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STRENGTHENING INTEGRITY IN WATER ALLOCATION SYSTEMS IN THE FACE OF CLIMATE CHANGE

WIN Water Integrity Network 20 YEARS

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About WIN

The Water Integrity Network (WIN) advocates for integrity in the water and sanitation sectors to reduce corruption risks and improve services, for the benefit of all. Access to safe water and sanitation are fundamental human rights. Our goal is to contribute to the realisation of these rights, as well as ensure the sustainable use of water resources in the face of the climate crisis.

https://www.waterintegritynetwork.net

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Cover image: Somenath Mukhopadhyay, Woman irrigating her mango plantation in Jharkhand (India), WIN photo competition entry 2012

CONTENTS

PART 1: WATER ALLOCATION SYSTEMS AND INTEGRITY

1.1 INTRODUCTION

The impact of climate change on water availability, coupled with increasing demand for water, makes the need for effective and adaptable water allocation systems more pressing than ever. Such systems must ensure sufficient water to fulfill the human rights to water, food, and an adequate standard of living. They must also ensure sufficient water to support broader economic and development needs, including small and large-scale agriculture, industry, energy generation, and commercial purposes—while reserving sufficient water for ecosystem functioning. Growing populations and higher standards of living demand greater water use. Climate change is profoundly altering rainfall patterns, impacting water availability and water quality and amplifying already significant competition for water, imposing a new set of challenges for the sustainable and equitable allocation of water.

Each country creates and modifies its water allocation systems through many years of use, reform and overhaul. A water allocation system is the combined institutional, legal, and operational framework that governs the distribution of water resources among competing users and ecological needs, within a specified catchment or a defined administrative region. It answers the fundamental questions: who has the right to use water, what priorities apply when water is scarce, how trade-offs between economic development, social equity, and ecological integrity are made, and what principles guide decision-making. Water permitting, which is the core focus of this paper is the most commonly used administrative tool for the operationalisation of a water allocation system.

Water allocation, like other development-related discourses, is considered in terms of desired outcomes. Water allocation systems are created and implemented to embody a set of values, depending on the priority given to social and climate justice, environmental sustainability and economic development. Which values are prioritised in water allocation systems determines who benefits in access to water, but what is set out on paper and what happens in practice may significantly change who the actual beneficiaries are.

The effectiveness of various elements and steps in an allocation system that impacts on how well the desired outcomes are achieved. While many people involved in water allocation are doing their best with limited knowledge, capacity and tools, effectiveness also relies on design, structures, procedures and controls operating to mitigate the misuse of power.

This paper seeks to answer one overarching research question: What are the key integrity risks in water allocation systems in the context of new challenges emerging due to climate change?

Sub-questions include:

1. How can integrity be considered in terms of water allocation at a systemic level? How does this relate to procedural justice?

2. What are the key integrity risks in administering and managing water permit systems in the face of climate change?

3. What measures are needed to improve integrity in water allocation systems and water permit systems, in the context of uncertainty imposed by climate change?

This paper is based on a review of academic and grey literature, as well as semi-structured key informant interviews with 11 experts working in different regions of the world. Informed consent was given for all interviews, with anonymity provided as requested. Both authors bring extensive experience to the research topic. In a senior South African government position, Schreiner played a key role in formulating the government's water allocation policy, among others, has done extensive work on water allocation systems, and has continued to draw attention to issues of integrity. Galvin has worked on social justice-related issues as a leader and activist from civil society.

It is intended to contribute to improved knowledge and practice on integrity risks and risk management in water tenure and water allocation. It offers a basis for government officials, international organisations and local civil society groups to consider aspects of integrity risks in water allocation with the aim of influencing policy and practices, such as the FAO dialogue on water tenure.

The paper considers water allocation in diverse ways: systemically, conceptually, practically and exploratory. These provide a basis for practical recommendations. The paper is structured as follows:

- Part 1 considers water allocation as a system that faces—and poses—integrity challenges. It provides an overview of the integrity and water allocation systems, including consideration of the integrity and social justice nexus, as well as administrative and procedural justice.

- Parts 2 and 3 are conceptual, creating a basis for understanding how integrity flows from procedural justice to administrative justice to water allocation mechanisms, Part 2 examines briefly issues of integrity in transboundary water allocation and provides some recommendations for enhancing integrity in this context. Part 3 sets out the nature of national water allocation systems and identifies integrity issues across allocation policy, legislation and allocation system design. It also raises issues of procedural justice and integrity risks.

- Part 4 is practical, identifying integrity risks in the administration of water permits. It focuses specifically on integrity in water permit systems and the various stages of the permit application and approval system.

- Part 5 explores lessons from practitioners' experiences in particular contexts. It sets out real world experiences of integrity failures in water allocation systems, drawn from the combination of desktop research and interviews with practitioners and experts across several countries.

- Part 6 provides recommendations for action to improve integrity in water allocation systems with a focus on water permitting systems.

1.2 TWO LEVELS OF INTEGRITY

Integrity in water allocation operates at two levels: in the characteristics of water allocation system itself and integrity in the administration or the procedures in use of the system. Each allocation system has characteristics that can create or close space for integrity risks to arise. The nature and severity of these risks may change in response to climate uncertainties and pressures. Separate from this, there are integrity risks in the day-to-day administration or the procedures used in applying the system.

In the context of water resources management, WIN defines integrity as the use of vested powers and resources ethically and honestly for the equitable and sustainable management of water resources. Integrity is implicit in the human rights obligations, explicit in administrative justice laws of many countries, and operationalised in the governance principles of transparency, accountability, participation and anti-corruption.

Integrity is a critical element of an effective water allocation system that controls the water use of medium and large users, protects the water rights and uses of marginalised communities and ecosystems, promotes water and climate justice and manages transboundary water justly. It answers the fundamental questions: who has the right to use water, what priorities apply when water is scarce, how trade-offs between economic development, social equity, and ecological integrity are made, and what principles guide decision-making.

After raising systemic integrity issues in the following section, the paper focuses on understanding integrity risks and mitigation options in the allocation of water with a particular focus on integrity in water permit systems and with a lighter consideration of integrity in transboundary water allocation.

> *Integrity covers many aspects. To start with, there is the integrity of the government versus the user, or the user versus the government, right? So, the user may say the government is corrupt and wants me to pay a bribe. Or the government gives the water, but the user is fraudulent and takes much more water than is allowed. So that's one arena. Another arena is amongst water users. In an irrigation district they should be good neighbours, but one of the classical tensions is between the upstream and downstream farmers. And there's a third dimension to integrity, which is the sustainability and social equity question. So in South Africa, in Brazil, in Australia, there are old injustices that need to be addressed and how to do that is not easy.*
> (Alaerts interview, 10 July 2025)

1.3 THE INTEGRITY AND SOCIAL JUSTICE NEXUS

Social justice and integrity in water allocation are both concerned with how power, resources, and benefits are distributed. They ask whether decisions serve the public interest rather than narrow or private interests. Integrity refers to decision-making that is honest, transparent, accountable and free from corruption, while social justice focuses on fairness in access to resources and in the distribution of costs and benefits, especially for marginalised or vulnerable groups. In water allocation, weaknesses in integrity translate into social injustice and inequitable outcomes.

When water rights, permits or concessions are allocated through opaque or overly discretionary processes, powerful actors are more likely to secure preferential access, while smallholders, informal users, women, indigenous peoples, or marginalised downstream communities may be excluded. Corruption, political interference, or elite capture can result in over-allocation to industry or large agriculture, reducing water availability for basic needs or livelihoods. In this way, integrity failures directly undermine social justice.

Conversely, socially unjust allocation systems are often a sign of poor integrity. Persistent disparities in access to water for domestic or productive uses may indicate that allocation rules are not being applied consistently, that customary rights are ignored, or that regulatory agencies lack independence. Where laws exist on paper but are not enforced in practice, integrity is compromised and inequities become entrenched.

Social justice also strengthens integrity by increasing legitimacy and accountability. When water allocation processes recognise diverse users, protect basic human needs, and allow meaningful participation, affected communities are more likely to monitor decisions, challenge abuses, and demand transparency. This social oversight reduces opportunities for corruption and arbitrary decision-making.

Finally, integrity-oriented systems are better able to deliver just outcomes over time. Transparent rules, public registries of water rights, clear sustainability limits, and accessible grievance mechanisms help ensure that water allocation adapts to scarcity and climate change without systematically disadvantaging certain groups. In this sense, integrity is not only about preventing harm but about enabling water governance systems that support equitable development, social stability, and long-term resilience. Administrative and procedural justice—fair and inclusive decision-making processes—are a bridge between integrity and social justice.

1.4 INTEGRITY AND ADMINISTRATIVE JUSTICE

Administrative justice is concerned with whether public decision-making and administrative action are fair, lawful, accountable, and reasonably carried out. It includes aspects such as procedural fairness (how decisions are made), substantive fairness (whether the decision itself is just and reasonable), legal reviewability (consistency with law), access to remedies and appeal and transparency and accountability of public officials. It examines whether authorities act within their legal mandate, apply rules correctly, give reasons for their decisions, respect rights, and provide effective remedies when things go wrong.

Procedural justice is about the fairness of a process by which decisions are made, independent of the outcome. Administrative justice asks whether there are lawful, accessible, and fair mechanisms for individuals to get decisions made, challenged, and reviewed by administrative bodies. A process can be procedurally fair—for example, involving consultation and clear steps—but still fails administrative justice if the final decision is unlawful, arbitrary, discriminatory, or grossly unreasonable. Conversely, a technically lawful decision may still violate procedural justice if affected parties were excluded or not informed.

In water allocation systems, administrative justice is reflected in the existence of clear legal frameworks for allocating water, independent and competent water authorities, accessible appeal and review mechanisms, and effective enforcement. It ensures that allocation decisions are not only made through fair procedures, but also result in decisions that are consistent with the law, public interest, and principles such as proportionality and non-discrimination.

Civil servants must make decisions and apply laws, regulations, and government policy "faithfully", upholding the principles of administrative law and public service codes of conduct, whether as an implicit standard in many countries or codified (see for example Australia's public service values, UK Civil Service Code and Canadas Values and Ethics code), or an implicit standard in many countries. When making resource allocation decisions (including water), impartiality is a key requirement. Other requirements include acting in an apolitical manner, integrity, honesty, and objectivity; and seeking the public interest.

Even without the intent to act with impropriety, civil servants' actions can be challenged legally or administratively. Many administrative law systems allow judicial review if a decision is "irrational" or "unreasonable". This is intended to ensure that allocations are consistent, can be explained and can withstand scrutiny or legal challenge.

1.5 PROCEDURAL JUSTICE AND INTEGRITY

Early approaches to water allocation from the 1940s onwards, informed by and alongside social justice research, focused on the distributional aspects of justice, including equity theory and studies of relative deprivation. After nearly 40 years, in the late 1970s and 1980s, there was a shift in focus from distributional justice to procedural justice, understanding that the manner or procedures in which the allocation of rewards or outputs are decided are critical for determining what is just. (Neal et al., 2014)

> *Recognising that the social dilemma of water prioritisation is mainly distributive in nature and that there is no universally acceptable set of rules or justice principles that ensures that water is justly allocated, humans have created a governance system to try to make the process of prioritisation and allocation more just. In other words, we have created a system that emphasises procedural justice as a means to deal with the difficulties of resolving the social dilemmas of distributive water allocation.*
> (Neal et al., 2014)

Procedural justice refers to the fairness, transparency, and inclusiveness of the processes through which decisions are made, rather than the outcomes of those decisions. It is concerned with how decisions are taken, who participates, whose voices are heard, and whether rules are applied consistently and impartially.

In the context of water allocation systems, procedural justice means that decisions about who gets access to water, in what quantity, for what purposes, and under what conditions are made through processes that are open, predictable, and inclusive. This includes clear rules for allocating permits or concessions, opportunities for affected users to participate in decision-making, access to information about water availability and allocation criteria, and mechanisms for appeal or grievance when decisions are contested.

Procedural justice is a key integrity element of water allocation which is vulnerable to abuse of power, elite capture, and corruption. Where allocation decisions are discretionary, opaque, or negotiated behind closed doors, there is a higher risk that water rights will be granted based on political influence, bribery, or favouritism rather than objective criteria. Lack of procedural justice undermines integrity by allowing rules to be bent or selectively enforced.

PART 2:
INTEGRITY IN TRANSBOUNDARY WATER ALLOCATION SYSTEMS

The importance of transboundary allocations is evident: competition between countries over the control of water resources (international rivers, lakes, wetlands or aquifers), which pay no regard for human-made and imposed boundaries, has, in some circumstances, been the cause of international tensions and disputes. Examples include the Nile, Mekong, Colorado, and Danube rivers. In other areas, transboundary water sharing has taken place despite political conflicts being in place. In some areas, water has been used as a weapon of war between countries, and conflict-induced scarcity sits alongside physical and economic water scarcity (Schreiner, 2024). Climate change impacts are putting strain on agreements that were made under a different hydrological regime.

A transboundary water allocation system refers to the legal, institutional, and technical arrangements used by two or more countries to divide, manage and protect shared water resources that cross their political or administrative boundaries.

International agreements provide legal guidance to riparian states on basic norms equitable and reasonable utilisation of the joint water body; the duty to do no significant harm; prior notification and consultation; and the duty to cooperate. These are set out in the UN Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE Water Convention), the Convention on the Law of Non-Navigational Uses of International Watercourses as well as the Draft Articles on the Law of Transboundary Aquifers (UNESCO, 2024).

While not ratified by the majority of countries, the UNECE Water Convention specifies the management of water equitably and reasonably, in a manner that supports sustainable development while balancing countries' economic, social, and environmental needs. It encourages states to establish bilateral or multilateral agreements to achieve this. Many of the world's shared river basins are indeed managed under treaties or agreements, some drawn up many decades ago. Some well-known agreements include the Indus Waters Treaty (India and Pakistan) specifying fixed allocations of river waters; the Colorado River Compact (USand Mexico) that is a volume-based division of flow; and the Nile Basin Cooperative Framework Agreement that attempts to redefine upstream-downstream rights (but which Egypt and Sudan have opposed). Mechanisms that were put in place under colonialism, or 'colonial geopolitical influenced agreements', can contribute to present day controversies such as those in the Nile Basin (Halidu et al, 2025).

According to the UN World Water Development Report (2024), over 3,600 international water treaties and approximately 120 international basin organisations exist to jointly manage shared basins globally. Yet only 32 out of the 153 countries sharing transboundary waters have operational arrangements for water cooperation (covering at least 90% of their transboundary basin area) and there are very few aquifer-specific agreements.

Without a regional guiding protocol or framework, countries face a myriad of problems in sharing water, and supply to some areas may be highly precarious. An interesting example of a regional agreement is SADC's Revised Protocol on Shared Watercourses, which aims to foster close co-operation amongst member states for the sustainable and equitable management of transboundary water resources, including groundwater. (SADC, 2000). Yet even in such contexts, there are challenges of power. In this case, South Africa developed its water resources earlier than other countries and has a greater share as a result.

Climate change makes it even more important to develop and strengthen international agreements that govern shared water resources, including aquifers. Extensive diagnostic analyses have been done by the Southern African Development Community (SADC) Groundwater Management Institute of six of the 32 transboundary aquifers in the SADC region and yet the various transboundary basins are still poorly recognised in bilateral agreements. (SADC-GMI, 2024)

New research has raised the issue of governance of the global water cycle and the impacts of land use changes in one country on rainfall in another yet existing legal and institutional frameworks are largely blind to these dependencies. (Keys et al., 2024; Mazzucato et al., 2024) Recent scientific evidence demonstrates that land use and land cover change can trigger indirect effects via land-atmosphere interactions that impact precipitation both locally and remotely, with deforestation in regions like the Amazon reducing evapotranspiration and consequently diminishing rainfall in downwind countries such as Peru, Bolivia, and Argentina (Weng et al., 2018). Some activities, on the other hand, including afforestation and irrigation, enable the transfer of groundwater into the atmosphere, potentially mitigating dry spells whether locally or remotely. The science is based around the concept of atmospheric watersheds or precipitation-sheds, within which moisture flowing in the system can be modified by land-use decisions in one location resulting in impacts in a different catchment, country, or even continent. (Keys et al., 2024)

The integrity issues arising from this disconnect are profound and multifaceted and still unexplored. A key problem is the accountability gap: since international water law governs blue water in rivers and aquifers but not atmospheric moisture, a country that deforests and reduces another's rainfall has no legal obligation to inform, compensate or mitigate (Rockström, 2023). This creates unidirectional harm without recourse, where 'upstream' land-users externalise costs onto downwind nations. Addressing these integrity failures requires recognising vegetation-supplied precipitation as an ecosystem service, developing shared monitoring systems, and establishing cooperative frameworks that acknowledge the hydrological cycle as a global common good (Global Commission on the Economics of Water, 2024).

The challenges of managing the global hydrological cycle still have to be explored. However, even within the current transboundary arrangements, there remain integrity challenges. A fair allocation of water between or amongst countries requires a willingness to share data and to acknowledge water resource use, needs and intentions. It requires a full consideration of t competing national human, ecological and economic needs. Without this approach, geopolitical considerations can and do result in low level or even open conflict between countries, with power dynamics well-covered in the literature on hydropolitics.

At the transboundary level, water is allocated using a range of legal, institutional, and cooperative approaches, often combined rather than applied in isolation. They reflect differing political relationships, hydrological conditions, and legal traditions. The main approaches are outlined below.

One common approach is treaty-based allocation using fixed quantitative rules. States agree through bilateral or multilateral treaties to divide water using specified volumes, percentages, or flow shares. Examples include allocations based on average annual flows or minimum guaranteed quantities. This approach provides clarity and predictability, but it can lack flexibility in the face of climate change and changing demands and may embed inequities if based on historical power asymmetries.

A second approach is allocation based on principles of international water law, rather than fixed quantities. The most important principles are equitable and reasonable utilisation, the obligation not to cause significant harm, and the duty to cooperate. These principles are reflected in instruments such as the 1997 UN Watercourses Convention and the UNECE Water Convention. Under this approach, allocation is determined through ongoing assessment of factors such as population needs, existing uses, ecological requirements, and alternatives, rather than rigid quotas. This is more adaptive but can be contested and harder to operationalise.

A third approach relies on joint institutions and river basin organisations. States establish permanent commissions or authorities to manage shared waters, exchange data, plan infrastructure, and agree on operational rules. Allocation decisions may be embedded in joint planning processes, seasonal operating rules, or coordinated abstraction limits rather than explicit volumetric shares. This approach emphasises cooperation and joint problem-solving and is often considered best practice where political conditions allow.

A final approach is based on benefit-sharing approaches rather than direct water sharing. Instead of dividing water volumes, states cooperate to share the economic, social, or energy benefits derived from water use, such as hydropower, irrigation, navigation, or flood control. Water allocation becomes implicit rather than explicit, with countries accepting different uses in exchange for shared benefits. This approach can reduce zero-sum conflicts but requires high levels of trust and institutional capacity.

Another approach is project-based or infrastructure-driven allocation rather than catchment-based allocation. Here, allocation is determined through the design and operation of dams, reservoirs, canals, or diversion schemes agreed between states. Operating rules specify releases, storage levels, or timing of flows related to specific infrastructure. While technically precise, this approach can be rigid and may privilege upstream or infrastructure-owning states if governance arrangements are weak.

In practice, most transboundary basins combine several of these approaches. For example, a treaty may establish legal principles, create a joint institution, define procedural rules, and leave detailed allocation to adaptive, basin-level decision-making. The effectiveness and integrity of any approach depend not only on its design, but also on power relations, data transparency, dispute resolution mechanisms, and the ability to adapt to hydrological change.

2.1 INTEGRITY RISKS IN TRANSBOUNDARY WATER ALLOCATION

Integrity in the management of transboundary water resources contributes to the developmental, economic and political present and future circumstances of and between affected countries. Conversely, integrity risks and failures in transboundary water allocation can have wide reaching impacts.

Some integrity risks include:

Blatant disregard and unwillingness to cooperate or compromise own interests for a fair sharing of water resources

Engagement between or amongst countries requires integrity in terms of the willingness to share water resources fairly amongst countries to meet competing national human, ecological and economic needs.

Corruption and over-abstraction in upstream countries compromises water availability to downstream

High levels of corruption or poor regulatory control in upstream countries may result in significant over abstraction and therefore decreased availability of water for downstream countries or in shared aquifers. This may be exacerbated in times of water scarcity. As a result, downstream use is jeopardised with possible negative effects on human and economic use and ecological integrity. This can result in low-level or open conflict between countries.

Data manipulation or lack of transparency

Water allocation processes rely on modelling of water that is currently available and that will be available in the future, including in transboundary basins. In transboundary basins, this requires transparency about resource availability and use, future development plans and the implications of climate change. In many cases this is complicated by data gaps, incompatibility of datasets and information systems, and a lack of willingness among riparian states to share data and information, but it is also more difficult as climate change affects water availability and historical records become increasingly inappropriate as a way of modelling future scenarios. While data-sharing is often incomplete or poorly coordinated in shared river basins, there is evidence of countries manipulating or withholding data. (Kranz et al., 2005)

In the Buzi Pungwe Save transboundary basins shared by Mozambique and Zimbabwe, a key issue related to equitable water allocation between the two countries. According to Sithole (interview, 20 June 2025):

> *Mozambique wants to understand better how much water Zimbabwe holds. Because when floods happen, Mozambique being downstream, suffers the worst. When droughts happen again, being downstream, they suffer the worst because the downstream flows will be limited. So they want a joint study because the studies that were done before by two different teams of consulting firms did not reach the same conclusions. One was saying the water that's flowing into Mozambique, given the design and nature of the basin, is actually the best that Zimbabwe can release. Another study indicated that Zimbabwe's dams are holding a lot more water than what is required by the sugarcane plantations.*

There was sense from the Mozambican team that the study showing water being released by Zimbabwe as sufficient was skewed due to some of the consulting team members being aligned with Zimbabwean interests. On the other hand, the Zimbabwean team was saying the consultants didn't consult the managers on their side so they didn't have the information on the capacity of the dams, or the management regime or what the water demand requirements for irrigating the sugar cane estates. (Sithole interview, 20 June 2025)

In the Limpopo basin, which South Africa, Botswana, Mozambique and Zimbabwe share, the countries are mutually installing hydrometric equipment in key areas of the basin, so that each country can measure water flows in the other countries in both dry and wet seasons. Sithole explained:

> *This clears up the lack of transparency. Previously South Africa would report based on their stations but no one else had access to these stations. Zimbabwe would do the same, and Mozambique the same. But now under the Limpopo Commission, they have installed equipment that will measure those flows jointly and each country will be able to see what is happening in the other countries. I think that's creating a sense of transparency and also a kind of trust between the countries.*

Donor power conditionalities and geo-political interests

Donors, development banks and international NGOs play a substantial role in transboundary basin management and water allocation, whether through development assistance, infrastructure financing (grants/loans), technical assistance, convening power (mediation / secretariats) or institutional capacity and information strengthening.

Experience within a variety of transboundary basins raises questions regarding donors seeking outcomes that support their commercial interests or geopolitical influence. This raises the questions of whether donors should be obliged to disclose and report on their commercial links (procurement, contractors) and diplomatic ties and the degree of power exerted by donors to further their own interests by using funds as leverage, introducing implicit or explicit conditionalities, setting the agenda or promoting their desired reforms or standards. (Mostert, 2005; Medinilla and Sergejeff, 2021; Bosshard, 2008, cited in UNESCO, 2024:104).

Still, it is important to keep in mind that donors and governments are engaging one another. Donors can have their influence reversed, challenged or undermined through geopolitical security and sovereignty, investment politics between financiers and donors or a mismatch between donor and recipient government priorities.

Accountability for due process

How countries can be held accountable for following due process in transboundary water management raises a number of questions:

> *Where decisions or proposed developments in a given country related to a transboundary watercourse could impact the freshwater rights of users in another country sharing that watercourse, does international law require that all potentially impacted water users are notified in advance and consulted with respect to these decisions or proposed developments? In addition, do all water users have the right to judicially or administratively appeal decisions and actions that (potentially) impact water users' freshwater rights?*
> (Rights and Resources Initiative & Environmental Law Institute, 2020:59)

Due process in transboundary water management is a key integrity challenge: without transparent, participatory, and enforceable procedural frameworks, agreements between riparian states risk being shaped by power asymmetries rather than equitable principles. While the UN Watercourses Convention (1997) establishes obligations of notification, consultation, and negotiation among riparian states, but its procedural requirements are aspirational rather than binding, with weak enforcement mechanisms and low ratification rates (McCaffrey, 2019). Salman (2007) has shown how the absence of robust procedures enables upstream states to present downstream states with a *fait accompli*—infrastructure that is already planned or built before meaningful consultation has taken place, fundamentally undermining the integrity of any cooperative framework.

This connects to broader concerns in transboundary water governance about the "hydro-hegemony" dynamic, where more powerful riparian powers shape both the substance and the process of negotiations to entrench favourable outcomes. (Zeitoun & Warner, 2006). Without meaningful due process—including access to information, rights of participation for affected communities, and independent dispute resolution—transboundary water governance lacks the procedural integrity necessary to produce durable and legitimate outcomes.

2.2 RECOMMENDATIONS FOR INTEGRITY IN TRANSBOUNDARY WATER ALLOCATION

Ensuring integrity in transboundary water management begins with transparency. To improve transparency of water data, riparian states should establish systems for jointly monitoring water availability and flows, including both surface water and shared aquifers. Interoperable hydrological and geohydrological monitoring networks can make real-time data accessible to all riparian states, reducing uncertainty and preventing disputes over water allocation. Joint modelling and scenario planning should be conducted collaboratively, taking into account climate change and future development, so that all parties can trust that allocations are based on shared evidence rather than unilateral assumptions.

Alongside data sharing, clear protocols for consultation and notification are essential. Any proposed infrastructure or water development with potential impacts on other states should be formally communicated in advance, with standardised procedures for review and feedback. This would reduce unilateral decision-making, ensure that downstream water needs are respected, and allow for adjustments before projects proceed. Mechanisms for dispute resolution should be embedded in these processes, allowing countries to appeal or challenge decisions in a structured and legally recognised way. The SADC Revised Protocol on Shared Watercourses is an excellent example of this.

Strengthening institutions is equally important. River basin organisations should be empowered with the technical, financial, and legal capacity to coordinate across borders, enforce agreed rules, and mediate conflicts. These organisations can act as impartial stewards of the shared resource, ensuring that allocations are equitable, water quality is protected, and management is adaptive in the face of climate variability. Regular audits and independent verification of basin-wide water use and infrastructure impacts can further reinforce integrity and trust.

Finally, donor involvement should be structured to support integrity rather than distort it. Financial or technical support from external actors should be fully transparent, with clear disclosure of any commercial or geopolitical interests. Support should be designed to strengthen basin-wide cooperation and institutional capacity rather than favour particular countries, sectors, or projects. Accountability frameworks should include reporting requirements for both donors and riparian states, ensuring that all parties act in ways that uphold fairness, sustainability, and long-term cooperation.

Taken together, these measures can build a culture of integrity in transboundary river management, ensuring that water allocation reflects shared needs, reduces potential for conflict, and supports sustainable development across all countries in the basin.

PART 3: INTEGRITY IN NATIONAL WATER ALLOCATION SYSTEMS

Within any country, a water allocation system (or systems) is a framework of policy, legal, technical, economic and environmental components formulated to ensure that water resources are distributed among various users within or between watersheds. Policy and legislation provide the overall framework for water allocation decisions, which are given more detail through regulations that provide guidance for the implementation of legislation. The institutions responsible for implementation need to be dynamic and resilient enough to be able to manage increasing climate change uncertainty and conflict (Larson, 2019).

Policy and legislation establish the statutory allocation systems, of which permit systems are the most widely used (Dinar et al,1997). Permit systems may be purely administrative or may have a market-based component to a greater or lesser extent. In many countries, customary allocation systems operate in parallel with the permit systems without formal or statutory recognition.

Permit systems manage the allocation of water among users through the issuing of water use permits, typically required for all water uses above a set minimum quantity (de minimus). To be granted a permit (or a license or concession), applicants must generally submit details about the source and location, quantity, duration, and the purpose of their water use, along with potential social and environmental impacts. They can be granted even when the applicant does not own land. (Bosch & Gupta, n.d.)

The permitting authority—a government agency—reviews the request against existing water rights, environmental flow needs, and water quality standards before deciding to approve, modify or deny it. Once issued, permits usually include conditions such as maximum withdrawal limits, monitoring requirements, and reporting obligations. In some cases, permits can be transferred (with or without government approval). This system helps balance competing demands for water while protecting ecosystems and ensuring compliance with water laws and policies. (Bosch & Gupta, n.d.)

