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Article

Transboundary Water Governance: Legal Frameworks and Political Realities

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Abstract: Transboundary rivers and aquifers are vital to regional development, environmental sustainability, and geopolitical stability, yet their governance poses complex legal and political challenges. The nature of the overlap between international law and political realities is critically reviewed in this essay concerning the management of international water. With the references to international conventions and principles, like the principles of fair usage and the obligation to avoid harm, it shows the relation to their application, disputes, or alterations in reality. Explaining three major differences in the power distribution that are considered to be critical determinants of cooperation outcomes, the article also draws its conclusions through comparative case studies carried out on the river basins of the Indus, Nile, Mekong, and Danube. The analysis reveals that legal instruments, although necessary, should be supplemented with political will, capacity of institutions and inclusive governance in order to have sustainable and equitable water management. The conclusion highlights the necessity of a resilience-based flexible framework which responds to the socio-political complexity of transboundary water systems in the context of increasing environmental pressure.

Keywords: Transboundary Water Governance**,** International Water Law**,** Hydro-politics**,** Power Asymmetry**,** River Basin Management

1. Introduction

Water resources are the most crucial natural assets maintained through human life, ecosystems, and economies. However, over 60 per cent of the global freshwater runoff traverses national boundaries and, as a result, the management of international shared water resources is among the most intricate and politically obtrusive issues in worldwide environmental governance. The rivers (i.e. the Nile, Indus, Mekong, and Danube) flow through several nations with varying interests, capabilities, and possible histories, leading to complex governance systems and frequently controversial governance systems. In that regard, the significance of transboundary water governance has peaked as a subject of international relations, in exclusive rivalry avoidance, and sustainable development [1].

Transboundary water governance is a policy, legal, institutional, and practice that dictates how nations manage the shared watercourses. By nature, it attempts to tame the tug of war between upstream and downstream, agricultural and industrial needs of nations and those of regions, and to achieve an ecological viability of the river basins. The management of these resources does not just deal with technical and environmental reasons, but it is full of deep-rooted elements of legal, political, and geopolitical reasons. Sovereignty, issues of territorial control, historical rights and imbalanced power relations tend to dominate the development of an agreement, negotiating or taking actions against it [2,3].

The international community has, over the last few decades, come up with a collection of legal norms that have been designed to enhance cooperation and sharing of transboundary water resources in a fair manner. Helsinki Rules (1966), the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses (1997) and the UNECE Water Convention (1992) have established the standards of behaviour known as: equitable and reasonable utilisation, no significant harm, and prior

notification. These legal frameworks create a basis on which cooperation can occur, but in practice, in most cases, they are ineffective because the enforcement mechanisms are weak or there is a problem of institutional capacity, or geopolitical differences come into play [4].

Of utmost importance is that the legal architecture is not in an empty vacuum. Political contingencies, such as past animosities and national security interests, development necessities and imbalances in power, all have a drastic impact on how states interact with these sets of legal principles. As an example, upstream nations might wish to exercise as much sovereign control over their water resources as possible, whilst downstream nations resort to historical or environmental damage to question upstream actions. Very often, more powerful countries or countries with greater political influence can influence the conditions of negotiations or postpone them, which results in the creation of situations that might not be quite fair and sustainable. Therefore, legal norms are not the only way to look at transboundary water governance, as it is also a matter of political bargaining and political negotiation and changing coalitions [5].

What compounds this complexity is the emergent issues of climate change, population, urbanisation and changing patterns of land use, which are all increasing the strain on fresh water systems. Specifically, climate change is modifying hydrological regimes, heightening the number and intensity of floods and droughts, and increasing uncertainty. Such stress gives cooperative water governance an imperative, and at the same time adds to the difficulty of arriving at any agreements and enforcing them. Creativity, flexibility and inclusive management systems are more urgent than ever before.

This review paper focuses on a critical review of the integration of law and politics in transboundary water governance. It aims at providing the synthesis of some essential international legal instruments, the analysis of the way the specifics of the distribution of political power influence the water-sharing agreements, and the application of the lessons based on chosen world case studies. Finally, this paper will hold that although legal systems do play a vital role in offering outline and direction, they can only work as a result of the political will, institutional capacity, as well as trust between the riparian states. Going ahead, regulating the shared water resources should be governed by both normative principles and pragmatic knowledge of the political terrain where these principles are nested [6-9].

2. Legal Frameworks for Transboundary Water Governance

Legal regimes can be vital in organising the cooperation, lessening the hostility, and designing sustainable use of shared water sources across the borders at a national level. These structures are the basis of water-sharing agreements, dispute settlements, as well as institutional arrangements between riparian (river-sharing) states. Nevertheless, their power is influenced through various political, historical and hydrological backgrounds. This subdivision discusses the most important international instruments, customary rules, regional treaties, and implementation issues existing in the sphere of transboundary water management that influence the legal framework of such domain [10].

2.1. Main International Agreements and Conventions

2.1.1 The Helsinki Rules (1966)

The Helsinki Rules on the Uses of the Waters of the International Rivers, adopted by the International Law Association (ILA), were the first major initiative in codifying the rules concerning equitable water sharing. The regulations pay particular attention to:

- The fair and just use of common waterways.
- Not to adversely affect other riparian states severely.
- The prior notification and consultation principle.

The Helsinki Rules are not legally binding, but they have important effects on subsequent legal developments and state practice [11].

2.1.2 Convention by the UN Watercourses (1997)

With an official name of Convention on the Law of the Non-Navigational Uses of International Watercourses, the document adopted by the United Nations is the international legal framework on transboundary water governance, the most popular in the world. Among the key principles, there is:

- Fair and sensible use and involvement.
- Duty not to harm greatly.
- Obligation to cooperate, such as exchanging information and consultation frequently.

- Informing about the introduced plans, which could have some negative outcomes.

Although adopted in 1997, the Convention did not come into force until a great number of ratifications occurred in 2014. Although it is very important, not all the major watercourse states have ratified it yet, including Turkey, China, and the U.S., to make it universally applicable [12].

2.1.3 Water Convention UNECE (1992)

The Europe region was the first region to be addressed, as the Convention on the Protection and Use of Transboundary Watercourses and International Lakes were adopted initially under the UN Economic Commission for Europe (UNECE). It has now become accessible to other countries across the globe since 2016. Among the features are:

- Cases of preventing, controlling and reducing transboundary impacts.
- Demand for bilateral or multilateral regimes and common institutions.
- Emphasis on monitoring, sharing of data and participation of the populace.

UNECE Convention is regarded to be more institutionalised and implementation-oriented compared to the UN Watercourses Convention [13].

2.2. Customary International Law

Customary international law is very important in the regulation of state actions, and this is done in the absence of agreements or treaties that are ratified. Based on regular and universal practice considered law (opinio juris), it has such principles inside it:

- The equality of states and territorial integrity.
- Duty to avert transboundary harm (no-harm rule).
- Fair exploitation by such factors as geography, hydrology, population requirements and socio-economic conditions.

In dispute resolution, customary law has frequently been used where there are no formal agreements or they are ambiguous [14].

2.3. Basin Level and Regional Agreements

In addition to international conventions, many regional and river basin accords modify governance to the local and regional conditions. They can be such as bilateral treaties to bilateral treaties to multilateral basin organisations. There are such prominent examples as:

- **Indus Waters Treaty (1960):** India and Pakistan; sponsored by the World Bank. Puts rivers on a geographic basis and provides a system of dispute settlement. A long-lasting legal contract, even though political differences persist [15].
- **Nile Basin Initiative (1999):** It is a multiparty association of the Nile Riparian nations. It is not a binding treaty, but has led to the development of technical collaboration and dialogue, even though there are also areas of legal disagreement (e.g. the Cooperative Framework Agreement) [16].
- **Mekong River Commission (1995):** It was created by Laos, Thailand, Cambodia, and Vietnam based on the Mekong Agreement. China and Myanmar are not full members; hence, they restrict the authority of the Commission upstream [17].
- **Danube River Protection Convention (1994):** A Legal and institutional framework of 14 countries and the European Union. It shows how the legal harmonisation and the political integration (e.g. through the EU) can augment transboundary water governance [18].

2.4. Implementation Issues and Gaps in the Law

Even though there are legal systems in a given country, there are still some weaknesses in practice:

2.4.1. Weak Enforcement Mechanisms

The majority of the international water laws do not have binding enforcement powers or the provision of legal force. International obligations are usually subject to political goodwill, diplomacy, or third-party arbitration, which are both limited and one-sided.

2.4.2. Legally Asymmetrical Capacity

Developing nations might have no technical, legal or financial capacities to negotiate or impose water agreements equally with the more influential states.

2.4.3. Vagueness and Double-meaning Language

Such words as equitable or significant harm are arguable and can be used selectively. The vagueness in the law may create the opportunity for easy cooperation as well as generate contestation.

2.4.4. Overlap and Fragmentation

Settlements can be made on numerous agreements and institutions on one and the same basin, and they may be redundant, inconsistent or have jurisdictional unclarity.

Transboundary water law, used as a scaffold, establishes the cooperation and dispute settlement systems and provides guidelines on laws governing transboundary interactions among the riparian states. Such general agreements on international waters as the UN Watercourses Convention and regional agreements may provide shared standards and avenues of negotiation. Their effectiveness is, however, limited by non-ratification, the ambiguities of legal enforcement and enforcement, as well as power asymmetries. To fill those gaps, it increasingly becomes clear that there is a need to integrate flexible, adaptive, and inclusive legal mechanisms in a way that could adapt to the changing socio-political and ecological realities [18].

3. Political Realities and Power Asymmetries

Although legal rules provide the foundations of the normative approach to transboundary water management, reality tends to reflect the political reality rather than the legal obligations. Such political forces may support or oppose cooperation based on the balance of power, states' interests, national factors and geopolitics at large. This part identifies the interactions between politics and water law, using the hydro-political power asymmetries, national interests, domestic politics, and the presence of external factors in the determination of outcomes of water governance.

3.1. Asymmetrical powers and Hydro-Politics

3.1.1. Upstream-Downstream Dynamics

In the greater number of transboundary basins, there is an inherent lack of symmetry between upstream and downstream countries. States that have jurisdiction over headwaters have a physical advantage in regulating water flows compared to downstream ones, which are usually more susceptible to being affected in quantity or quality. Such imbalance can result in unilateral activities of the upstream states (e.g. the construction of dams, the diversion of waters), which might cause tensions or engage reactive diplomacy of the downstream states [19].

3.1.2. Hydro-Hegemony

Hydro-hegemony (Zitoun and Warner, 2006), the concept developed by Zeitoun and Warner, is used to explain that the powerful riparian states employ force, discourse domination, and resource superiority to influence the forms of water-sharing to their liking. Hydro-hegemony may be done in the form of:

- Coercive force (military or economic coercion)

Structural power (knowledge, financing or institutional control)

- Discursive power (naming the story of the use of water, e.g., “development” vs. “rights”)

As an example, Egypt has long been a politically dominant hydro-hegemon on the Nile Basin and China in the Mekong, which tend to oppose multilateral frameworks or the interests of downstream riparians.

3.2. Geopolitical Tensions and Regional Hostilities

Water governance is not something that exists outside the larger geopolitical conflicts. Water negotiations all too frequently include the exacerbation of historical conflicts, territorial tensions and the failure of diplomacy, causing issues of technical collaboration to become political games.

- **India, Pakistan (Indus Basin):** Water is now intertwined with the issue of India, Pakistan, Kashmir and cross-border skirmishes that have taken place since the signing of the Indus Waters Treaty.

- **Turkey, Syria, Iraq (Tigris Euphrates):** Turkey plans to build dams on the upper reaches of 3 rivers as part of the Southeastern Anatolia Project (GAP), which has reduced tensions with downstream countries of Iraq and Syria, who argue that Turkey is depriving them of enough flow.
- **Ethiopia-Egypt-Sudan (Nile Basin):** The development of the Grand Ethiopian Renaissance Dam (GERD) by Ethiopia has resulted in years of successful negotiations with Egypt, which believes that the dam threatens its water security.

