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Viewpoint – The Case for Reconciling Water Principles with Treaty Practices in Crafting a Comprehensive Nile River Basin Treaty

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ABSTRACT: The Nile River Basin (NRB) is home to a long-standing dispute with colonial roots. A comprehensive agreement on water allocation and joint basin management has so far eluded its eleven riparians. How might the states reconcile downstream dependence on existing uses with upstream development needs? Principles of equitable and reasonable utilization and prevention of significant harm are indispensable, but they leave open important operational questions. Agreements on other transboundary rivers offer instructive, although imperfect, examples of fixed deliveries, percentage formulas, seasonal schedules, drought adjustments, joint commissions, and dispute procedures.

This Viewpoint argues that the disagreement is ultimately about power and legality rather than hydrology. A positive path to treaty engagement is for (i) Ethiopia to articulate a coherent national water strategy and a model treaty proposal; (ii) all riparians to recognize that negotiated allocation, alongside dam operation and basin management, belongs on the agenda; (iii) the parties to draw jointly on international watercourse principles and, just as importantly, relevant treaty practices; and (iv) the basin states to develop reciprocal arrangements for sediment management, water use, and watershed protection. A phased agreement would protect vital existing uses while creating tangible opportunities for equitable upstream development.

KEYWORDS: Nile River Basin, watercourse conventions, water treaties, Ethiopia, Egypt, Sudan

THE QUESTIONS THAT SHOULD GUIDE NILE NEGOTIATIONS

The Nile has no comprehensive allocation treaty binding all basin states, although international watercourse principles and comparative treaty practices provide indispensable guidance. Ethiopian tributaries contribute a substantial majority – often estimated at approximately 86% – of the flow measured at Aswan. The bilateral 1959 Egypt-Sudan Nile Waters Agreement allocated 55.5 billion cubic meters (bcm) of flow to Egypt and 18.5 bcm to Sudan, with an allowance of 10 bcm for evaporation and other losses (NWA, 1959; MWRI, 2005). Ethiopia was not invited to join this agreement and received no allocation from it. Instead, limited development of the Ethiopian water infrastructure has helped sustain existing water flow regimes; financing constraints are among several contributing factors to this lack of development.

It is also worth noting that Ethiopia's surface water – the annual surface runoff from the river basins – is estimated at 124 bcm and its sub-surface water at 16 bcm. This is enough to meet, at the international average, the annual water needs of only 120 million of its 135 million people (Zhang et al., 2025). All but one of Ethiopia's nine major rivers are transboundary, and Ethiopia currently utilizes an insignificant fraction of its sovereign water resources due to a combination of internal weaknesses and unprecedented external pressure. These facts offer opportunities and challenges alike for one of Africa's poorest countries.

The Nile Basin Initiative (NBI 1999, 2025) has advanced cooperation, although a final agreement among all riparian countries remains largely unfinished. Egypt and Sudan have expressed concerns about

how a new framework would protect their water security and existing uses. The resulting disagreements call for practical negotiations on rights, safeguards, and adaptation.

The difficulty of negotiating just and sustainable allocations also reflects conflicting distributional incentives. Egypt and Sudan depend heavily on established uses, but an inclusive treaty would need to provide for meaningful future water use by upstream states. The scale and timing of this rebalancing would depend on hydrology, efficiency gains, negotiated safeguards, and the pace of new projects.

The hydrological evidence forms a basis for cooperation, even where estimates and projected impacts remain contested. Legal interpretation, political incentives, and competing development priorities also shape the dispute (Brunnée and Toope, 2002). Upstream states question the validity of the bilateral 1929 and 1959 arrangements to which they were not a party; downstream states emphasize their dependence on the status quo. Table 1 profiles these agreements.

Egyptian officials and expert commentators commonly advance several concerns:

- Dependence and water security: Egypt relies heavily on Nile waters, particularly for agriculture, and fears that new upstream withdrawals or changes to storage operations could threaten established uses. This dependence warrants serious protection in any transition, but it does not, by itself, settle the allocation claims of the other riparians. Proposals concerning the operation of major dams should therefore be evaluated through reciprocal rules, transparent data, and negotiated drought safeguards (Berhanu, 2026).
- Existing uses and proposed projects: Egypt places considerable weight on the obligation to avoid significant harm to existing water uses. Upstream states contend that the same principles embrace an equitable and reasonable utilization for all. The parties, for example, disagree over the implications of the Grand Ethiopian Renaissance Dam (GERD) for downstream flows and future control of the river (Wheeler et al., 2020). Consultation and impact assessment may clarify these questions without presuming that any party to the dispute has an unconditional veto. Historical utilization and reliance are relevant factors in any comprehensive agreement, though they do not alone determine the rights of non-parties to earlier agreements.
- Different interpretations of legal obligations: Egypt has not ratified the UN Watercourses Convention (UN, 1997). Egypt and Sudan have not joined the Nile Basin Cooperative Framework Agreement (CFA), which entered into force for its parties in 2024. Their positions raise questions about customary law, treaty obligations, and the authority of established uses. A negotiated framework ought to address these questions explicitly but as impartially as possible.

Ethiopia and other upstream states advance the following corresponding arguments:

- The earlier agreements do not bind non-parties: The 1929 arrangement was concluded by Britain on behalf of territories it administered, while the 1959 agreement was between Egypt and Sudan (GBE, 1929; NWA, 1959). Upstream states claim that these exclusionary agreements lack legitimacy to determine their own entitlements.
- Equitable and reasonable use applies throughout the basin: All riparian states can invoke these longstanding principles, subject to duties of cooperation, due diligence, and regard for significant harm. Negotiators must weigh geography, climate, contributions, needs, historical use, and feasible alternatives in designing water allocation and basin management.
- A broader CFA process offers a possible exit route: Renewed engagement among all states, including Egypt and Sudan, could develop a framework that would give practical effect to equitable utilization, prevention of significant harm, and shared water security.

Table 1. A comparative look at historical Nile Agreements

Dimension	UN Watercourses Convention (1997)	CFA (2024)	1929 (UK-Egypt) and 1959 (Egypt-Sudan) Agreements
Legal Nature	Multilateral UN treaty on non-navigational uses of international watercourses; global	Regional treaty negotiated by Nile Basin states; not yet in force (needs ratifications)	Colonial-era treaties imposed by UK (1929) and between Egypt and Sudan (1959)
Parties	Open to all UN members; 39 ratifications as of 2024 (but not including Egypt and Ethiopia)	Ratified by 6 upstream states (Ethiopia, Rwanda, Tanzania, