in the FAO Strategic Framework 2022–31⁴ and its four betters – better production, better nutrition, a better environment and a better life – that seek to support the attainment of the 2030 Agenda for Sustainable Development towards more efficient, inclusive, resilient and sustainable agrifood systems. With this in mind, since 2017 the FAO has established the Global Framework on Water Scarcity in Agriculture⁵ to support countries in achieving the SDGs – specifically SDG 6 (Clean Water and Sanitation) and SDG 2 (Zero Hunger), with contributions to the attainment of SDG 1 (No Poverty), SDG 3 (Good Health and Well-being), SDG 5 (Gender Equality), SDG 13 (Climate Action), SDG 15 (Life on Land), and SDG 17 (Partnerships for the Goals). Under the Dushanbe Water Process, FAO also played a key role in supporting the Government of Tajikistan in two high-level international conferences held 20–21 June 2018 and 6–9 June 2022 in Dushanbe on the implementation of the goals of the International Decade for Action on Water for Sustainable Development 2018–2028. A joint declaration recognized that water, sanitation, health, ecosystems, ocean, energy, food systems and nutrition are interlinked and that water is essential for resilient and sustainable development and the eradication of poverty and hunger. FAO is also the custodian agency on SDG Target 6.4 indicators measuring water use efficiency and water stress.

4. During the Forty-third Session of the FAO Conference in July 2023, Members focused on strategizing and prioritizing actions for the 2024–2025 period, recognizing the role of agriculture in water

¹ Among many high-profile events globally, water is the 2023 theme of the World Food Day, celebrated annually on 16 October.

² Such high-quality evidence includes, among other things, the 2023 IPCC Synthesis report, a series of seminal publications by the Global Commission on the Economics of Water, and the Global Water Security 2023 Assessment by the United Nations University Institute for Water, Environment & Health.

³ Water stewardship is a concept that emphasizes the responsibility and proactive engagement of individual water users and organizations in the sustainable management of water resources. Water stewardship goes beyond compliance with regulations and focuses on the voluntary actions taken by businesses, industries, and communities to conserve water, protect water quality, and promote water security (Alliance for Water Stewardship, 2019).

⁴ The FAO Strategic Framework 2022–31 is available at <https://www.fao.org/3/cb7099en/cb7099en.pdf>.

⁵ The WASAG Strategy for 2021 to 2024 is available online at <https://www.fao.org/3/cb5448en/cb5448en.pdf>.

management and the necessity for integrative and inclusive approaches across different sectors to achieve efficient and sustainable water usage.⁶

5. Building on the fundamentals and the latest developments in the field, as outlined above, this background paper aims to reemphasize the significance of all of this, with specific focus on the FAO Europe and Central Asia region, so that Members are better informed and enabled to develop, present and promote their national positions on the importance of inclusive water governance for desired transformative changes in agrifood systems.

6. This paper is structured into five sections, exploring the context and dynamics of water sector and governance reform in the region and its subdivisions, followed by a synthesis of the findings and policy implications.

II. Water management: back to nature

7. Water resources management is by nature a nested system in which water drains from higher springs, streams, watersheds and canal systems to those at the gradually lower locations (FAO, 2017). In fact, the bigger the river system, the more nested and complex it is. Hence, it is essentially hierarchical, involving multiple operational levels and scales, until the water reaches the low-lying valleys and plains. It is widely agreed nowadays that in the past, the integrity of such nested systems would be most frequently compromised by the prevalence of economic activities, administrative boundaries, engineering dominance and top-down decision-making when water management was considered the exclusive domain of the government (Davidson *et al.*, 2015). However, this state of affairs, despite being dominant, repeatedly led to chronic inefficiencies and underperformance on the part of governments regarding the proper handling of water resources, distributive infrastructure and the surrounding environment, without engaging closely with all concerned. This was a consistent trend and phenomenon in the modern era, eventually leading to a worldwide water management crisis and a massive urge for alternative ways of approaching this important domain of economic activity that are more integrated, environmentally friendly, inclusive, responsive and smart (Vermillion and Sagardoy, 1999).