These incidents demonstrate that on the one hand, water can serve as a victim and a roadway of geopolitical confrontation, whereas on the other hand, it does not allow much space for overall cooperative governance [20].

3.3. Domestic Political Forces

Domestic politics also affect water policies and transboundary negotiation, and can contain:

- **Nationalism and national identity:** Water has frequently been turned into a nationalist issue in a domestic context as nations turn water rights into a sovereignty or national identity issue.
- **Developmental priorities:** Infrastructural schemes such as dams and irrigation schemes are often being advanced as the insignias of modernisation and state-building.
- **Type and regime stability:** authoritarian regimes can unilaterally exercise their power or suppress opposition on cross-border calls, whereas democracies may be limited by the opposition or the law.

As in the case of Ethiopia, where Iran has been presented as a unifying national project, it is sometimes the case in Pakistan that the water negotiations with India are sometimes staged as a threat to national sovereignty. Domestic factors may make diplomacy awkward, postpone treaties or lead to an abrupt change of policy after a change in top leadership [21].

3.4. Third Party and External Actors' Role

The role of external actors like donor agencies, multilateral banks and international organisations is remarkable in many basins. Their interventions may be facilitating and troublesome:

3.4.1. Facilitation and Mediation

Third parties may assist in the development of trust, infrastructure financing, or broker deals. One of the landmark examples is the Indus Waters Treaty mediated by the World Bank. The African Development Bank, World Bank, and bilateral donors have been helping the Nile Basin Initiative in assisting in strengthening the institutional capacities.

3.4.2. Conditional and influencing

The donors can put the circumstances of government or openness, and this would either make the accountability better or create frustration. Geopolitical interests may also be carried by outside interference where strong nations support particular nations based on their interests (e.g. American interest in Egypt, Chinese control in the upstream in Asia).

3.4.3. Non-Governmental Organisations and Civil Society

The non-state actors are environmental NGOs and transnational networks, and they can change the discourse about water, promote the rights-based approach, and organise communities. Nonetheless, they are detached when it comes to access to decision-making in most of the transboundary governance environments [22].

3.5. Shadow Politics and Informal Politics

Informal arrangements to a large extent play a decisive role in many instances compared to formal treaties in conjunction with the behind back diplomacy and personal networks. These may comprise:

- Negotiations behind the scenes in order not to be exposed or challenged.
- Elite networks and political patronage, which translates to who it serves in the cross-border projects.

- Non-compliance and water grabbing, the practice of using legal vagueness or ineffective regulation by those with the power to operate against shared waters in a unilaterally exploitive fashion.

These unofficial political ways of doing politics make it difficult to enforce legal norms and disrupt the idea of openness and fairness.

The exercise of power, whether power asymmetries and domestic politics, or geopolitical rivalries and informal practices, leaves deep marks on the transboundary water governance outcomes. Even the best legal constructs have been constrained by the capacity of functioning within this turbulent political landscape. As such, any viable policy of governance must include a sophisticated understanding of power relations, interests and political incentives that influence state performance [23].

4. Case Studies and Comparative Insights

In order to see how legal frameworks and political realities interact in transboundary water governance, it is necessary to look at real-life examples. Case studies provide information on how international principles have been interpreted into practice, or rather, how geopolitics at the local level, institutional capacities, and asymmetries of power influence cooperation or conflict. This part gives us four opposing case examples, which are the Indus, Nile, Mekong and the Danube rivers basins. These are two possible cases that represent different governance systems, legal frameworks, and political processes, and therefore, it is possible to draw certain comparisons and draw certain lessons [24].

4.1. Indus River Basin: legal Strength in Political enmity

Context

Indus River Basin is the landmass occupied by India and Pakistan, two nuclear-armed countries that have a history of fighting even wars. Nevertheless, this animosity has not disabled the Indus Waters Treaty (IWT), negotiated by the World Bank and agreed upon in 1960, from holding up rather well.