3.1 INTEGRITY IN ALLOCATION POLICY

National or state level policy frames the approach to balancing the competing demands of different water users such as:

- Domestic Use: domestic use covers the human right to water as well as water for other domestic uses such as washing, food preparation, sanitation, and food gardens.
- Agricultural Use: In many regions, agriculture is a significant water user, so specific amounts may be allocated for irrigation.
- Industrial and Commercial Use: Water for factories, mines and commercial enterprises including small and medium enterprises.
- Energy Generation: water for the general of power in various forms including cooling of coal fired power stations or hydropower generation.
- Ecological Use: Ensuring enough water remains in rivers, lakes, wetlands, estuaries and aquifers to sustain ecosystems and biodiversity.
- Other Uses: Transport/Navigation on rivers, dams and lakes; Freshwater fisheries, whether artificial or natural; Cultural and spiritual purposes; Sport and recreation

Water policy frames the 'desired outcomes' of water resources management, including allocation, which typically, in line with the concept of integrated water resources management, address issues of equity, efficiency, effectiveness and sustainability (Yhang, 2014). The policy may include prioritisation of major water use sectors. In places facing water stress or water scarcity in particular, the implications of such policy positions in relation to who gets how much water are significant.

Numerous documents, including those related to the SDGs, international agreements and reports by Special Rapporteurs on the Right to Water, emphasise the need to accord the human right to water and water for ecosystems the highest priority. Often prioritisation beyond this is at the sectoral level, such as water for agriculture, energy or municipal needs, not distinguishing, for example, between priority of use differences between large commercial agriculture and subsistence agriculture.

International legal instruments recognise the rights of indigenous peoples, Afro-descendants, and local communities' water tenure but this is not necessarily translated into domestic policy or legislation.

Prioritisation of water allocation in South Africa

In post-apartheid South Africa, water policy and law is guided by the Constitutional right of access to 'sufficient water and food' and by the demands of redress of the apartheid legacy. The National Water Resource Strategy (DWS, 2023), which is binding on all institutions exercising powers or performing duties under the National Water Act, sets out the prioritisation of water allocation as follows.

Priority 1

The highest allocation priority is afforded to water for the purposes of ecological functioning and meeting basic human needs . For basic human needs, this is set at 25 litres per person per day

Priority 2

The second-highest priority is meeting international water requirements in terms of agreements with neighbouring countries.

Priority 3

The third highest priority is accorded to water for poverty eradication, the improvement of livelihoods of the poor and marginalized, and uses that will contribute to greater racial and gender equity.

Priority 4

The fourth highest priority is accorded to water for uses that are strategically important to the national economy, such as energy generation.

Priority 5

The fifth priority is water used for general economic purposes, which includes commercial irrigation and forestry.

All five priorities must give effect to allocations that promote equity.

Water allocation policy can lack integrity even before implementation if problems are built into the policy design itself. Integrity failures are often assumed to arise only from corruption or weak enforcement, whereas in reality, they can be embedded in the policy's assumptions, rules, and decision-making structures.

One way policy lacks integrity is through structural bias in objectives. A water allocation policy may formally claim to balance social, economic, and environmental needs, but in practice prioritise certain uses or actors. For example, policies that explicitly reserve large volumes for industrial or export agriculture while treating domestic or smallholder use as residual embed inequity in the policy itself. Even if implemented "honestly," such policies systematically disadvantage smaller users, meaning the integrity failure is encoded in the policy.

Integrity can also be undermined by exclusionary policy-making processes. When allocation policy is are developed without meaningful participation from affected communities, informal users, women, Indigenous peoples, or downstream users, it will reflect partial interests and knowledge. This is a lack of procedural integrity: the policy may be legal and technically sound, but it is not legitimate or fair because key stakeholders were never recognised as rights-holders or decision-makers. Procedural integrity is discussed further under section 3.5.

Another common problem is ambiguity or discretionary loopholes in policy. Policies that rely on vague terms such as "strategic use," "public interest," or "exceptional circumstances" without clear criteria invite arbitrary decision-making. Even in the absence of overt corruption, such ambiguity allows powerful actors to influence allocation outcomes in their favour. Here, the policy lacks integrity because it creates conditions for unequal treatment and non-transparent decisions.

A further integrity failure arises when policies fail to recognise existing rights and uses, especially customary or informal water rights. Many allocation frameworks only recognise permitted or registered uses, effectively erasing long-standing livelihood practices. This is not an implementation failure but a policy choice that privileges formal, often capital-intensive users.

Policies can also lack integrity when accountability mechanisms are absent or ineffective by design. If allocation decisions cannot be appealed, reviewed, or challenged, or if data on allocations and use are not publicly accessible, the policy shields decision-makers from scrutiny. Integrity requires not just rules, but built-in checks and balances; without these, even well-intentioned policies are prone to abuse and capture.

Another issue is misalignment between stated goals and policy instruments. A policy may claim to support equity, resilience, or climate adaptation, but rely solely on market-based instruments or first-come-first-served systems that inherently favour those with greater resources or political access. This internal inconsistency signals a lack of integrity in policy design, as the means chosen cannot realistically deliver the stated ends.

Finally, integrity is compromised when policies externalise social and environmental costs. Allocation frameworks that allow water-intensive activities without requiring users to account for downstream impacts, pollution, or ecosystem degradation embed injustice into the policy structure. This effectively transfers costs to communities or future generations, contradicting principles of fairness and sustainability.

In sum, water allocation policy can lack integrity not because of corruption in implementation, but because the policy itself encodes biased priorities, excludes affected groups, relies on vague or discretionary rules, ignores physical limits, fails to recognise rights, lacks accountability, or contradicts its own stated objectives. Addressing integrity therefore requires scrutiny of policy design and governance choices, not only enforcement and compliance.

3.2 INTEGRITY IN LEGAL FRAMEWORKS FOR ALLOCATION

In many countries there are two parallel legal systems that govern water allocation: statutory law and customary law. These two forms of law differ primarily in their source, formality, and the way they govern access to and allocation of water.

Statutory law refers to formally enacted legal rules established by the state through constitutions, legislation, regulations, and administrative procedures. In the context of water allocation, statutory law defines who has the legal authority to allocate water, sets out licensing or permitting systems, establishes priority uses, and specifies enforcement mechanisms. Water rights under statutory law are usually written, registered, time-bound, and administered by government agencies.

Customary law refers to locally developed, historically rooted norms and practices that govern resource use within a community, often transmitted orally and enforced through social institutions rather than the state. In relation to water allocation, customary law determines who may access water, when, how much, and for what purposes based on tradition, social relationships, and shared understandings of fairness and sustainability. Customary water rights are often collective, flexible, and closely linked to livelihoods, culture, and local ecological knowledge.

Tensions between the two arise when statutory systems fail to recognise or protect customary water rights, potentially undermining equitable access and local water governance (Mukuyu and Galvin, 2023). Although customary water governance is widespread throughout sub-Saharan Africa, it is poorly recognised in statutory law. Customary water rights are better recognised in Latin America and some parts of Asia, often through land or forest law, or through the rights of nature or rivers. However, customary rights are seldom quantified.

One recommendation has been the adoption of a 'hybrid water law' model, a form of legal pluralism that recognises both statutory and customary law, in which both carry weight, formulated in terms of various country contexts (van Koppen and Schreiner, 2018).

This paper is focused on statutory permit systems, but the tensions with the lived customary experiences and challenges of many marginalised or vulnerable people are woven through the analysis.

Within statutory systems, the legislation defines the allocation mechanisms to be used, such as permits, market-based or user-based mechanisms. More than one may be used in a country, although one approach is generally dominant and permit systems are the most widely used.

3.3 INTEGRITY IN ALLOCATION SYSTEM DESIGN

It is essential to consider the integrity of the water allocation system itself before considering the integrity of procedures or administration: if the container is rotten, its components can be exemplary, but that does not change the whole. Integrity failures do not only result from corrupt practices. They can also come from systems whose design undermines the possibility of achieving intended objectives such as equity or sustainability or opens the door for corruption and other malfeasance.

Integrity failures that arise from the design of a system can take different forms: systems that are impossible to implement due to a lack of resources; systems that rely on market forces to benefit powerful groups; systems that are designed purposively to benefit powerful groups and large users; ineffective or poorly designed permit systems that allow for profiteers to take advantage of water scarcity; and systems without safeguards that allow interest group capture over time. These are described below.

One of the critical issues in this regard is the design of a system that cannot be implemented, due to lack of financial, human and technical resources. One example relates to the development of water resource regulators in India.

> *In India, in the late 90s, the World Bank had decided that they should take the law seriously. So, in Maharashtra they came up with this idea of a regulator which would be set up under the Irrigation Act, and that will somehow regulate that everyone was doing their job properly.*
> *So, they set up these regulators and every state in India now has to have a regulator. It was a requirement by the government for budget funding. This was a great success story of the World Bank to have the regulator, and we'd make sure everyone got their water. But the regulator was staffed by former by retired government officials all working as consultants on short term contracts, and the regulatory commission was funded from the budget of the same ministry that that they were regulating; you can guess the rest.*
> *So that's a whole other issue for integrity. I went to see the regulator in Bombay and it was quite sad really. They admitted they had no power and no money.*
> *So that's a good example of a bad reform.*
> (Anonymous 1 2025, unpublished interview conducted by WIN, 2 July)

A lack of capacity is not, per se, an integrity failure—but creating or continuing to rely on a system that cannot be implemented, is.

Designing a system that cannot be regulated leaves it open to capture by powerful groups. One interviewee described how the Mexican system "*was designed in a period of neoliberal principles, and therefore it was put considerably in the hands of the market, and with a regulatory framework but very weak regulatory institutions*" (Anonymous interview 4, 24 June 2025).

A water allocation system may also be designed in such a way that it advantages certain groups (e.g., big irrigators, politically connected industries/mines) at the expense of others (e.g., smallholders, Indigenous communities). This can also apply to drought rules, which sets out who gets what water in dry periods, and which may be designed to favour more powerful groups. This can also refer to a system that requires all users to have permits, regardless of how much water they use. This approach can undermine administrative justice.

Even when the system is not designed in a way that advantages certain groups, a failing or ailing permits system can result in water scarcity from which powerful groups can profit. This is particularly relevant in the context of climate change. Allocation rules need to be chosen that can cope with climate change uncertainty, taking any weaknesses of institutions into account. (Pal et al, 2024)

Reis (2014) provides an in-depth case study from central Mexico showing how permitting —restrictive concession systems, bureaucratic barriers, and unequal enforcement—can (unintentionally) produce water scarcity. This can undermine equitable access to water. In this case, it created opportunities for intermediaries ("coyotes"), developers, and politically connected actors to profit from the unofficial trading of water rights, while marginalized users faced increasing difficulties accessing water.

Over time, as law is interpreted—by courts, regulators, and administrators—implementation can diverge substantially from the original legislative intent. Interest groups are able to influence processes and outcomes in their favour over time (McCubbins, Noll & Weingast 1987).

Many of the integrity challenges inherent in a water allocation system play out in relation to administrative and procedural justice which are the subject of the following sections.

3.4 INTEGRITY FAILURES IN IMPLEMENTATION OF WATER ALLOCATION SYSTEMS

Key integrity failures in water allocation related to administrative justice occur when public authorities fail to administer water resources lawfully, fairly, and accountably. Administrative justice encompasses both procedural and substantive aspects, so integrity failures can arise from flaws in decision-making processes, implementation, oversight, or enforcement. Some of these issues are highlighted below.

Opaque or non-transparent decision-making

When water allocation decisions are made without publicly accessible criteria, published entitlements, or documentation, users cannot verify whether decisions are lawful or equitable. Lack of transparency undermines accountability and facilitates favouritism or corruption. (Mehta et al., 2016; OECD, 2015). Al'Afghani refers to the challenges in Indonesia of "opaque decision-making around on-the-ground water allocation which enables discretionary and potentially corrupt practices." (Al'Afghani interview, 11 June 2025).

Similar challenges pertain in Mexico, where there is a public register of water rights allocation, but there is a lack of information, it is opaque—or it is manufactured depending on powerful political or economic agendas (Anonymous interview 4, 24 June 2025)

Discretionary power without checks and balances

Administrative authorities often have significant discretion to approve or adjust water allocations, particularly during scarcity or emergency periods. Without independent oversight or clear limits, this discretion can be abused, resulting in preferential treatment for politically connected users or industries. Such discretionary misuse is a classic administrative justice failure (Salman, 2007; Bakker, 2012).

Al'Afghani describes how officials who control the opening and closing of irrigation gates in Indonesia have considerable discretionary power, and concerns that this power lacks proper monitoring or oversight and is abused. He further refers to the Imbalance of power and discretion in the hands of local agencies where they had significant authority and discretion in controlling water allocation. "*This concentration of power, without adequate checks and balances, enables potential abuse and diversion of water for personal or political gain, including during local elections where water might be diverted to certain locations.*" (Al'Afghani interview, 11 June 2025)

Failure to recognise or protect customary and informal rights

Administrative systems that prioritise statutory water rights while ignoring customary or traditional water use undermine both procedural and administrative justice. Communities relying on informal or customary water access may be excluded from allocation processes, leaving them vulnerable to deprivation even when the law nominally protects water access (Schlager & Blomquist, 1996; Giordano & Wolf, 2003).

Inadequate grievance and appeal mechanisms

Even where allocation rules exist, users often lack effective recourse to challenge or appeal unfair decisions. Inadequate or inaccessible mechanisms prevent the correction of errors, the enforcement of rights, or accountability for misallocation, which constitutes a key integrity failure in administrative justice (Mehta et al., 2016; OECD, 2015).

Weak enforcement and monitoring

Most of the interviewees raised the issue of weak enforcement of legislation and weak monitoring. When authorities fail to monitor water use, enforce entitlements, or detect illegal abstraction, integrity is at risk. Selective enforcement, where powerful users are rarely penalised while smaller users face sanctions, violates administrative justice by failing to uphold laws impartially (Salman, 2007).

Al'Afghani describes the situation in Indonesia, where, for example, the manual operation of irrigation gates and channels makes it difficult to monitor and verify how the water is being distributed and where there are challenges in enforcing regulations, particularly around illegal groundwater abstraction, due to a lack of resources and alleged corruption. (Al'Afghani interview, 11 June 2025).

Conflicting mandates and poor institutional coordination

Water allocation often involves multiple agencies (water, environment, agriculture, energy). When mandates overlap or conflict, decisions may be inconsistent or arbitrary, undermining legal certainty and accountability. Poor coordination creates gaps that can be exploited, reducing administrative integrity (Bakker, 2012; Giordano & Wolf, 2003).

Emergency or crisis decision-making without safeguards

During droughts, floods, or conflicts, authorities may bypass normal allocation procedures. While flexibility is sometimes necessary, unregulated emergency powers can entrench inequities or benefit powerful actors, reflecting both administrative and procedural justice failures (Mehta et al., 2016; Bakker, 2012)

For example, during prolonged drought in Chile, authorities use "Water Scarcity Decrees" that suspend ordinary water governance mechanisms, including the powers of water user organisations and normal allocation rules. These decrees allow the government to authorise extraction and suspend ecological flow limits outside normal regulatory processes, potentially privileging larger agricultural or powerful actors. The powers are intended to be temporary, but in practice they have been applied repeatedly for long periods, illustrating how emergency mechanisms can override regular procedures and affect fairness in allocation decisions. (García et al., 2025).