8. It is worth noting that the public domain as a whole (not only water management) had been long experiencing similar challenges that ultimately resulted in the overall paradigm shift from government to governance (Frahm and Martin, 2009). Therefore, governance as a relatively new phenomenon (Biswas and Tortajada, 2010) is closely linked to recent trends by governments worldwide to make public services more inclusive, participatory, responsive and effective by bringing them under the direct control and influence of those who use and depend on them in one way or another. Considering this, good governance and inclusive institutions are increasingly seen as the way forward to solving massive underperformances of public service delivery systems across the board. This particularly concerns common pool resources such as water, whose management failures across the globe are well documented and have become notorious to the extent that they have “inspired” the use of some of the finest metaphors, such as “the tragedy of commons” (Hardin, 1968). The fact that common pool resources have to be shared in one way or another among people, communities, sectors and countries led to the realization that managing common pool resources is all about managing conflicts (Delli Priscoli and Wolf, 2009), and that the best way to manage conflicts is to try to transform them in a way that allows people and countries to work out and agree on collective rules so that the use of shared resources is more predictable and bound by collectively agreed arrangements (Ostrom, 2015). As common pool resources tend to cross borders and jurisdictions, so does the scale of “the tragedy” they are associated with if mismanagement or miscommunication continues.

⁶ For more on the results of the FAO Conference, please visit <https://www.fao.org/newsroom/detail/fao-conference-ends-with-an-increase-in-the-organization-s-budget-and-requests-for-strong-action-on-water-resources-management/en>.

9. Therefore, the domain of water resources management nowadays is increasingly inspired and driven by the closely linked sustainable development frameworks of good governance, integrated water resources management and those that are nexus-based to better grasp the multi-interdependent nature of water (Benson, Gain and Rouillard, 2015; FAO, 2014; Smith and Clausen, 2015). Fully backed and supported by major international development cooperations and financial institutions, these frameworks are commonly accepted as the guiding principles to inform, shape and carry out agricultural and water sector reforms throughout much of the developed and developing world. FAO's latest flagship publications on a range of topics – including governance (Bojic, Clark and Urban, 2022), food security (FAO *et al.*, 2022), agricultural innovation (FAO, 2022d), transformation triggers (FAO, 2022e), aquaculture (FAO, 2022c), forestry (FAO, 2022a), commodity markets (FAO, 2022b) and Indigenous People's food systems (FAO, Alliance of Bioversity International, and CIAT, 2021) – are vivid examples of the increasing importance of applying the approaches and principles of good water governance (FAO, 2023) to different contexts, sectors and scales of agricultural water decision-making.

10. This is particularly important for countries and areas that are both highly water-stressed and heavily reliant on irrigated agriculture. In essence, the interaction between water stress and irrigation efficiency highlights the intricate relationship of water management, agriculture and broader sustainable development goals. By promoting efficient water conveyance and field-level irrigation practices, water governance can help alleviate some of the competition for water among sectors. When agriculture uses water more efficiently, there may be more water available for other purposes, such as drinking water supply, industrial use and environmental flows. Good water governance, therefore, provides the institutional framework necessary to strike a balance between water supply and demand, promote efficient and equitable resource use, mitigate conflicts and protect ecosystems. Adopting integrated water resources management practices is, therefore, pivotal to achieving economic development while safeguarding the environment and ensuring water security for all (FAO, 2022e).

11. On top of that, also remarkable and commendable are the voluntary commitments that individual countries of Europe and Central Asia region increasingly make towards improving their water use efficiency and adaptive capacities to water stress and climate change in their nationally determined contributions. For instance, the European Union as a collective entity included in its nationally determined contributions commitments to reducing water consumption in industries, promoting water-efficient technologies and supporting sustainable agricultural practices across its Member States (Federal Republic of Germany and European Commission, 2020). Similarly, all Central Asian countries in their latest nationally determined contribution updates emphasized crop diversification; a gradual move from water-intensive crops; a shift to water-saving technologies; reduced water wastage; and the modernization of basin-, scheme- and field level water conveyance, storage and irrigation infrastructure and practices in view of any hypothetical change and redistribution of available freshwater resources in the agricultural sector (Kyrgyz Republic, 2021; Republic of Kazakhstan, 2023; Republic of Tajikistan, 2022; Turkmenistan, 2022; Uzbekistan, 2021).

III. Region at a glance: putting blueprints to test

12. The Europe and Central Asia region, which encompasses 53 Member Nations and one Member Organization, features a vast array of natural habitats and climates, ranging from polar regions in Northern Europe and the Russian Federation to arid areas in the Middle East and Central Asia.