Legal Framework

Whether this could be done using IWT, which is a bilateral agreement that apportions the six rivers belonging to the Indus system between the two states.

It awards the three rivers flowing in the eastern side (Ravi, Beas, Sutlej) to India and the three rivers flowing in the western side (Indus, Jhelum, Chenab) to Pakistan.

The treaty contains elaborate terms of water sharing, information sharing and conflict management in the form of a Permanent Indus Commission, review by neutral experts and international arbitration.

Political Realities

Although the treaty has been honoured even during times of armed conflict, it has been proven to be strained over the past years.

Indian politics has argued that the treaty should be re-staged given the security tensions.

- Pakistan cites that India has breached the no-harm clause of the treaty by building upstream hydro power projects.

Insights

An effective legal system, which is facilitated by the third-party duties of reconciling differences and settling disputes, enables the IWT to remain resounding even in the context of acute political competition. Nevertheless, to sustain it on long-term levels, the political will and mutual trust are essential [25,26].

4.2. Nile River Basin: Humidification and Realignment of Power

Context

The Nile River is the longest in the world, and it flows through 11 countries, although Egypt and Sudan have always controlled it (especially its downstream governance). This has been challenged by the construction of the Grand Ethiopian Renaissance Dam (GERD) by Ethiopia, an upstream country.

Legal Framework

Both Egypt and Sudan used to be reliant on the colonial era agreements (1929 and 1959) that assured them the majority of the Nile water and gave them a deciding vote on upstream projects.

In 1999, the Nile Basin Initiative (NBI) was established as an entity to lead to dialogue and cooperation between riparian states.

In 2010, some of the countries upstream of the river signed the Cooperative Framework Agreement (CFA) to create a new legal foundation for sharing water equitably; however, both Egypt and Sudan did not sign.

Political Realities

The GERD is one of the cauldrons of regional diplomacy, and Egypt has cautioned that it poses a menace to its water security.
Negotiations, which the African Union and the U.S were the mediators between, have not agreed on a binding agreement under the law.
Ethiopia claims its right to develop and denies historical treaties, which are treated by them as unwarranted.

Insights

The case of Nile shows that legal fragmentation and unsuccessful cooperation may be a result of the contested legitimacy of the law and the transition of regional dominance. The flow of governance in the basin is now politically fixed as opposed to the legally settled opinion [27].

4.3. Institutional Presence: Mekong River Basin No Full Participation

Context

The six countries cut across the Mekong River: China, Myanmar, Laos, Thailand, Cambodia and Vietnam. The agriculture, fisheries, and hydropower in Southeast Asia rely upon it [28].

Legal Framework

In 1995, the Mekong Agreement was introduced, which formed the Mekong River Commission (MRC) between the four countries of the lower Mekong (Laos, Thailand, Cambodia, and Vietnam).
The MRC facilitates the sharing of data, coordination of plans and dispute avoidance.
Neither China nor Myanmar is a member, but China is a dialogue partner and is having more and more involvement in the Lancang-Mekong Cooperation Framework.

Political Realities

- When China constructed dams in the upstream Lancang (upper Mekong), its impact on the flows downstream is very high, but China is not bound by the regulations of the MRC.

With the investment of China, Laos has also followed a so-called battery of Southeast Asia policy, with many dams constructed with little consultation.
Such issues as sediment loss and ecological damage have been raised by Vietnam and Cambodia.

Insights

The case on the Mekong highlights the weaknesses of regional institutions of law, where major players such as upstream actors are either missing or unilateral. It also notes the ability of outside economic and political forces (in this case, China) to circumvent official systems of governance [29].

4.4. Danube River Basin: The European Legal-Political Synergy

Context

The Danube is the second-longest river in Europe, which flows through 19 countries, some of which are EU states.

Legal Framework

The Danube River Protection Convention (1994) established the International Commission for the Protection of the Danube River (ICPDR).

- The ICPDR hosts water quality, flood protection and sustainable use policies.
- It is also harmonious with the EU Water Framework Directive (WFD), which requires an integrated river basin management approach and involvement of the general public.