3.5 PROCEDURAL JUSTICE INTEGRITY RISKS

A positive example may be at the interface between statutory and customary law. The negotiated prioritisation of water resource allocation supports a transparent and just sharing of water resources. This means a "g*overnment steered process of negotiated prioritisation involving ALL water users, not just the minority of regulated permitted users. In this process, transparency, participation and the free, prior and informed consent of all water users can serve to build a more just and equitable system*" (Schreiner and van Koppen, 2024:161).

However procedural justice is often undermined by unequal access to power or by procedures that do not allow for full engagement of affected parties. One example relating to water allocation is whether national law requires "*that communities are notified in advance and consulted when decisions or proposed developments related to a freshwater resource within that focus country could impact their freshwater rights? Does the national law of the same focus country recognise the rights of communities within that country to judicially challenge the government's decisions/actions to extinguish all or some of communities' freshwater rights?*" (Rights and Resources Initiative & Environmental Law Institute, 2020:61).

In many water allocation systems, including those based on water permits, communities may "*face a broad range of procedural obstacles to realize their water use, governance, and exclusion rights. These requirements (such as water use permits, incorporation requirements, and other administrative mandates) commonly limit the duration of communities' rights to use freshwater and can hinder the accessibility and affordability of freshwater resources for communities.*" (Rights and Resources Initiative & Environmental Law Institute, 2020:9)

One of the significant challenges with regards to procedural justice in water allocation is the requirement for all users to obtain a permit for water use. One analysis of community-based water tenure regimes (CWTRs) across 15 countries (13 low- and middle-income countries and 2 high-income countries) found that the vast majority (74%) required a commercial use permit to pursue community enterprises and over one-third required a permit for abstracting water for livelihood needs. (Rights and Resources Initiative & Environmental Law Institute, 2020:9). These requirements can disadvantage water users who have lower levels of administrative competence or access to formal decision-making systems.

Weak or inaccessible grievance and appeal mechanisms also pose procedural justice challenges. Even where allocation rules exist, affected users may have no practical way to challenge unfair decisions or report abuses. Courts or administrative appeals processes may be costly, slow, or geographically inaccessible. Without credible avenues for redress, corruption and maladministration are more likely to persist.

Finally, emergency or crisis-driven allocation decisions present specific procedural risks. During droughts, floods, or conflicts, normal procedures may be suspended or fast-tracked. While flexibility is necessary, emergency powers can be misused to entrench privileged access or bypass stakeholder engagement, leading to long-term inequities that persist after the crisis has passed.

Another integrity failure is creating barriers to the participation of marginalised groups or even attacking them, which is widespread globally against environmental protectors.

Taken together, these procedural challenges show that integrity risks in water allocation are often systemic rather than individual. Addressing them requires transparent rules, inclusive processes, independent oversight, and strong accountability mechanisms—not just better technical data on water availability.

The following section shows how integrity failures in permit systems can undermine effective water allocation.

PART 4: INTEGRITY IN WATER PERMIT SYSTEMS

Integrity failures in the administration of permit systems undermine their functionality and cumulatively result in dysfunctional systems. A dysfunctional system opens doors for further integrity failures, creating a vicious circle.

Integrity risks occur at each stage of the water permitting cycle. Table 1 below provides a generic overview of the steps in permit application process.

Table 1: Integrity risks and mitigation at each step in a permit system

Steps in permit system	Key integrity risks	Suggested mitigation measures
Application submission: The applicant submits a completed application for a water permit, along with necessary supporting documentation and site plans.	Misrepresentation or incomplete information by applicants.	Standardise application forms and submission requirements. Conduct initial verification of documents. Implement checks on key elements of application.
	Use of biased or non-independent consultants for technical studies.	Require registration of environmental and water professionals.
	Favouritism/bias in accepting or prioritising applications.	Implement online submission systems with automated tracking. Require identification of politically exposed persons in licence applications and treat this as a red-flag requiring greater scrutiny.
	Lack of transparency about submission requirements.	Publish clear guidelines for technical requirements.

	Submission requirements mitigate against easy submission by small or marginalised water users, such as costs of application, requirements for technical studies, etc.	Differentiate requirements for different categories of water use (e.g. by volume, impact etc).
Application review: The permitting authority reviews the application for completeness and accuracy, requesting additional information if needed.	Inconsistent or subjective assessment of completeness and accuracy and what additional information is needed.	Develop objective review checklists. Assign multiple reviewers to ensure consistency.
	Delays caused by bureaucracy or selective attention.	Enforce deadlines for review. Capture review deadlines in digital system.
Technical analysis: The authority conducts technical analyses to determine water availability, potential impacts, and compliance with regulations.	Minimising or ignoring of technical concerns to favour certain applicants (e.g. water availability, environmental or social impacts).	Require independent peer review of technical reports. Rotate staff to reduce favouritism. Introduce conflict of interest declarations and whistleblower mechanisms.
	Ignoring cumulative impacts or environmental thresholds.	Integrate cumulative impact analysis.
	Lack of transparency and rigour in review methodology.	Standardise modelling and data methods. Publish assessment criteria and results.
	Bribery of officials involved in assessing the application.	Train staff in anti-corruption requirements.
Stakeholder consultation: There may be requirements for stakeholder involvement and consultation in new applications and changes to existing permits.	Exclusion of marginalised or informal users.	Conduct early and inclusive consultation. Provide accessible notice (languages, media, locations) and ensure representation of marginalised groups. Document all stakeholder input and the response. Use independent facilitators when needed.
	Tokenistic consultation and/ or selective inclusion of stakeholders with political or economic influence.	
	Inadequate notice preventing meaningful participation.	
	Dishonest representation by applicants of the extent of consultation conducted.	
	Institute penalties for misrepresentation in permit applications	
Application decision: After considering the application submission and public input, the authority decides on whether to approve or decline the application and under what conditions.	Decisions influenced by corruption, political pressure, nepotism or favouritism.	Make written reasons for decisions publicly available on request. Require application to identify politically exposed persons and subject such applications to greater scrutiny. Establish decision committees to reduce individual bias.

	Inconsistent application of rules. Arbitrary approval or denial.	Use scoring matrices or criteria to standardise approvals.
	Lack of documented rationale for decisions and lack of transparency.	Make written reasons for decisions publicly available on request.
Development of permit conditions: The permitting agency develops permit conditions that may cover abstraction volumes and location, infrastructure parameters, environmental flow requirements and/or water quality parameters for effluent/return flows, monitoring and reporting requirements, and the length of time of validity of the permit.	Conditions may be set leniently for powerful users. Environmental flows or monitoring requirements may be ignored. Failure to consider and mitigate cumulative impacts.	Standardise environmental and operational requirements. Align conditions with scientific and legal benchmarks. Require multi-stakeholder review particularly for permits with significant social or environmental impacts.
	Conditions imposed are impossible for permit holder to meet.	Publish draft permit for comment and submit draft permit to applicant for comment.
Draft permit preparation: A draft permit is created, including all proposed limitations, conditions, and requirements.	Conditions may be prepared selectively to favour certain applicants.	Implement version control and audit trails. Ensure internal review.
	Failure to address stakeholder feedback.	Publish final permit conditions.
	Bribery of officials to amend conditions.	Train officials in anti-corruption requirements. Ensure effective whistleblowing policy and procedures that adequately protect whistleblowers.
	Hearings may be procedural only, without real influence. Marginalised voices may not be heard.	Provide multiple access channels (online, local media, community boards). Document how comments are addressed. Conduct accessible hearings. Ensure feedback to stakeholders.
Appeal processes: Applicants may appeal against the declining of a permit or the permit conditions.	Appeals may be delayed, costly, or opaque.	Establish independent appeal bodies. Set strict timelines for appeal resolution.
	Decisions may favour applicants with political connections.	Provide low-cost or free appeal processes. Ensure transparency of outcomes.
	Intimidation of appellants.	Protect whistleblowers and appellants from retaliation.

Compliance and monitoring: Once issued, the permit holder must comply with the permit conditions and undergo regular inspections and monitoring by the authority.	Weak enforcement. Selective inspections protecting powerful users. Failure to act on violations. Bribery or extortion regarding inspections and sanctions for non-compliance.	Develop risk-based inspection schedules. Deploy remote sensing and digital monitoring. Enforce penalties consistently. Allocate sufficient resources for monitoring. Publicly report compliance data. Publicise whistleblowing channels.
	Inaccurate or falsified reporting by water users.	Use independent third-party inspections including citizen monitoring.
Suspension/withdrawal or amendment of permit: The authority may amend or suspend the licence under certain conditions.	Amendments applied inconsistently.	Establish clear criteria for suspension/ amendment. Require documented justification.
	Pressure or bribery from political or economic actors to avoid suspension/ withdrawal. Lack of transparency about reasons. Arbitrary or punitive modifications.	Publish amendment notices. Ensure appeal mechanisms regarding amendments or suspensions/withdrawal. Publicise whistleblowing channels.

4.1 PERMIT APPLICATION

The first step in obtaining a permit to use water is for the applicant to submit an application, often in a prescribed form, along with supporting documentation. There are several integrity risks that arise even at this early stage of the process.

Perhaps the most significant risk at this point relates to administrative requirements set that are too administratively demanding or expensive for small water users or users from marginalised communities and that undermine their ability to make a submission. This is compounded by the fact that many small-scale users may not be aware of the legal requirement for a permit.

Sithole (interview, 20 June 2025) highlights the challenge:

> *[F]or South Africa, if you are a small scale or a medium enterprise you need to do a geohydrological study, a soil study that you need to submit to the catchment authority. How many small or medium-sized enterprises have funds to afford a geohydrologist or a hydrologist to do those studies? So, the processes themselves already disenfranchise certain socioeconomic groups. I know there are caveats where they say the catchment management authority will be able to help some of those that are struggling. But when we interact with these small-scale and medium-sized enterprises, they say yes, they do help sometimes, but it depends on whether they have capacity in the office for people to come out and help. So, a process that could have taken you six months to finalise might take you three to four years instead.*

Martin Ginster adds (interview, 30 June 2025):

> *If you have the means, it is easier but for some the transaction cost of putting a license together, specifically for someone who has a relatively small footprint, can be exorbitant. They don't have the in-house experience in applying for a license. They appoint the big consultants. The consultants say this is what you need and produce a huge pile of reports. And sometimes the department may say, well, we need more detail. But often it's a complete overkill. It's hard to be compliant for a small player.*

This fact has been recognised by the South African government itself. The second edition of the South African National Water Resources Strategy acknowledged that "*current licencing processes are often costly, very lengthy, bureaucratic and inaccessible to many South Africans*" (DWA, 2013:53).

In contrast, Kenya's water allocation system requires different levels of information for categories of water use, from small to large. This deliberately makes it easier for small users and results in more efficient use of limited state resources, since the greatest regulatory effort is spent on the highest-impact water users.

Decentralisation of permit approvals (subsidiarity) ensures that lower-impact water use approvals are done through a decentralised structure for more efficient use of state resources (Schreiner and van Koppen, 2018:30).

Some applications are misleading in the volumes requested.

> *Farmers overestimate what they actually use so that if a farmer knows they need 10,000 cubic metres, they actually apply for 15,000 or 20,000. The Water Law in South Africa currently does not allow for trading in water. If I have a licence, I cannot trade my allocation and sell it to other people, right? But what these farmers are doing—once I apply for 15,000 and I'm only using 5 000 then I make a back door arrangement with my neighbouring farming colleagues to then share my allocation with them for a fee that would then make me able to pay my water bill. For me, there's an integrity issue there, because by over-allocating to commercial farmers, you then deny opportunity for water reallocation to small scale users. But also, by over allocating to commercial farmers who are in South Africa and upstream in the Incomati catchment, you also then deny the other riparian countries, Swaziland and Mozambique, who are downstream.*
> (Anonymous interview 2,20 June 2025)

A further challenge is that not all water users apply for permits even when required to do so by law. While for many small-scale users this might be due to lack of information regarding the requirement for a permit, there is a significant issue of more powerful water users simply taking the water they need without applying for a permit. Several interviewees referred to this issue:

> F*or you to use water for any commercial purpose in Zimbabwe, you need to apply for a water permit. Catchment managers complain about their frustration that people who are aligned to the ruling political party are lying in these processes. And if they feel the process is cumbersome, they don't even apply, they just go ahead and access water. Then they request the catchment authority to come and make them compliant at the cost of the catchment authority, rather than at the cost of the applicant. As an applicant you need to go to the offices, submit your paperwork but these guys do it the other way around because of their political muscle. They just draw water and say, yeah, we are using it,if you want to know how much we are using, you need to come with your papers, help me fill them. Then I'll sign them and become compliant. You cannot take them through the court process because once you summon them, your boss will call you to say no, they told you they will comply, just help them comply.*

If the catchment manager tries to enforce the regulations, that's when these politicians or people aligned to politicians will say no, no, no, don't worry, you are only a boss at the catchment level. I'll call your boss at Head Office. The boss from HQ is the one who calls the catchment manager. So, the catchment managers, when they realise this one is a powerful political person, they just refer the case to Head Office of the Zimbabwe National Authority even though they are mandated by the Water Act to take action.
But these people cannot do it. I asked them: why can't you just go and stop the water? They said: these guys will actually tell you 'send your bailiff and we'll shoot him'. Straightforward like that. So, they say they would not want to put their own workers, the bailiffs or themselves at risk. Their only remedy is to refer these cases to their headquarters, knowing that headquarters won't take action.
(Anonymous interview 2, 20 June 2025)

4.2 PERMIT APPLICATION REVIEW AND DECISION MAKING

Once the completed application has been submitted, the permitting authority follows a number of steps, from reviewing the application for completeness and accuracy and requesting any necessary additional information, to making a decision and either refusing the application or issuing a permit. One of the most significant integrity risks at this stage is bribery of state officials to expedite the awarding of the permit, or to reduce the compliance requirements. A clear example of this is given in the Mexico experience where bribes were being paid to expedite the processing of permits, as well as to influence the decisions being made.

A second integrity risk relates to the manipulation of data regarding water availability. For example, water managers may adjust the models to release more water for certain users. This begs the question of when is this technically appropriate, and when is it an integrity issue?