13. The region harbours diverse economic and political landscapes, with noticeable differences in water sector reforms between developed European Union Members and transitional economies. The latter face challenges in aligning their water sector plans with the templates provided by advanced economies.

14. The European Water Framework Directive, established in 2000, has been a key catalyst in harmonizing water sector reforms in the European Union, setting unified goals and strategies and promoting stakeholder engagement and effective monitoring and feedback mechanisms (European Commission, 2000).

15. This universal approach aids non-European Union countries, such as those in the Western Balkans, in steering their water management systems towards alignment with the Water Framework Directive, although further efforts are necessary to overcome existing challenges such as pollution control and institutional capacity building (Mott McDonald, 2017).

16. In contrast, countries in the Caucasus and Central Asia – while committing, overall, to similar transformations of their water management domain both politically and legally – have been, however, facing a range of pressures and challenges. The legal, policy and institutional frameworks and arrangements in these countries in support of comprehensive water sector reforms are still evolving. This is further complicated by transitional pressures, insufficient capacities, data availability, difficult trade-offs and uncertainties that restrict longer-term planning, goal setting and the availability of sufficient funding. On top of this, water resources in these countries are often subject to complex geopolitical and development dynamics, with multiple countries sharing transboundary water resources and competing for access to limited water supplies. In fact, this calls for urgent peacekeeping efforts at times to calm tensions and find uneasy solutions with regards to shared water resources and water infrastructure that are abundant in multiple transboundary settings between these countries.

17. Despite disparities in progress, all countries in the region share common challenges, such as climate change impacts and the need for efficient data systems. The paper seeks to foster a bidirectional knowledge exchange, utilizing lessons from both Europe and other regions to enhance the adoption and adaptation of water governance principles.

18. This is done with reference to case-based learning, which is an established cross-disciplinary approach to facilitating evidence-based learning and knowledge application to other real-world settings, rather than using sheer abstract blueprints. This case-based learning method is grounded in constructivism, with new applications facilitated through the interaction of case knowledge and the knowledge of the environment, where such new knowledge can be potentially applied (Ellington and Earl, 1998).

IV. European Union: putting blueprints to scale

19. Adopted in 2000, the Water Framework Directive is currently going through the third six-year river basin management planning cycle of 2021–2027 across the European Union. Its ultimate goal is to achieve “good ecological status” for all European waters, including surface, transitional, coastal and ground waters. The Water Framework Directive emphasizes an integrated approach to water management that takes into account social, economic and environmental concerns. It aims to ensure the protection and restoration of aquatic ecosystems and promote sustainable water use. The Water Framework Directive legally applies to all European Union Member Nations and some other countries beyond it – specifically, those that aspire to European Union accession. Even the United Kingdom of Great Britain and Northern Ireland, when leaving the European Union in 2020, decided to retain and continue using the framework both internally and externally. At the same time, worth noting is that the Water Framework Directive does not replace national water legislation and legal instruments that European Union Member Nations might have in place. Instead, it sets an umbrella framework for water management at the European Union level, with Member Nations required to transpose the Water Framework Directive’s provisions into their national legislations. In other words, Member Nations retain their own legal instruments and frameworks in place that are specific to their national contexts. However, national legislation and policies must be consistent with the Water Framework Directive’s requirements, and Member Nations are required to report regularly to the European Commission

on their progress in achieving the Water Framework Directive's objectives. The European Commission is responsible for monitoring and enforcing compliance with the Water Framework Directive to the extent that it may take legal actions against Member Nations that fail to meet their obligations (European Commission, 2000).