Political Realities
The integration of the EU has improved environmental governance and the harmonisation of law.
The relatively stable political relations, the ability of institutions, and the accessibility of the EU funds facilitate cooperation.

- Conflicts are addressed in a legal-administrative way instead of facing a political contest.

Insights

The Danube has been a good example of how practical transboundary cooperation could be achieved with the help of regional integration, rule-based governance, as well as multi-level institutions. Law is supported by political harmony with common environmental purposes [30].

4.5 Comparative Synthesis of Lessons

Basin	Legal Strength	Political Conflict	Upstream Power	Key Challenge
Indus	High	High	Moderate	Legal endurance amid rivalry
Nile	Weak/Contested	High	Rising	Disputed treaties, weak enforcement
Mekong	Medium	Medium	High	Non-membership of the key upstream actor
Danube	High	Low	Shared	Institutional harmonization

Cross-Cutting Insights

- **Legal strength does not guarantee cooperation** unless supported by political will and institutional legitimacy.
- **Upstream-downstream power asymmetries** are a critical determinant of negotiation outcomes.
- **Third-party mediation and donor support** can facilitate cooperation but may be limited by sovereignty concerns.
- **Regional organisations** (like the EU) can enhance governance through integrated legal and political frameworks [31,32].

5. Conclusions

Transboundary water governance is a subject surrounded by law, politics and ecology. Although international legal norms have gone far in establishing legal norms reflecting on equitable use, no significant harm and a duty to cooperate issues, their efficiency is usually dimmed by political facts on the ground. In this review, it has been pointed out that legal norms can never stand alone as the sole means of collaborative and sustainable cross-boundary water management. As discussed in the case studies, Indus, Nile, Mekong, and Danube show a variety of results that emerge out of a varied combination of legal instruments, institutional set-ups, and political scenarios. The Indus Waters Treaty can be seen as an unusual instance of legal durability amid regions that are likely to experience conflict, and the Nile Basin highlights the pitfalls of challenged legal authority and changing power relationships as a barrier to cooperation. The view that partial institutionalisation is flawed by upstream unilateralism can be seen in the Mekong, whereas serious political alignment and regional integration leading to positive legal institutions and cooperation results can be seen in the Danube.

One that keeps emerging throughout the cases is the importance of asymmetries of power. The bargaining power tends to be high in the hands of upstream states, whereas the downstream countries depend on the legal norms and diplomacy as a means of safeguarding their interests. Where there is a concentration of power, standing in law becomes an instrument of validity as opposed to a check on each other. On the other hand, cooperation stands a high chance of success when power is lessening or distributed in parts where mutual interests or controlled by institutional checks.

The new challenges faced in the world, which can be climate change, population growth and rapid urbanisation, as well as ecological degradation, further add strain to the issue of adaptability, inclusion, and resilience in governance mechanisms. Legal regimes of the world have to vary to embrace the uncertainty, which should not only be state-to-state interaction but also involvement of the stakeholders, environmental safeguards and socio-economic equality. There are opportunities in the future based on the principles of integrated water resources management (IWRM), ecosystem-based governance, and polycentric cooperation.

With these considerations, one should aim further to work on:

- Finding a compromise between the law and politics through creating adaptable agreements that will change according to hydrological and political circumstances.

- Strengthening institutional capacity and particularly in under-resourced basins, to track compliance and adjudicate or facilitate long-term cooperation.
- Enhancing inclusive governance that utilises civil society, indigenous peoples and local stakeholders in decision-making.
- Enhancing regional and global institutions to bring legal and diplomatic support to basins where there is enormous asymmetry or potential for conflict.

Finally, transboundary water governance should not only be viewed through the lens of technical and legal issues, but through the lens of a highly political process imbued with power issues, questions of justice, and sustainability. It is important to understand how complicated this is and plan the process of governance in such a way that takes note of this complexity so that not only are the shared rivers of the world sources of peace, but they are also sources of cooperation.

Conflicts of Interest

The authors declare no conflict of interest.

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