> *In Spain for example, on paper everything seems to be working. They calculate how much water can be allocated after calculating how much the environmental flows are. But it is mentioned that sometimes the way you calculate the environmental flows can give you some leeway to reduce, for example, the pressure from farmers for more water. So, in his calculation, sometimes the water managers in Spain say if I tweak the algorithm a little bit then I can have a bit more water for the farmers, because if I don't do it, then there's going to be a bunch of farmers protesting. So that's a way for them to let some of the steam dissipate.*
> (Anonymous interview 3, 10 July 2025)

Similarly, in Mexico:

> *Very old models are used with little verification in the field, which generates inadequate characterisation of the quantity, flows and quality of the water. But it is also very easy to modify these models and to suddenly generate availability where there was no availability.*
> *So, suddenly, for example, a large project arrives endorsed by the State Government or the Federal Government, which needs water or an industry initiative where water is required or an agricultural project. A small modification is made to the parameters and the model shows you that now there is available water.*

> *We saw in Monterrey, where groundwater is mainly used by industry from an aquifer that is already overexploited, a desk modification to the model was done overnight. Where it seemed to be very little availability, and where they had to pay the highest rates, this changed overnight.*
> *That saved the industry billions of pesos in terms of its payments.*
> (Anonymous interview 4, 24 June 2025)

A third risk relates to the submission of misleading information in support of the permit application.

> *The data that is submitted by companies in Indonesia, for example, the environmental impact assessment is usually more or less like a template—sometimes they just copy and paste from another project to this project.*
> (Al'Afghani interview, 11 Jun 2025)

Decision on awarding or refusal of permit

Lack of integrity in the decision-making process is one of the key challenges in ensuring an effective permitting system. There are several aspects that lead to integrity risks in this process.

Non-transparent decision-making

One risk relates to opaque or non-transparent decision-making. Such opaque decision-making can be seen through the lack of publicly accessible criteria or documentation regarding the decisions made and the rationale behind the decisions.

Opaque or non-transparent decision-making in water governance increases the potential for elite capture, corruption, and biased allocation outcomes because stakeholders cannot see how decisions are made or hold decision-makers to account. Water policy decisions that lack accessible criteria, publicly documented entitlements, and transparent procedures tend to privilege powerful actors who have better access to information and influence, while marginalised users are excluded from meaningful participation and oversight. (Mehta et al. 2016)

When governance processes are 'black boxed'—whether through technical complexity, restricted access to information, or closed bureaucratic practices—this makes it easier for favouritism or unofficial influence to shape water allocations in ways that benefit elite interests over public or equitable outcomes.

Discretionary power without checks and balances

A related integrity risk arises where public officials exercise wide discretionary power over water allocation decisions without adequate checks and balances. Discretion is inherent in water governance, particularly in situations of scarcity, uncertainty, or emergency, but when it is not clearly bounded by law, oversight, and accountability mechanisms, it can be abused. Officials may use discretionary authority to favour politically connected users or economically powerful industries, undermining both administrative and procedural justice (Salman, 2007; Bakker, 2012).

Periods of drought, floods, or conflict often intensify this risk, as authorities may suspend or bypass normal allocation rules in the name of urgency or flexibility. While such flexibility may be necessary in the short term, unregulated emergency powers can entrench inequities and allow discretionary decisions to persist without scrutiny (Mehta et al., 2016; Bakker, 2012). A clear example is Chile, where Water Scarcity Decrees allow the government to override normal governance mechanisms, including ecological flow requirements and the powers of water user organisations. Although intended as temporary measures, these decrees have been applied repeatedly over extended periods, raising concerns that discretionary emergency powers may systematically privilege larger agricultural or politically influential users (García et al., 2025).

One interviewee explained that big mining companies in Tanzania often use their financial power to override the permitting process: "*One company in particular wanted to add more water to its existing permit. So, they just made a phone call, and the basin officer approved an additional amount of water above the existing limit. Adding more water to the existing permit has an impact—it denies other users at the same stream the same amount of water.*" (Anonymous interview 5, 3 July 2025)

The power of large companies to influence the outcome of decision-making is seen similarly in South Africa (Ginster interview, 2025):

> "One MD, you know, would just take the guys [from the Department of Water and Sanitation] into the lift to the top floor, take them out for a view of the operations and say: 'Well, you know, if I don't get my license we're going to close down this facility.' When is it correct to say that and when is it maybe not correct to say that? When is it fair and reasonable to push back and when isn't it?

Another example related to water quality comes from an industrial facility operating with a near zero-liquid-effluent discharge system. In such systems, discharge to the environment is minimal because water is recycled within the process. However, over time salinity levels can build up to very high concentrations. In the 1980s, a number of storage dams were constructed to manage these streams. More recently, regulatory requirements have been introduced that require these dams to be lined, even though they were originally authorised without such specifications.

Situations like this can lead to contestation between regulators and operators. Companies may appeal the requirement, arguing that the dams were authorised under earlier regulatory frameworks and that retrofitting them now is both technically infeasible and if it could be achieved prohibitively expensive. In some cases, the responsible authorities may not have sufficient technical or institutional capacity to negotiate these matters effectively, which can result in compromises on the original regulatory intent. (Anonymous interview 7, 30 June 2025)

Failure to recognise or protect customary and informal rights

Integrity risks also arise when administrative water allocation systems prioritise statutory rights while failing to recognise or protect customary or informal water uses. In many contexts, communities rely on long-standing customary arrangements for access to water, yet these arrangements are often invisible within formal permitting systems. When statutory systems ignore or override customary rights, affected users may be excluded from allocation processes entirely, despite their historical dependence on the resource and their rights to water.

Such failures undermine both administrative and procedural justice by denying recognition to legitimate users and weakening the social foundations of water governance. Scholars have long noted that water institutions which fail to accommodate customary and informal rights tend to exacerbate inequality and conflict, particularly where statutory systems favour larger or more capitalised users (Schlager and Blomquist, 1996; Giordano and Wolf, 2003).

Undue pressure and political interference

Another significant integrity risk relates to undue pressure exerted on administrative processes and decision-makers. This pressure can take multiple forms, including the deliberate setting aside of Environmental Impact Assessments or other regulatory safeguards in order to 'fast track' permits under the justification of immediate investment needs or economic development. In such cases, procedural requirements designed to protect public and environmental interests are weakened or ignored.

Pressure may also be exerted internally within institutions, where senior officials threaten or coerce lower-level staff to misrepresent information, alter technical assessments, or overlook non-compliance. In extreme cases, this pressure is reinforced through overt political interference, such as ministerial instructions to approve specific permits or the removal of ministers or senior officials who are perceived as obstructing desired allocation outcomes.

Examples from Zimbabwe illustrate how political influence can undermine enforcement and decision-making, particularly where powerful actors are able to intimidate or bypass regulatory authorities (Anonymous interview 2, 20 June 2025). In Tanzania, an interviewee described how large mining companies have used their financial and political influence to override formal permitting processes, including securing increased water allocations through informal channels, thereby denying water to other users within the same catchment (Anonymous interview 5, 3 July 2025).

Conversely, experiences in Mexico demonstrate that institutional reforms can reduce such integrity risks. The introduction of a digital permit tracking system by Conagua significantly reduced opportunities for collusion and bribery by increasing transparency, standardising procedures, and structuring water availability into the online system. This enabled authorities to identify corrupt practices, discipline implicated staff, and prevent the issuance of permits where no water was available.

In South Africa, undue pressure also manifests through negotiations and appeals over permit conditions, particularly where companies challenge retroactive requirements or costly infrastructure upgrades. Limited administrative capacity within regulatory agencies can make it difficult to navigate such pressure, leading to compromises that may undermine regulatory objectives (Ginster interview, 30 June 2025).

4.3 APPEAL AGAINST DENIAL OF PERMIT OR PERMIT CONDITIONS

Integrity risks in the appeals process for water permit decisions can be significant, affecting not only the fairness of individual outcomes but also confidence in the rule of law and in water governance more broadly. In many jurisdictions, legal or administrative appeals are the last line of accountability when a permit decision is contested. Ideally, appeals provide a forum for reviewing whether permits were denied or granted according to the law, whether correct procedures were followed, and whether affected parties have had their interests properly considered.

Judicial review mechanisms typically assess whether a decision was lawful, rational, and procedurally fair, including whether relevant evidence was considered and stakeholders were engaged in the process. When appeals function well, they reinforce transparency and accountability in decision-making and help ensure that social, environmental and resource considerations are not sidelined by administrative error, bias or malfeasance. Judicial review also serves to strengthen good governance by upholding statutory obligations and correcting decisions that do not comply with legal requirements.

However, several risks can undermine integrity in the appeals process. One of the most concerning is undue political interference, where executive branches or political leaders seek to influence judicial outcomes or the administrative structures that oversee appeals. When political interests are deeply entwined with water allocations, judges or review boards may face implicit or explicit pressure to uphold or overturn permit decisions in ways that reflect political agendas rather than legal merits. Political interference erodes public confidence in the impartiality of appeals, widens distrust of environmental governance, and can deter legitimate challenges to flawed decisions.

In some contexts, corruption can extend into the judiciary itself, with the risk that judges or adjudicators may be bribed or otherwise incentivised to render favourable decisions for powerful actors, further skewing the balance of justice and undermining both environmental protection and equitable access to water. Systemic corruption of this type has been documented in national contexts where judicial independence is weak and political or economic elites exert disproportionate influence over legal outcomes.

Another major integrity risk stems from weak judicial capacity and inadequate grievance mechanisms. Even where laws provide for appeals or judicial review, if courts lack the technical expertise to understand complex hydrological, environmental, or regulatory issues, appeals may be decided on procedural grounds unrelated to substantive justice or environmental sustainability. Water permits often involve scientific evidence and specialist determinations; without adequate judicial capacity, judges may default to simplistic interpretations or defer excessively to administrative authorities. This can result in flawed decisions. A clear example of this is described by Barrios who describes a court decision that Conagua had to approve two hundred permits in an area in which there was no water to allocate (see section 6.3). Moreover, inadequate or inaccessible appeal mechanisms – for example, where costs, procedural complexity, or geographic distance make litigation prohibitive – effectively exclude many stakeholders from meaningful participation in review processes. Such barriers distort access to justice and create perceptions that the system favours those with resources and influence. (Barrios interview, 16 June 2025e)

Underlying these risks is a broader governance context in which corruption and lack of transparency can permeate the water resource sector. When the criteria for appeals, the documentation of decisions, or the conduct of hearings are not publicly accessible or properly explained, it becomes difficult for affected parties to challenge decisions effectively or for observers to hold institutions accountable. Corrupt influence, whether through bribery, favouritism, or other forms of improper conduct, further weakens enforcement and erodes trust in the entire regulatory system. Because corruption in permitting and appeals can interact with broader distortions in governance, strengthening integrity in appeals requires attention to judicial independence, transparency, capacity building, and robust procedural safeguards that ensure fairness and accountability throughout the water governance system.

In South Africa, the Water Tribunal was established to give water users recourse to an appeals mechanism that did not carry the administrative or financial burden of appealing to the courts, which did, however, remain as the final arbiter if needed. In practice, however, the Tribunal has largely served the interests of large commercial farmers. One interviewee suggested that some large farmers in South Africa take advantage of their strong capacity and the lesser capacity of Catchment Management Agencies and the DWS, which "lack people with technical capacity and may not have followed proper procedures or missed a small step". He asserted that farmers are "always ready to litigate against CMAs and the Department, and often times they will win". In other words, powerful actors with resources and capacity can use existing, proper processes to benefit disproportionately. Structural biases in appeal systems can reinforce power imbalances in water allocation, rather than serving as neutral checks on administrative decision-making. (Anonymous interview 7, 30 June 2025)

4.4 COMPLIANCE MONITORING AND ENFORCEMENT

Once the permit has been issued, the permit holder must comply with conditions and undergo inspections. Bribery, extortion, and other forms of corruption are widely documented mechanisms through which water users avoid compliance with water use licences, particularly in contexts where regulatory capacity is weak, monitoring is sporadic, and power asymmetries between regulators and users are pronounced. Rather than complying with licence conditions related to abstraction volumes, infrastructure specifications, monitoring, or reporting, some users pay bribes to inspectors or officials to ignore violations, falsify records, or delay enforcement actions. In such cases, corruption functions as an informal substitute for compliance, allowing illegal or excessive water use to continue while creating a façade of regulatory control.

This dynamic undermines both the effectiveness of water allocation systems and the credibility and even legitimacy of public institutions, while disproportionately disadvantaging smaller users (OECD, 2015; Mehta et al., 2016; Warner et al., 2009).

In Jakarta there is a major problem with businesses and residents illegally abstracting groundwater without proper permits, which is difficult to enforce due to high levels of corruption. (Al'Afghani interview, 11 June 2025)

Jennifer Molwantwa spoke of the difficulties of enforcement in the context of powerful users in South Africa:

> *In practice when you go to the Inkomati-Usuthu Catchment Management Agency, we have laws, policies and regulations that are very good on paper, but enforcement and compliance of them is a different issue altogether. In South Africa politics plays some role, but the huge factor is economics. The commercial users in South Africa are always ready to litigate against the catchment management agencies and the department and oftentimes they win. The department and catchment management agencies are not properly resourced in terms of human capacity and technical skills. You have people who then try and enforce regulations, but they might not have followed proper procedures or might have missed a small step, and this is the advantage that these commercial users take to litigate and often times they win.* (Molwantwa interview, 7 July 2025)

Enforcement is made more difficult by high levels of crime in some areas. One interviewee reported having many instances in which "people mention that some of the irrigation districts are now controlled by the narcos in Mexico. So, nobody in their right minds is going to check is that narco complying with the water rights or the conditions of the water right." (Anonymous interview 3, 10 July 2025)

4.5 CORRUPTION IN THE OPERATION OF WATER SYSTEMS

Bribery, extortion, and other forms of corruption represent significant integrity risks in the implementation of water use permits. These risks arise where oversight is weak, enforcement is discretionary, and powerful actors have the capacity to influence decision-making processes. Weak institutional capacity, opaque procedures, and limited transparency can all create conditions in which compliance becomes negotiable, and in which elite actors are able to avoid regulatory obligations more easily than smaller or less-resourced water users.

Salman (2007) highlights how discretionary powers vested in regulatory authorities, particularly in contexts of water scarcity, can be exploited to favour certain users. While the focus is often on procedural discretion rather than corrupt exchanges, he notes that such discretion creates an environment in which non-compliance can be facilitated through informal arrangements or preferential treatment. Bakker (2012) similarly observes that water governance structures in some countries allow for elite capture, where users with economic or political influence can shape enforcement outcomes to their advantage, often at the expense of equitable access or environmental sustainability.

These systemic vulnerabilities create opportunities for unethical practices, including bribery or collusion. When enforcement relies on self-reporting of abstraction volumes, powerful users may have the means to avoid penalties or manipulate reporting without being detected.

The literature underscores that these integrity challenges are systemic rather than incidental. They are not necessarily a matter of individual wrongdoing alone, but reflect the interaction of weak institutions, discretionary enforcement, lack of transparency and corruption. (OECD, 2015; Mehta et al., 2016; Bakker, 2012; Salman, 2007).