20. The directive has fostered a shared understanding and collaboration within and across European countries over the past two decades. Nearly half of the European Union's river basin districts have international transboundary status, involving intricate relationships with neighbouring countries and requiring continuous coordination and cooperation. The data signifies the international nature of most of Europe's freshwater resources. There are 156 river basin districts in the European Union, not including those in the United Kingdom of Great Britain and Northern Ireland post-Brexit, with nearly half having international transboundary status involving multiple European nations. The number was 180 before Brexit. Each European country shares three to four cross-border river basins, with Europe having a substantial proportion of international river basins, significantly higher than the global average (European Environment Agency, 2018). On average, each European country shares three to four cross-border river basins with its co-riparian neighbours. Out of 310 international river basins listed in the global Transboundary

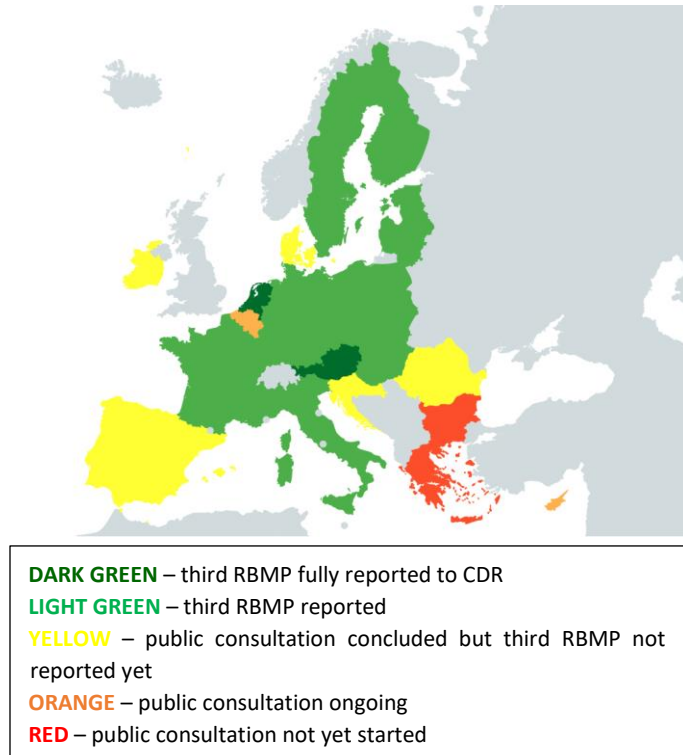
Freshwater Dispute Database, 74 are associated with Europe, making up 72 percent of the total land territory in the European Union – much greater than the global average of 47.1 percent (McCracken and Wolf, 2019). This points to the international nature of most freshwater resources in Europe.

21. The Water Framework Directive necessitates that each European Union Member formulate and update river basin management plans every six years through a collaborative and inclusive process.

22. While the directive allows for adaptive approaches, many districts have not met the set objectives, prompting an extension of the deadline to 2027 from 2015. Overall, while progress has been made in developing river basin management plans for all of the European Union, there is still work to be done to ensure that the objectives of the Water Framework Directive are fully met by Member Nations.

23. Besides, there is also a pipeline of eight European Union candidate countries and two potential European Union candidate countries, five of which are in the Western Balkans. As potential future European Union Members, they are also expected to transpose and implement the Water Framework Directive principles and work towards achieving good ecological status for their water bodies. While progress has been made overall in aligning their water management systems with the Water Framework Directive, further efforts are needed to address challenges such as pollution control, water quality monitoring, stakeholder involvement and institutional capacities. These countries are working towards meeting the requirements of the Water Framework Directive as part of their overall journey towards

Figure 1. State of third river basin management plan adoption in the European Union.



Source: Adapted from **European Commission**. 2023. *Water Framework Directive*. In: *Environment*. [Cited 7 September 2023]. https://environment.ec.europa.eu/topics/water/water-framework-directive_en

European Union membership. Therefore, the Water Framework Directive serves as one of the enabling drivers to guide and ensure compliance with the process (Mott McDonald, 2017).