A further risk is the bypassing of regulatory requirements for permits in order to obtain water. In Indonesia:

> *When there is scarcity of water, then there are black market water allocation where you can receive water if you pay certain amount of money…Farmers in the area have reported the existence of a 'water mafia'—individuals who are diverting water away from its intended allocation, especially during the second and third planting seasons when water becomes scarce. The farmers allege that by paying a certain amount of money (30 million rupiah per village), these 'mafia' gain access to water that should have been allocated to others.*
> (Al'Afghani interview, 11 June 2025)

In Tanzania:

> *People are generally using water illegally, just abstracting water rather than bothering about paying a bribe for a permit. To be honest, to most people, if it's a river flowing; I will tell you this is water from God, why should we pay for it anyway? And if you want to enforce it, you cannot do it because you need evidence that they were using illegal water. So, you need only to negotiate to ensure they don't abstract more than what they're supposed to. And you tell them the importance of getting a permit for the purpose of conservation and protection and that's it.*
> (Anonymous interview 5, 3 July 2025)

PART 5: PRACTITIONER EXPERIENCES OF INTEGRITY FAILURES IN WATER PERMITTING

The impact of integrity failures on water allocation is clear: water is not allocated in a way that meets the desired outcomes, particularly of equity and sustainability. It can undermine a country's economic development trajectory. Undermining residents' trust in elected and non-elected leaders and corroding social norms can have a ripple effect beyond the water sector.

In the section that follows, practitioners share how their experiences of integrity risks and failures in water allocation are embedded in the political, institutional and economic contexts where they occurred or emerged. What happens in the water sector is part and parcel of what is happening in a country: its economic development, the nature of politics and power, role and respect of residents, social norms, trust of government and the proverbial fabric of society.

This section shows how integrity in water allocation is embedded in different local contexts, which shape the scope for action by institutions and individuals. Interviewees spotlighted integrity failures in water allocation, which are included in the rest of the report. Below, practitioners explain how specific integrity failures emerge and feed into the local context in Zimbabwe, India, Pakistan, and South Africa. This is followed by two detailed accounts of integrity failures that run through the entire water allocation system in Mexico, illustrating just how complex the interplay between water; history and politics; laws and judiciaries and institutional change can be.

5.1 POLITICAL PRESSURE AND FEAR AT EACH STAGE OF THE PERMIT SYSTEM IN ZIMBABWE

One interviewee described how political pressure, fear and corruption has undermined the water permitting system at each stage in Zimbabwe. While other accounts highlight incidences of political pressure, this full account explains how this power is asserted at each stage of the permit system, in organisational and personal terms.

The following explanations and quotes come from an anonymous interview (no 6) conducted on 20 June 2025.

Beginning with the application for a water use license, the interviewee explained that people who are aligned with the ruling party treat the application process as cumbersome. They do not even apply, they just go ahead and take water. Then they request the catchment authority to come and make them compliant. The interviewee described how pressure is wielded:

> *"The head of the catchment agency is first to feel the pressure. If he tries to enforce the regulations, that's when politicians or people aligned to the politicians will say 'no, no, no, don't worry. I'll call your boss at Head Office.' Then the Boss at Head Office tells him, 'they want to comply, now help them with the compliance process'. Of course, what they did was illegal, using water before they got a permit, but catchment managers avoid the situation when they realise that this is a powerful political person. Penalties are forgotten."*

This affects the availability of water to users who do pay and, in some cases, can affect transboundary flows. For example, Zimbabwe's sugar cane estates are expanding, and semi commercial farmers getting into the sector are politically aligned. Corruption and water theft upstream in Zimbabwe can affect availability downstream in Mozambique.

Then, at the abstraction point, river monitors may be bribed by users to falsify the volume of abstraction so that users pay very little. The interviewee emphasised that the supervisor needs to ask where water is going if s/he sees unaccounted for losses. Or there is a failure of integrity in the duty of care and due diligence in managing state resources.

Political alignment also undermines payment for water resources: "*Politically aligned people who are usually in agriculture or mining do not pay. They can do what they want, and the politically powerful people turn a blind eye to non-payment.*"

Again, the interviewee explained how pressure is wielded:

> "*The Zimbabwe National Authority staff are mandated by the Water Act to disconnect supplies for defaulting clients, but for these powerful people you cannot do it without risking being viewed as a saboteur and experiencing personal negative consequences. Bailiffs would be timid to disconnect someone powerful people for fear of victimisation. They wouldn't want to put their workers, the bailiff or themselves at risk, so they can only refer such cases to the headquarters for enforcement related to debt recovery.*"

Without political will, change is difficult because "*politically aligned and more powerful people show you the finger like that because they trust in the system, and the power behind their actions*".

> *"There are a lot of issues that really hinder integrity from the shop floor to the very top because at the highest level of political office, if a leader is not aware of the impact of not making correct decisions or favouring cronies, the whole system can collapse. The lack of integrity will become systemic and people get used to it—it is normalised and it will be too difficult to reverse when a new leader comes. People say 'what are you trying to do here? We know that we need to benefit from whatever we are working on'. The changes have to come with political will at the higher levels, so that competent leadership is appointed and the shop floor is reoriented to do the right thing."*

In terms of a catalyst for change, the interviewee suggested that high-level competent leadership is needed to set an example first and foremost. Once the norms in the organisation change, people are more likely to do their jobs with integrity.

5.2 PERMIT SYSTEMS UNUSED OR IN DISARRAY IN INDIA AND PAKISTAN

An anonymous interviewee (no 1), with extensive experience in South Asia, reflected that in India and Pakistan, permits are not issued and permit systems are in disarray. Irrigation development is a 'big ticket in the development sector' because it is visible and lucrative. Without an effective water allocation system, there are no limitations, conditions or procedures to ensure that water is allocated within hydrological or ecosystem limits, much less justly. In India, for example, new irrigation schemes are built that take water away from existing irrigation schemes—with government authorisation: "*You get project clearance and you just go ahead. They don't really care about the impacts on other water users because they're relying on riparian doctrine or basically no law at all*".

In terms of the specific areas, the interviewee explained:

> *"I've seen corruption in this area throughout the whole chain of withholding water or getting kickbacks to provide water allowing. They basically look at the topographical map, for places where they could build irrigation schemes and on the basis of that they get some kind of clearance from the state governments. I mean, they do some kind of feasibility study or whatever, but then they build a new irrigation scheme that takes water from the existing irrigation scheme and then another one upstream of that. It's absolutely crazy. I've even had farmers telling me: We need a new diversion point to get our water back upstream of the new irrigation scheme that's taken our water. We need a new canal to take the water back.*
> *So within this overall lack of accountability at the field level, it's very clear that there's an awful lot of corruption going on as well….So the way it works is that the contractors basically bribe the politicians and the politicians pass on some of the money to the civil servants, and then they build more irrigation schemes like that. And the World Bank or other donors may or may not support this, because it's got to be good."*
> (Anonymous 1 interview, 2 July 2025)

5.3 COMPANY POWER IN OBTAINING PERMITS IN SOUTH AFRICA

Martin Ginster, former water advisor within a large industrial company's corporate risk and Safety, Health and Environment function, has many years of experience with water licensing processes in South Africa. He explained that, in his view, there is always the risk that organisations or individuals with significant economic or political influence may seek to use that influence when engaging with regulatory processes, for example in relation to permit approvals or water-use allocations. At the same time, he noted that officials committed to performing their duties with integrity can and do act as an important counterbalance in such situations.

Large organisations inevitably have access to senior decision-makers. It is plausible that senior company representatives may approach the Department of Water and Sanitation directly to discuss or seek progress on licensing matters, and that such engagement can expedite the approval of a licence.

He explained that good practices have improved integrity in water permit systems in South Africa, despite the many challenges. One example is how the introduction of Water Use Authorisation Advisory Committees separated the role of case officers handling an application on behalf of a company from the decision makers. This is beneficial for integrity because the case officer does the paperwork, pulls everything together and presents it to the committee. Then the decision is made by the committee and a high-level official designated with the responsibility must sign off on the permit.

Ginster noted that industry in South Africa has been working under difficult circumstances: "*getting a licence can take years and often the licences that are issued come with inappropriate conditions or conditions that the company simply cannot meet, regardless of the cost.*" (interview, 30 June 2025)

Yet government officials can and do push back. One example is when a powerful mining company pressured the government to speed up licensing when a new 280 million USD capital project was being held up because they couldn't get a water use license for a crossing over a conveyor belt. When the company demanded to know when the license would be issued, the Acting Director General said "*we have to apply our minds and consider the license application as a process. And once we've concluded that proves you'll get informed of the outcome.*"

Jennifer Molwantwa, former Executive of the Inkomati-Usuthu Catchment Management Agency (IUCMA), explained that two major pulp and paper producers operate large plantations of alien trees across South Africa. These plantations, she noted, consume significant amounts of water when they grow near streams. Although classified as non-consumptive, they inadvertently reduce streamflow and groundwater recharge.

She observed that the companies had expanded their operations down the valleys from higher mountainous areas, further diminishing water availability. "*This cannot be technically disputed*," she said, "*but the companies used their lawyers to secure access to water and maximise profits.*"

Molwantwa recalled instances of political interference: "*The former Director-General and a provincial economic MEC called me directly. I was accused of causing trouble, threatening economic activity, and even endangering stock exchange listings. At that level, you would expect them to say, 'We trust the committee's process,' but clearly, pressure had been applied.*"

She emphasised that the companies' claims of lawful use were misleading. "*They cannot expand their footprint and still insist that all the land they move into falls under their existing lawful use,*" she explained. Through legal and environmental consultants, the companies created delays and what she described as a "self-made emergency." Ultimately, the CMA could only recommend a five-year license, allowing time to resolve the technical and legal impasse.

Molwantwa reflected on the broader implications: "*This shows how South Africa's constitution and legislative imperatives, praised worldwide, were twisted out of fear of economic collapse. The price paid was minimal, while profits from exports remained high.*"

She acknowledged suspicions of corruption, though she had no direct evidence. "*I wasn't personally aware of corrupt activities, but my suspicion was that it probably happened. Communities accused the CMA and department colleagues of being paid off to ignore complaints, which was painful for hardworking officials.*"

Looking forward, she stressed the need for accountability: "*We need deterrents—a code of conduct that applies to all decisions, past and present. Consequence management is essential to ensure that those responsible for wrongdoing are held to account.*" (Molwantwa interview, 7 July 2025)

5.4 A FAILED PERMIT SYSTEM IN MEXICO: TWO NARRATIVES

As stated throughout this paper, integrity failures are embedded in specific contexts (hydrological, historical, socio-political, economic and cultural). By understanding the specific context, stakeholders can identify areas of intervention where change can be catalysed, so that it is effective and likely to be sustained. This is evident in the following transcripts from two stakeholders in Mexico.

Interview: Eugenio Barrios

In one interview, Eugenio Barrios recounts his experience within Mexico's water administration, highlighting the deep structural and integrity challenges that have plagued the water allocation system from its inception. He explains that while the system was intended to rationalise water distribution through permits, in practice it became a bureaucratic process divorced from the ultimate goal of sustainable water management. Delays, inefficiencies, and a lack of clarity in procedures created fertile ground for corruption, at all levels, from Conagua employees, water users, and external actors such as lawyers and consultants, who colluded to accelerate or manipulate permits. Barrios emphasises that confusing legal frameworks, inefficiencies, insufficient digital tools, and limited monitoring capacity made enforcement difficult, particularly for groundwater, where actual usage remains largely unknown. (Barrios, 2024)

Barrios also reflects on the broader political dynamics that have undermined integrity: efforts to modernise and digitise permit systems were later disrupted due to political interference, with water rights increasingly treated as a symbol of privatisation rather than a tool for regulated management of a common good. The consequences, he argues, are a de facto "Wild West" scenario, where local actors, irrigation districts, and powerful agricultural interests operate largely outside Conagua's authority, leaving small farmers particularly vulnerable. He stresses that transparency and clarity—knowing precisely how much water exists, who holds rights to it, and under what conditions—are essential to restoring order, accountability, and fairness in Mexico's water governance.

Barrios worked for Conagua for five years after completing his master's degree, which was right after the new National Water Law was published in 1992. He was involved from the beginning in dealing with the challenges of issuing and regulating permits—and the modernisation policy of regulating all water users in the country. Fifteen years later, with extensive experience in various positions with the World Wildlife Fund Mexico and Latin America, he returned to Conagua—this time as Deputy Director, where he was deeply involved in the water allocation system.

On challenges implementing the water allocation system

> *What we found was that there was a lot of confusion and a lot of different instruments, different laws, and different norms involved. The users were not confident in the system, and that was one of the main reasons that many people started attacking the system. Also, because of this confusion, the process was prone to corruption. There were clear procedures but there was not enough capacity or interest in complying with legal timelines for the finalisation of applications. There were a lot of applications without resolution, and so everything was very fertile for corruption.*
> *There were a lot of permit applications and the system was very inefficient. There were no electronic systems or systems to make the process more efficient. Everything was on Excel and on paper – in a very old-fashioned style. One of the things that we implemented when I was in Conagua was a digital permitting system that was really powerful in terms of identifying inefficiencies and even bad practices. We were ableto really advance very, very fast all the permits that were needing resolution. This system*

was already under development when I arrived and we were able to finalise and implement it. When I took up office in Conagua in 2019, there were 200,000 permit applications open, all from the previous many years. Following a risk assessment,we start resolving all the low-risk permits, where water balance and social impacts were not at stake, and we finalised around 50,000 in one year. We estimated that it would take at least 6 years of working in that way with the same procedures with the digital system to close the gap of those 200 000, a fundamental step to start recovering confidence in the system and prove that having a reliable a water allocation system was possible.

That system enabled us to track where the permits were in the process. At the end of the day, I would get together with my staff and identify where the applications that were issued that day were. We would identify if there was a problem with the issuing of the permit, and we could even identify the name of the person who processed the permit. We also included in the system real time water availability, so you were not able to apply or issue a permit if there was no water available in that river basin for example.

The digital system gave us the opportunity to identify who was directly implicated in bad or suspicious practices. We would make the case and the legal department in Conagua would take the process to the authorities. There were many charges but it was difficult to proceed because the previous procedures were not very clear. There was a lot of lack of integrity in the process, so it was very easy for people to prove that they were not involved. Although this was also related to the limited capacity of Conagua legal department.

It was known as a common practice to bribe officials to speed up the process, to allocate more water to people, or to change permit conditions. In some states, like Chihuahua, the largest state in Mexico, in the north part with a lot of water problems, and in the central part where there are also big water availability restrictions, there were all kind of tricks, whatever you could imagine, you could find.

it has to be said, that we had enough power to deal with this situation including to reject the permit. But it took a lot of time to get a legal review. We had the National Water Law and the Federal Law of Administrative Procedures which is intended to protect citizens. Once you issue the permit, it's really difficult to get it back because you need to nullify the procedure and to prove that was wrong. It was not easy, but we did have the possibility to do it.

For discharge permits, the problem was compliance with water quality restrictions, but this wasn't a big problem compare with to groundwater extraction permits. Surface water permits are easier, one way or another, you know the amount of water you have mainly in the dams, and the allocated volume. But in terms of groundwater, there´s a lot of uncertainty about water balance and extractions. It´s fair to say that this is not a Mexican problem, in Europe, an assessment of illegal wells in Spain and Italy identify 1 and 1.5 million respectively. So here in Mexico, I have no idea. It could be millions.

On the judiciary

We also had a lot of court cases against Conagua because we were not able to resolve the permit applications in the specified time. The users presented complaints to the federal Justice Department, and so we were in many trials. In the end, because the lawyers in Conagua didn't finalise processes within the right timeframes, we had personal fines we had to pay because as officials we didn't comply with the resolution of the court. The legal department in Conagua didn't complete the processes in time so the judge set a fine for the person in charge. All the employees of Conagua were suffering this. It was part of the mechanism to get permits solved without water availabitliy considerations, for instance.

We lost one trial and had to issue 200 permits for wells in Chihuahua where there was no water. The judge said: 'Well, I don't care if there's no water. That's your problem. You need to permit 200 wells.' We appealed this case for many years. It was a trial that took almost 10 years, but, at the end, the resolution was: you need to give the permits' and that's it.

One problem we had is that judiciary were very weak in terms of water. They had no capacity on how to resolve water problems, so they proceeded as if they were resolving a commercial issue or something similar. We started working with the judiciary to start creating capacity to understand the water problems so that they would not resolve that we must give water when there is no water for example.

On political change and power

In 2018 we had a transformation of the political system and one of the main areas of change was in terms of water. The main political flag of the new administration was to end corruption. And Conagua was equal to corruption. At the beginning, the Director General of Conagua was really committed to ending the corruption in Conagua and we were making really strong decisions. So, after a few years, the new government started attacking a lot of water permits and water rights; they took the allocation water rights as synonymous with privatisation. And they blamed the companies for the lack of water in many places—they used water rights as a political tool to hit the previous government, but also to hit everybody.

At some point, because of a problem in Chihuahua with the water treaty with the US, all the high-level staff that were close to the Director General was fired. A new staff was appointed by the president. They were non-water people with limited idea how to manage water and operate following the law, then they broke the system. For example, they broke the digital water permit system.

Behind this situation, there were two issues. One was that we were treading on powerful people's toes. The other was the idea that water permits were equal to corruption and privatisation. There was a political idea that water rights were a way to privatise water, for example, of how beverage industry is taking water away from everybody. And if you put that together with the powerful groups from the agricultural sector, well, that's the perfect match to start breaking the water rights system.

It is clear that the problems are still not fixed. People are complaining that they have no permits, they have no rights, but water is needed.

At the end, water is now managed outside Conagua. Water is managed by the individuals, by the water utilities and agricultural irrigation districts. They get together, they agree, and they do whatever they want to do. And Conagua is on the outside. It's like a Wild West situation.

In terms of the agricultural sector, there are two powerful players. The big farmers, let's say the capitalist farmers, and the social groups who lease their land to the powerful capitalists. The social groups rent their land and water to the big farmers and get money in exchange. And so, they are playing games together and the people who are really suffering are the small farmers that are neither capitalist, nor with the powerful social groups—those small farmers that are around the big water users, urban areas or irrigation districts. They suffer because they don't have any power and the law does not protect them because if you have a permit or not, nobody cares.

On the need for a water rights system

It's really a social value to have a water rights system in place. It is the civilised way we can agree upon common goals and work together to manage water. It's of great value for a country to have such a system and we were very close to having it. What I am asking for is to save that system and start running it again, river basin by river basin.

In general, I think one of the main mistakes that happened here in Mexico was the lack of transparency in the process. The people must know exactly the amount of water, who has that water, and what's the conditions of that permit to build trust of each other. And that has to be explained in a very practical and clear way, so everybody knows where every drop of water is and who is having that water.
For example, here in in Mexico right now, in the head of the society is that industry is drying up the country and that's completely wrong. This is a country where with 3% of the total water available allocated to industry generates near 700 million dollars per year that represents 70% of the total operation costs of Conagua, so that's a great business. That's very clever and it's very important for people to know this fact. But in Mexico everybody has a completely wrong opinion on that. They say the beverage industry is drying up the country, but that's a wrong idea.
I think you need to grow the management processes as the problems and the pressures grow in different regions. You cannot start with a very powerful or very sophisticated way of managing water where there are no big problems. Nor can you start with very basic water management instruments if the problems are really complex and difficult to solve.

Barrios' early reflection still holds: the regulatory process often becomes a goal, instead of better water management. As a result, water allocation systems move far away from the realities of a country.

Interview: Fermin Reygadas

In another interview, Fermin Reygadas reflects on the integrity challenges in Mexico's water allocation system, tracing many of these issues back to the way the system was designed under neoliberal principles. He emphasises that the administration of water has been largely left to market mechanisms, supported by a regulatory framework that is weak in both authority and capacity. This has created a system in which water allocation is vulnerable to manipulation, where powerful actors can exercise disproportionate influence, and where regulatory institutions lack the resources to enforce compliance.

Reygadas highlights lack of transparency in water information and monitoring as a key integrity challenge: although Mexico maintains a public register of water rights, there is very limited oversight of actual water extraction or quality, and available data can be modified or selectively withheld to suit political or economic interests.

Reygadas also points to structural weaknesses in legislation, insufficient investment in monitoring and enforcement, and the normalisation of non-compliance as compounding the problem. Corruption, both within public institutions and in interactions with private actors, undermines regulatory enforcement and enables overuse or contamination to go unchecked.

Reygadas has been a deeply committed civil society leader over the last 19 years. Since he founded Cantaro Azul in 2006, Reygadas has worked with community groups affected directly by issues of integrity in water allocation. Since 2011, his work has also focused on Chiapas.

He explains that in rural areas, the dismantling of communal land and water systems, such as El Ejido, has led to the privatisation and monopolisation of water resources, exacerbating inequities. At the same time, Reygadas underscores the role of civil society and community-based initiatives, such as CUPUDA in Oaxaca, which demonstrate that collective management and local monitoring can help restore sustainable and equitable water use, even within a system that is largely captured by powerful interests.

This interview offers both a critical lens on systemic failures and insight into the potential for grassroots solutions to improve integrity in water management.

On the state of water

In terms of integrity in the water allocation system, one of the key issues relates to opacity in relation to both the conditions of water use and around the quantity and quality of water both on the surface and in the subsoil. Mexico has a public register of water rights. Once an assignment or a concession [equivalent to a water use permit] is given, it is entered into this register. It is easy to access the register, anyone can see it, and if you invest a little time to learn how to use it, you can have access to it. So, you can know who has what water allocation. But it does not give information on how water is being extracted or what quality of water is being returned to the ecosystems or bodies of water, so there is also a very large information gap.
In other words, one of the weaknesses from the perspective of integrity of the water management model in Mexico has to do with the lack of information, with the opacity of information, or with the information that is manufactured, depending on the political or economic desires of the moment and the region.

On political change

The administration of water allocation was designed in a period of neoliberal principles, and therefore it was put considerably in the hands of the market, and with a regulatory framework but very weak regulatory institutions. Weak regulation and the institutional weakness of the state to be able to regulate the administration of water seems to be one of the factors that also affects integrity.
In addition, there is very clear corruption within the institutions, but also on the part of the private sector and some public bodies or some public actors. There is a lot of corruption in terms of water management, that is reflected in how to obtain a permit. Those who now have the monopolies to water and have the benefits of having water concessions have power. They exercise power where legislation has failed, and that has had very great consequences. There has been a very great resistance to seeing water with a perspective of equity and sustainability and to a large extent this has been due to the undue influence that actors who control water have.

On water crime and the judiciary

I think there are also other challenges which are more general, such as challenges in the judiciary that make it difficult to achieve justice in relation to the allocation of water.
There are also security challenges where in some regions of the country organised crime is involved in water management and so it makes it very difficult for an institution like the National Water Commission (Conagua) to exercise its responsibilities in that region.

On information and investment

But I would say that the broadest effects on integrity come from the challenges in relation to information, to opacity, mainly, or the fabrication of information in order to capture institutions and the legislative process by those who have monopolised water.
In terms of information, we see the lack of investment on the part of public institutions, especially the National Water Commission, in monitoring water in the country. The National Water Commission collects, from the use of water and including penalties, approximately 27 000 million pesos a year (around 1 500 million USD). But it only invests 150 million pesos (8 million USD) to monitor water resources and the same amount to exercise regulation. This is negligible. As a result, about ten to fifteen years ago, the network of water laboratories of the National Water Commission was dismantled and the Commission's capacity to carry out its water quality studies was lost.

The water monitoring network for surface and groundwater was also dismantled. There has been insufficient investment to generate quality information. Very old hydrological models are used with little verification in the field, which generates inadequate understanding of the quantity, flows and quality of the water. But it is also very easy to modify these models and to suddenly generate availability where there was no availability. So, for example, a large project arrives endorsed by the State Government or the Federal Government, which needs water, or there is an industry initiative where water is required or a large agricultural project. A small modification is made to the parameters and the model shows you that now there is water available to allocate.

We saw this in Monterrey, where groundwater is the main source for industry, but where the aquifer is overexploited. There was a modification done to the model to reduce the degree of overexploitation, resulting in a significant reduction of the water fees paid by industrial users, saving them millions of dollars. All of this happened without any real change in water availability for use.

There is also a challenge around acknowledging information from other sources. Cántaro Azul had access to a database of more than 20,000 samples of water quality analysis that were carried out in schools. We found faecal contamination, but also arsenic and fluoride in the centre and north of the country. We shared this information with the National Water Commission, but they said that data is not valid even when it was carried out by an authorised third-party laboratory. It is very common there to be efforts to hinder the little information that is generated from getting to the public.

On regulatory capacity

This is closely linked to the inability of Conagua to regulate water. There are a little more than 100 inspectors who must cover more than hundreds of thousands of concessions and assignments for the whole country. This is impossible. Conagua's regulatory capacity is completely inadequate.

So, structurally, you have very weak legislation that believes that the best way to distribute this resource is to put it in the invisible hand of the market without any consideration of the inequalities that exist in our country and the institutional weakness. And on the other hand, there is no effort to allow Conagua to be a strengthened institution with adequate resources to exercise regulation.

Add to this the lack of information and it is very easy to use more water than you should or to discharge contaminated water. In most cases, it is not even detected. When it is detected, it is very easy to pay a bribe so that no consequence comes. When Conagua does take a water user to court, often Conagua does not have the resources to carry out the case well, which the large water user has significant legal resources. So, there are structural challenges and these take one into a cycle that is very difficult to get out of, where water is not managed with integrity. And this becomes normalised which is a very big problem because when failure of regulation is normalised, others will say 'Well, if the others were not sanctioned, then I can also do it this.'

On rural realities

In the rural context there is a complete absence of institutions. There was enough water 40 or 50 years ago, but since then we have seen an increase in demand for water. There was also El Ejido, where communal land tenure was used after the Mexican Revolution to redistribute land to rural communities. The big estates were broken up, and land was granted to groups of people (the ejidatarios) who collectively held and managed it. Individuals could farm plots assigned to them, but the land itself remained legally communal, and decisions about shared resources—including water—were made collectively.

When an ejido included a water source, that water was treated as common property for the use of the community. The right to access and manage the water was tied to membership in the ejido and subject to collective decision-making. Water use was regulated internally, often with informal rules for sharing among members, rather than being fully privatised or subject to federal permits. In the neoliberal period, el ejido was dismantled and part of the communal land was given as private plots to the ejidatarios. And there was a very big mistake in which the land where the water spring was, the water source, was also privatised. At first there was not much effect because the culture of these regions was that water was for common use, not for private use. But then things began to change was water started to be seen as something private and people began to say 'no, because I inherited this land from my father, if you want to access this water then you have to pay me.'

Water is now being privatised in the rural areas and there is an absence of the state to regulate and to make it very clear that water belongs to the nation that you cannot charge for it. This is now generating conflicts between communities and between communities with individuals, because this water is being hoarded and amount is more variable due to climate change. So, you can have a lot of water in the rainy season and little water in the dry season so there is more competition for water. And that water already has owners despite the Constitution that does not allow this.

No one is saying that in Mexico we are solving the water problem in an adequate way. It is recognised that there is a problem, but the solutions continue to emerge from the same paradigm that created this problem because the institution is captured. It was an institution that was born in the nineties with this neoliberal model that leaves it to the market to manage water, while the state focuses on the construction of large works. So Conagua is an institution of engineers, of the great construction of works, but not of the political and social management of one of the most important national assets.

Before the National Water Commission there was the Ministry of Agriculture and Hydraulic Resources which operated the water infrastructure and provided infrastructure for farmers. These efforts were supported by the International Monetary Fund and the World Bank. They pushed Mexico to decentralise responsibilities and to create irrigation districts and units. In the irrigation districts, what they do now is that the National Water Commission operates the dam and delivers the water in block to the irrigation district, which brings together tens, hundreds, sometimes thousands of farmers. The farmers form an association of water users and then distribute the water to them. Unfortunately, mechanisms were not created to strengthen water user associations and ensure that democratic principles were in place.

So, the people with more political power began to control the associations and a lot of inequity has been created in how water is managed. There are those who have monopolised more land and water in the irrigation districts and who have more control over management of the water.

In many cases these people have not only the economic power, but also the political power that, with a call, can stop a regulatory initiative by the National Water Commission. Depending on how much economic and political power you have, you manage in one way or another, to corrupt the system, in the sense that you make an unfair use of the rights that have been assigned to you. So, instead of having a renewable resource, which is managed equitably and sustainably, we have a resource, which is becoming more and more scarce, with more competition for it, more limited, more polluted, which becomes more expensive.

The role played by citizens, movements, native peoples to protest and make visible these challenges is very important, not only to make them visible but also to generate proposals and alternatives on how we can organise ourselves. For example, in Mexicali, a brewery was going to be built to export beer to the United States. Mexicali is on the border with California and it is an arid place, with a lot of pressure on water. The citizens organised and managed to position this problem on the public and political agenda to the point where a decision was made not to allow the construction of the brewery. But there are also many cases where it is not possible to stop projects, partly because of repression but also because it is very difficult to sustain a movement for long, because there is very little support for civil society or because the public institutions and public figures themselves also seek to dismiss what the citizenry and especially the movement's propose.

On the example of Oaxaca

There is a useful example in the central valleys in Oaxaca, where the current model gives concessions to farmers without having adequate regulatory mechanisms. They had not had structural problems in their water management, until the concessions arrived and the aquifer began to be over-concessioned. The larger farmers were not part of the social organisational structure and they individualised their use of water. The 'collectivity' that previously existed was lost and was not replaced by institutional processes to achieve adequate management.
Then the aquifer dried up and the farmers, because they no longer had water despite the concession on paper that said that they could extract so many litres of water a year, stopped renewing their concessions. They organised themselves and began to invest time and money to create areas of water infiltration. They also began monitoring and limiting of use of water. Thus, through community processes and institutions they managed to return water levels where they had been before. This, which is one of the few experiences that have achieved that in Mexico. But then Conagua came and told them 'you don't have concessions, you lost them, so you can't continue to use this water'. So, they organised and took the matter to court and through judicial processes, but also through practice and making visible what they were doing, at the end of the last six-year federal administration term they reached an agreement with Conagua for a collective concession. This is the first time that something like this has been done – a collective concession instead of an individualised concession.
CUPUDA (Coordinadora de Unidades de Planeación y Uso de Agua) is a collective organisation of water users' associations in the central valleys of Oaxaca. That collective concession allows it to maintain the rules include that users have to invest in the catchment in reforestation and water harvesting strategies and also to have internal mechanisms to limit their water use. In organisations such as CUPUDA, they seek to comply with the constitution where native peoples have the right to manage natural resources, including water in their territory and in the territories they occupy, in which case they would not need a permit from the National Water Commission. The federal executive should respect this right, because it is in a territory of native peoples, but it does not do so and so it needed to create a mechanism like this collective concession. But the ideal is to reach a point where those rights are recognised by Conagua as it recognises the rights of other countries in shared waters. After 30 years of a failed model, we need to look for what has emerged in the resistance, in the alternative models because they are there. There are elements that make visible what does not work and proposals on how to manage it in a different way. And this should be codified in public policies and in the institutional framework, because these practices, these good practices, are not going to replicate themselves. It is very difficult to make them work when there is a system that repels them, but the State does have the opportunity and the responsibility to take these good practices and codify them in laws, in public policies, in budgets and to seek to replicate them.

Maybe I would say one last thing. With Mexico a country where the manufacturing bases of many international companies are, these companies should meet at least the same standards of their country of origin in water management in Mexico, from mining to industry to agribusiness.

Reygadas concludes on the state of the system: weak legislation that leaves the 'invisible hand of the market' to distribute water in a country with massive inequities and institutional weakness. This is made worse by the fact that there is no effort to strengthen Conagua so that it is an institution with adequate resources to exercise regulation.

Conagua's authority over water concessions and the reallocation of unused or recovered water volumes was strengthened in a new General Water Law and amendments to the National Water Law in December 2025 (Greenberg Traurig, 2025). However, in line with the above analysis, civil society organisations argue that the reforms may be insufficient without greater institutional capacity and funding.

PART 6: RECOMMENDATIONS AND CONCLUSION

Strengthening transparency, data integrity and decision traceability

A central recommendation emerging from the research is the need for greater transparency in how water allocation decisions are made, particularly in contexts of scarcity and climate uncertainty. Integrity risks increase significantly where allocation decisions are based on projections or models that are not publicly accessible, poorly explained, or selectively disclosed. Clear and transparent projection of water resource decisions—including the assumptions, data sources, and uncertainties underpinning them—is essential to prevent manipulation, mistrust, and abuse of discretion. This is especially climate-impacted systems, where historical data may no longer be reliable and water users need to understand on what basis decisions are being taken.

Transparency should extend beyond high-level policy statements to the level of individual permitting and allocation decisions. Publicly accessible documentation explaining why a particular allocation was approved, modified, or refused, and how it aligns with availability assessments and policy priorities, provides an important check against favouritism and elite capture. Involving a diversity of actors in reviewing or validating projections and allocation assumptions—including technical experts, downstream or affected jurisdictions, and civil society representatives where appropriate—can further strengthen integrity by acting as a counterweight to unilateral or politically driven decisions.

Digitalisation, data systems and technology as integrity enablers

The development of integrated, user-facing digital systems emerges as a particularly powerful integrity reform when implemented carefully. Online permit application platforms that allow applicants to submit documentation, track the progress of their applications, and receive standardised communications can significantly reduce opportunities for bribery, informal payments, and discretionary gatekeeping. When applicants are able to see where their application sits in the process and what steps remain outstanding, delays become visible and harder to exploit for rent-seeking purposes. The ability of senior officials to track permit progress, as in the Mexico case, can also serve to identify bottlenecks and issues of corruption.

Beyond application tracking, the creation of comprehensive and regularly updated and publicly available water allocation databases is fundamental to improving integrity. Data systems that record water availability, permitted allocations, actual use, and compliance history make it more difficult to manipulate information or issue permits in over-allocated systems. The Mexico example shows how water availability information can be incorporated into an online system. While the ambition of a single comprehensive national data base may not be immediately achievable in all contexts, incremental improvements in data collection, standardisation, and accessibility can still yield substantial integrity gains. OECD (2015) highlights that fragmented, opaque, or outdated data systems are a major structural driver of corruption in water regulation.

Advanced technologies, including remote sensing, telemetry, and satellite imagery, can further strengthen integrity where adequate institutional capacity and sustainable funding exist. Satellite imagery, in particular, offers a way to prioritise monitoring and enforcement by identifying areas of intensive or anomalous water use, thereby reducing discretionary selection of inspection targets. Importantly, technology should be understood as an enabler rather than a substitute for governance; even low-tech but reliable measurement and recording systems can provide a strong foundation for integrity if they are consistently applied and publicly trusted.

Improving monitoring and enforcement mechanisms

Improved monitoring of both water availability and water use is a precondition for credible enforcement and for reducing the space in which corruption can flourish. Systems that systematically measure and record flows, abstractions, and return flows reduce reliance on self-reporting and informal negotiation, which are common entry points for bribery and extortion. Where monitoring data are routinely collected but not used, published, or linked to enforcement decisions, their integrity value is significantly diminished.

Strengthening enforcement tools is also critical. Enforcement mechanisms should be predictable, proportionate, and consistently applied, with clear escalation pathways for non-compliance. This reduces the incentive for users to attempt to negotiate outcomes informally and signals that compliance is not optional. Targeted enforcement strategies that focus on large or high-impact users can improve effectiveness. Publishing compliance monitoring data can also serve to improve integrity.

Public access to information and meaningful participation

Improving public access to accurate, comprehensible information is another cross-cutting recommendation that reinforces integrity throughout the allocation cycle. User-friendly water databases, plain-language guidance on permit requirements, and transparent explanation of allocation rules reduce information asymmetries that often favour powerful actors. When rules, priorities, and procedures are difficult to access or understand, discretion increases and accountability weakens.

Public participation, when genuinely implemented, can further improve accountability by exposing decision-making to scrutiny and by incorporating diverse perspectives into allocation priorities. Participation is most effective when it is linked to concrete decisions —such as negotiated allocation priorities or basin-level trade-offs—rather than treated as a procedural formality. Mehta et al. (2016) note that participatory processes can either mitigate or reinforce inequities depending on how they are designed; transparency and responsiveness are therefore essential.

Institutional checks, accountability and conflict-of-interest management

Strengthening the institutional architecture can support improved integrity. Establishing independent review mechanisms for water allocations can provide an important counterbalance to discretionary administrative power, particularly in politically sensitive or highly contested basins. Similarly, legal watchdog or oversight agencies focused on equity and accountability can help identify systemic biases, procedural failures, or patterns of preferential treatment that may not be visible in individual cases.

Reviewing and rationalising regulatory frameworks is also essential. Overlapping mandates, contradictory rules, or gaps in jurisdiction create opportunities for selective application and gaming of the system. Clarifying roles and closing regulatory gaps—including those that allow unregulated extraction or informal trading—reduces ambiguity and limits opportunities for corruption.

Addressing conflicts of interest requires both structural and procedural responses. Separating advisory and decision-making functions, ensuring that those who design allocation rules do not directly benefit from them, and requiring disclosure of interests for officials and consultants all contribute to mitigating integrity risks. Such measures are particularly important where technical expertise is scarce and regulators rely heavily on external consultants.

Targeted and adaptive permit system design

Tiered permit systems, as used in Kenya, allow regulatory effort to be focused on users with the greatest potential impact, without granting them superior entitlements. Permits can function more effectively as regulatory instruments when they are applied strategically to large-scale users, including foreign investors in large agricultural or industrial projects, while alternative allocation mechanisms may be more appropriate for small-scale or customary users, including collective permits as used in Oaxaca, Mexico.

Revisiting historic permits through creative and strategic approaches is also important in over-allocated or inequitable systems. Voluntary amendments, negotiated reductions, or incentive-based reallocation can sometimes achieve outcomes that are politically or legally difficult to impose unilaterally, particularly where vested interests are strong.

Complementary allocation mechanisms and local governance

At a broader level, integrity can be strengthened by recognising that centrally managed permit systems are not always the most effective or legitimate allocation mechanism in all contexts. In some settings, collective or user-based allocation systems grounded in local social norms and accountability structures may deliver better outcomes, provided certain conditions are met, including manageable scale, social cohesion, and clear recognition of basin boundaries. Hybrid models that incorporate collective permits and/or customary water rights illustrate how formal legal frameworks can coexist with community governance structures to improve accountability and address issues of exclusion and social justice.

Leadership, organisational culture and integrity champions

Finally, the importance of leadership and organisational culture in shaping integrity outcomes must be recognised. Formal rules and systems are necessary but insufficient without individuals willing to uphold them in the face of pressure. Identifying, supporting, and protecting integrity champions within institutions can have a significant impact on practice, particularly where political or economic interference is common. Awareness-raising, transparency initiatives, and visible accountability from senior officials help set expectations and norms.

As several interviewees noted, integrity often ultimately depends on whether leaders choose to do things differently. Creating institutional environments that reward such choices, rather than penalising them, is therefore a critical long-term recommendation for strengthening integrity in water allocation systems.

Implementing effective whistleblowing systems

Effective whistleblowing mechanisms represent one of the most cost-efficient and empirically supported tools for detecting and deterring corruption and malfeasance in permit issuing and enforcement, yet they remain underdeveloped in most permitting frameworks.

This paper recommends the design and implementation of a whistleblowing system for water permit administration, built around four core principles. First, it must provide robust legal protection for disclosers, shielding them from retaliation by both private permit-holders and public officials. Second, it must offer multiple, accessible reporting channels—including anonymous digital portals—that are independent of the permitting authority itself, to prevent internal suppression of disclosures. Third, disclosed information must trigger mandatory, time-bound investigative procedures with defined accountability for outcomes. Fourth, the system must be accompanied by a cultural change programme within permitting bodies, reframing whistleblowing as a professional and civic duty rather than an act of disloyalty.

International frameworks—including the EU Whistleblower Protection Directive (2019/1937), the OECD Anti-Bribery Convention guidance, and Transparency International's sector-specific integrity tools—provide established models that can be adapted to water permitting contexts. Evidence from analogous regulatory environments suggests that well-designed whistleblowing systems reduce corruption incidents, improve enforcement consistency, and strengthen public trust in environmental governance.

Targeted anti-corruption training

The development and mandatory delivery of a structured training programme for all officials involved in the issuance, review, and enforcement of water permits is a key element of improving integrity in water allocation systems. The programme should address four interconnected domains.

- First, integrity and ethics—covering conflicts of interest, gifts and hospitality, the management of political pressure, and the duties owed to the public interest rather than to applicants or supervisors.

- Second, administrative justice—ensuring decision-makers understand the legal framework within which they operate, including the principles of legality, proportionality, and the duty to give reasons for decisions.

- Third, procedural fairness—building practical competence in conducting fair processes, managing affected parties equitably, and ensuring that decisions are, and are seen to be, made on proper grounds.

- Fourth, accountability and documentation—emphasising that a decision's integrity is only as strong as the record that supports it, and that poor documentation is itself a corruption risk.

Training requires periodic refreshment, scenario-based learning drawn from real permitting contexts, and assessment against defined competency standards. Peer review mechanisms and communities of practice among decision-makers can reinforce training outcomes and create a professional culture in which integrity is a shared norm rather than an external imposition. Independent oversight of training design and delivery—insulated from the permitting authority itself—is essential to prevent the programme from becoming a box-ticking exercise.

CONCLUSION

The scope for corruption at each stage of the permit system can be seen clearly at an analytical level, but it is difficult to detect and to close spaces for corruption. It is essential to take action to do so. This can take the form of sanctioning behaviour or of creating institutional controls on behaviour by closing spaces for corruption. WIN uses shorthand terms—'no reprieve' and 'no room' respectively—to refer to these responses to corruption (WIN, 2024).

We examined the realities of the permit system in a range of country contexts, across the global South, and heard similar stories: corruption in permitting is embedded in wider political, economic and social dynamics.

The basis of this research was interviews with practitioners with extensive experience working on permitting. They explained and reflected on instances of integrity failures that they encountered and with which they struggled. This was an important entry point, allowing for a meso-analysis, moving between the national and local levels.

In each instance, it was evident that the forces driving corruption in water allocation were not individuals. Corruption was driven by individuals grounded in the nature of country politics and corruption, social norms and institutional vulnerabilities. Together these forces shape the trajectory of water allocation in that country, including integrity aspects.

In some cases, these forces are so powerful that individuals fighting corruption in water allocation are left trying to overcome much deeper challenges than corruption only— social norms and the nature of governance as well as structures of privilege/ economies that have developed over decades or generations.

These findings have significance for ongoing research around the effectiveness of water permitting systems, particularly under the added burden of climate change. They show how permitting systems are vulnerable to integrity risks and corruption at each stage of administration as well as more generally.

Improving integrity in the administration of permits—and taking steps to reconsider, reform or innovate around the allocation mechanisms being used—is paramount given the impacts of climate change. Water allocation needs to be considered through a lens of climate sustainability. This requires expanding our present water resource management considerations to allocate water equitably and to sustain vital ecosystems so that it does so in line with present climate change emphases—considering future generations and broadening ecological considerations to a right of rivers/nature.

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2. Alaerts, G., 10 July 2025.
3. Barrios, E., 16 June 2025.
4. Ginster, M., 30 June 2025.
5. Molwantwa, J. 7 July 2025.
6. Reygadas F. 24 June 2025.
7. Sithole, P. 20 June 2025.
8. Anonymous 1, 2 July 2025.
9. Anonymous 2, 20 June 2025.
10. Anonymous 3, 10 July 2025
11. Anonymous 4 , 24 June 2025
12. Anonymous 5, 03 July 2025.
13. Anonymous 6, 20 June 2025
14. Anonymous 7, 30 June 2025