Demo Case 1: Blueprints that work: insights from Spain

24. Prior to the adoption of the Water Framework Directive, water management in Spain was dominated throughout the twentieth century by the long-enduring “hydraulic paradigm” of meeting rising water demands for various uses, primarily through the development of publicly funded large-scale hydraulic infrastructure and interbasin water transfer schemes. As a result, attention to the protection and restoration of aquatic ecosystems and accounting for wider community interests had been constantly compromised. With the European Union-wide adoption of the Water Framework Directive in 2000 as an umbrella framework, Spain was required to accommodate accordingly and shift its longstanding technocratic focus. With this in mind, in 2003, it realigned its 1985 Water Law by transposing the key tenets of the Water Framework Directive and in 2009 adopted a new river basin management planning cycle with specific focus on public participation and good ecological status for all its waters. Among other things, this has set in motion more inclusive and environmentally friendly water governance processes, arrangements and mechanisms across its 25 newly delineated river basin districts, of which 17 are inland and eight are part of international river basin districts shared with Portugal (four river basins), France (two), Andorra (one) and Morocco (two). The adoption of the Water Framework Directive also led to the development of new monitoring and assessment programmes in Spain to assess the ecological status of its multiple water bodies and identify areas where improvements were needed. Spain established a comprehensive monitoring programme to assess the status of water bodies and identify sources of pollution. This enabled authorities to develop targeted measures to reduce pollution and improve water quality. Another significant change was the introduction of water pricing policies that aimed to incentivize water efficiency and encourage the use of alternative water resources. Spain introduced a pricing policy that charges higher rates for water use beyond a certain threshold, thereby encouraging water conservation. At the same time, the Water Framework Directive’s requirements for public participation and transparency led to greater involvement of civil society organizations and local communities in water management decision-making processes. This helped build public awareness and support for water management measures and ensured that local concerns are taken into account in the development of river basin management plans. With input and guidance from the Water Framework Directive, water management in Spain is nowadays regulated by a complex set of legal acts, instruments and policy frameworks and a sophisticated set of governance arrangements and institutions (Kingdom of Spain, 2023) that involve international, national subnational, regional and local levels.

Figure 2. River basin districts in Spain



Source: *Directorate-General for Water & Centre for Hydrographic Studies. 2017. Summary of Spanish River Basin Management Plans: Second Cycle of the WFD (2015-2021). Ministry of Agriculture, Food and the Environment of Spain: Madrid, Spain, page 13*

V. Central Asia, Türkiye and the Caucasus: still challenged but aspiring

25. It is commonly agreed that approaching water sector reforms in a consistent, systematic and comprehensive way, both conceptually and operationally, is instrumental in working out adequate and fit-for-purpose water governance arrangements and achieving water-efficient systems. However, consistency and comprehensiveness are frequently lacking and compromised for various reasons when initiating the reform process. This holds true not only for Central Asia and the Caucasus, but also for countries such as Türkiye, where similar challenges are faced. This was particularly the case with numerous interventions related to integrated water resources management and water governance at the start of transformative changes in most countries of Central Asia and the Caucasus. In the early days, most government-led and donor-supported water management projects in these subregions, while proudly proclaiming the initiation of reforms related to integrated water resources management, would focus exclusively on some specific single water institution, such as water users' associations. This was because national governments were still learning how to properly approach, design and lead the entire reform process and because coordination among donors and development projects remained poor (OECD, 2010).

26. The efforts by governments and development actors began to yield more logic, coherence and longer-term vision only in the mid-2010s, when some countries started introducing more advanced water legislation, policy frameworks, road maps, concepts, strategies, programmes and plans (Scientific Information Centre of the Interstate Commission for Water Coordination of Central Asia, 2020). A similar trend can be observed in Türkiye, which has made efforts towards advancing its water governance. This pattern is exemplified by the water reform dynamics, for instance, in Armenia, Kazakhstan, Kyrgyzstan and Tajikistan. In other cases, the conceptualization and implementation of policy frameworks preceded the legislative changes, such as in Uzbekistan. Some countries (e.g. Georgia and Turkmenistan) seemed to have been totally ignorant of any need to conceptualize and plan reform and/or policy action. Overall, following their independence, most countries in Central Asia and the Caucasus changed their water legislation at least twice. Tajikistan recently became the first country in the region to have changed it for the third time when, in 2020, it adopted a new water code coupled with a new water users' association law (Republic of Tajikistan, 2020a, 2020b). Table 1 summarizes the sequence and timeline of the adoption of major legal and policy frameworks in all the countries of the two adjoining subregions in the past 50 years.

Table 1. Timeline of the upgrading of water legislation and policy frameworks in the countries of Central Asia and the Caucasus

TIMELINE	Caucasus			Central Asia				
	ARM	AZE	GEO	KAZ	KYR	TAJ	TRM	UZB
	Major water legislation: water code (C), water law (L), drafted water law (L ^d) or amended (L ^a)							
1970-80s 1990s 2000s post-2010s	1973 (C)	1972 (C)	1974 (C)	1972 (C)	1972 (C)	1972 (C)	1973 (C)	1972 (C)
	1992 (C)	1973 (C)	1997 (L)	1994 (C)	1994 (L)	1993 (C)		1993 (L)
	2002 (C)			2003 (C)	2005 (C)	2000 (C)	2004 (C)	2009 (L ^a)
	2022 (C ^a)		2022 (L ^d)			2020 (C)	2016 (C)	
	Major concept (c), program (pr), plan (pl), roadmap (r), strategy (s) or policy doc (d)							
2005-2023	2005 (c)			2002 (c)	2013 (r)			2003 (d)
	2006 (pr)		-	2008 (pl)	2017 (pl)	2015 (pr)	-	2018 (r)
	2020 (r)	2023 (sd)		2023 (c)	2023 (s)			2020 (c)

Sources, Adapted from:

Yakubov, M. 2022. Small Basin Governance scheme: linking water sector reforms and governance in the Aral Sea Basin. International Journal of Water Resources Development. DOI: 10.1080/07900627.2021.1926936

FAOLEX. 2023a. Armenia. In: FAOLEX Database. <https://www.fao.org/faolex/country-profiles/general-profile/en/?iso3=ARM>

FAOLEX. 2023b. Azerbaijan. In: FAOLEX Database. <https://www.fao.org/faolex/country-profiles/general-profile/en/?iso3=AZE>

FAOLEX. 2023c. Georgia. In: FAOLEX Database. <https://www.fao.org/faolex/country-profiles/general-profile/en/?iso3=GEO>

27. It is noteworthy that the adoption and framing of integrated water resources management principles by countries worldwide, legally, institutionally and operationally has become an important proxy for their prospective capacity and success in realizing sustainable development goals in the long term with respect to water resources (United Nations, 2015). Thus, the river basin approach, the integration of multiple interests and public participation in decision-making are the most important principles when designing, operationalizing and implementing comprehensive integrated water resources management and water governance reforms. Therefore, the sheer mention or absence in countries' national water legislation and/or policy framework of key dimensions and concepts associated with integrated water resources management, water governance and river basin approach such as those listed in Table 2 below can be quite insightful about the overall reform progress and status in each respective country.

Table 2. Presence of references to integrated water resources management and river basin approach concepts in legal and policy frameworks underlying water sector reforms in the countries of Central Asia and the Caucasus

Key integrated water resources management and river basin approach notions in law (L) and policy (P) frameworks: Yes (+) No (-)	Caucasus						Central Asia									
	Armenia		Azerbaijan		Georgia		Kazakhstan		Kyrgyzstan		Tajikistan		Turkmenistan		Uzbekistan	
	L	P	L	P	L	P	L	P	L	P	L	P	L	P	L	P
1. Integrated water management	+	+	-	+	+	-	+	+	-	-	+	+	+	-	-	+
2. Intersectoral coordination	+	+	-	+	+	-	+	+	+	+	+	+	+	-	+	+
3. Basin management approach	+	+	+	+	+	-	+	+	+	-	+	+	+	-	-	+
4. Hydrologic boundaries	+	+	-	+	+	-	+	+	+	-	+	+	+	-	+	+
5. River basin agencies	+	+	-	+	+	-	+	+	+	-	+	+	+	-	+	+
6. Basin management plans	+	+	-	+	+	-	+	+	+	+	+	+	+	-	+	-
7. Basin level councils	-	-	-	+	+	-	+	+	+	-	+	+	+	-	-	-
8. Sub-basin agencies	+	+	-	-	-	-	-	-	-	-	+	+	-	-	+	+
9. Sub-basin level councils	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
10. Water users associations	+	+	-	+	+	-	+	+	+	-	+	+	+	-	+	+
Total	8	8	1	8	8	0	8	8	8	2	10	10	6	0	2	6

Source: Adapted from Yakubov, M. 2022. Small Basin Governance scheme: linking water sector reforms and governance in the Aral Sea Basin. International Journal of Water Resources Development. DOI: 10.1080/07900627.2021.1926936

28. The presence or absence of key integrated water resources management concepts and dimensions in Table 2 suggests that Armenia, Kazakhstan and Tajikistan have established the most sophisticated and balanced conceptual foundations in the two adjoining subregions for the implementation of advanced water governance reforms in terms of both law and policy, whereas Azerbaijan, Georgia, Kyrgyzstan, Turkmenistan and Uzbekistan tend to emphasize a single aspect, either the law or the policy side of it.

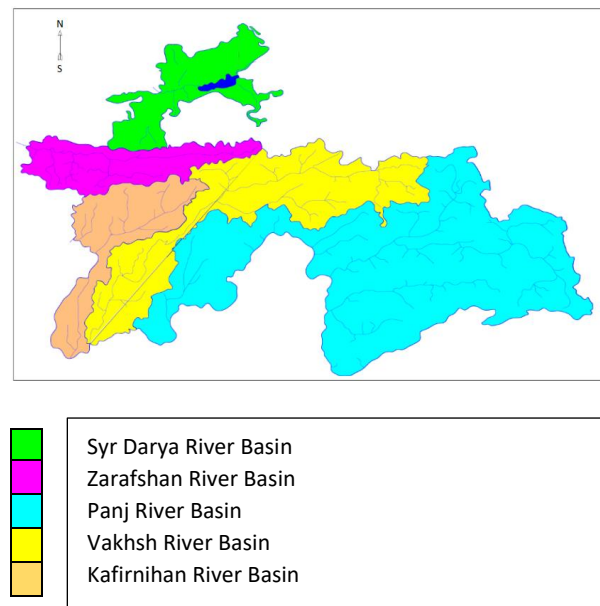
29. The demo cases included here outline the notable advances and reform dynamics that are worth considering in promoting comprehensive river basin and water governance reforms, one with a focus on a specific country (Tajikistan) and the other on a subregion as a whole (Aral Sea basin).

Demo case 2: Water sector reforms in Tajikistan

30. The 2000 Tajikistan water code was the first legal enactment among the countries of Central Asia to explicitly incorporate important elements of the basin approach and inclusive water governance, such as river basin organizations and water users' associations, in the framing of comprehensive water sector reforms (Republic of Tajikistan, 2000). This initial framework was gradually advanced by adopting more specific laws on water users' associations in 2006 (Republic of Tajikistan, 2006) and 2020 (Republic of Tajikistan, 2020a). Water users' associations and federations in Tajikistan are widely supported as community-based organizations to shape the basis for inclusive multilevel water governance in the country as a whole.

31. After the adoption of the 2000 water code, it took 15 years for Tajikistan to sufficiently mature and develop a comprehensive water sector reform programme for 2016–25 (Republic of Tajikistan, 2015). This program made it possible to raise both the legal and the policy frameworks of the country to the next level in 2020, when the Government of Tajikistan enacted a new water code (Republic of Tajikistan, 2020b). With all this in place, Tajikistan plans to roll out a fully operational institutional infrastructure for advanced multilevel governance and management of its newly delineated five river basins by 2026. These river basins will be managed by river basin and sub-basin authorities in close consultation with multistakeholder basin councils on the basis of integrated river basin management plans.

Figure 3. The newly delineated river basins in Tajikistan



Source: Retrieved and adapted from **Tajikistan Ministry of Energy and Water Resources**. 2023. *Реформа водного сектора Таджикистана — Министерство энергетики и водных ресурсов Республики Таджикистан*. In: *Tajikistan Ministry of Energy and Water Resources*. https://www.mewr.tj/?page_id=447

Demo case 3. Transboundary water cooperation in the Aral Sea basin

Central Asia's regional water cooperation, initiated over 30 years ago, stands as a successful example of multilateral water governance. The collaboration, now operating at a high intergovernmental level, enables consensus-based decision-making on regional water matters, effectively managing the remnants of the Aral Sea and facilitating regular discussions on water allocations and reservoir operations (Ziganshina and Sehring, 2023).

VI. Conclusions and implications: institutional requirements for effective multilevel water governance

32. Successful multilevel water governance, vital in agriculture and food security, relies heavily on robust institutional prerequisites. These encompass legal frameworks, financial schemes and monitoring systems, among others. According to prominent sources like the OECD (2011) and FAO (2023), coordinated efforts involving governments, economic sectors and civil societies are vital to managing water resources sustainably. There is an emerging consensus on the necessity for global-scale water governance, considering the escalating scarcity of freshwater resources aggravated by climate change and increased agricultural demands (Global Commission on the Economics of Water, 2023).

33. Insights from case studies in Europe and Central Asia accentuate the mutual benefits and contributions to advancing inclusive, multilevel water governance. Key aspects include:

- **Steering centre for design, coordination and facilitation of comprehensive water sector reforms:** This is probably the most important success factor for regionwide economic reforms. For example, with respect to river basin reforms in the European Union, the role is collectively performed by the supreme institutions – the commission, parliament and council of the European Union – that initiated the whole reform process, starting from the development and adoption of the European Union-wide Water Framework Directive and a complete suite of guidelines and logistical, financial and feedback arrangements and mechanisms to steer, facilitate and closely track the entire reform process. Similarly, in Central Asia, the countries sharing the key rivers of the Aral Sea basin have been long benefiting from effective water governance arrangements.
- **Legal and policy frameworks:** Developing strong legal and policy frameworks to guide reforms in specific subregions.
- **Institutional mechanisms:** Creating effective institutional mechanisms to foster coordination and collaboration at various governance levels.
- **Financial arrangements:** Ensuring sufficient financial resources and combining national, regional and user contributions for implementing various projects, including infrastructure development and environmental restoration.
- **Information, monitoring and evaluation systems:** Implementing robust monitoring and evaluation systems for adaptive management strategies.
- **Agriculture and food security:** Prioritizing agriculture and food security, with an emphasis on meeting the needs of farmers and the agricultural sector, facilitating technology adoption, and enhancing adaptive capacities to water stress and climate change.

VII. Challenges and opportunities for consolidated water governance reform

34. While institutional reforms are essential for the emergence of effective multilevel water governance, they also present challenges and opportunities for the countries initiating such reforms, as exemplified by the reform dynamics in the Europe and Central Asia region. These are briefly summarized below.

- **Challenges:** One of the key challenges is the need to strengthen institutional capacity and coordination among different levels of governance. For instance, in Central Asia and the Caucasus, the legacy of centralized governance systems poses challenges in decentralizing water management and engaging local stakeholders effectively. Additionally, a lack of operational and historical data to inform and improve decision-making and information exchange and limited financial resources and technical expertise further hinder the implementation of comprehensive water governance reforms.
- **Opportunities:** Institutional reforms provide opportunities to build capacity and share knowledge. The demonstrated cases suggest that countries undertaking comprehensive water sector reforms benefit greatly from technology, innovation and capacity-building initiatives complemented by financing that, among other things, enhance the understanding and implications of inclusive water governance for meaningful stakeholder engagement. Similarly, in Central Asia, regional water cooperation initiatives, such as the International Fund for Saving the Aral Sea, effectively contribute to regular knowledge exchange, capacity and trust building among countries facing similar water governance challenges.

35. In conclusion, comprehensive river basin and water governance reforms necessitate robust institutional foundations. While the countries of Europe, the Caucasus and Central Asia have made notable efforts, challenges persist. To support ongoing reforms, the following actions are recommended:

36. For the countries of Europe, the Caucasus and Central Asia:
- **Strengthen institutional collaboration:** Enhance intraregional cooperation. Focus on harmonizing legal frameworks and promoting mechanisms for consistent water governance.
 - **Promote integrated approaches:** Aim for cohesive land and water management strategies, ensuring the participation of all stakeholders.
 - **Secure adequate financing:** Identify sustainable financing mechanisms to support local water governance initiatives.
 - **Embrace climate resilience:** Prioritize water use efficiency, productivity and sustainable farming to address climate change's impacts on water resources.
 - **Ensure transparency and accountability:** Implement transparent water governance mechanisms that emphasize public participation, especially involving small family farmers.
37. For FAO's involvement:
- **Enhance collaboration:** Foster platforms for dialogue, knowledge sharing and joint decision-making among countries, regions and stakeholders. Assist in the development of digitalized agriculture and monitoring systems.
 - **Invest in capacity building:** Allocate resources for capacity-building programmes in water management. Encourage cooperation among countries to share expertise and best practices.
 - **Support financial efforts:** Explore and promote innovative financing and water stewardship models, involving public-private and international collaborations.
 - **Champion climate resilience:** Assist countries in understanding the broader impacts of climate change on their water resources. Support the creation of climate adaptation strategies and promote water efficiency measures.
 - **Promote governance transparency:** Assist countries in strengthening their enforcement mechanisms and ensuring compliance with water-related guidelines.

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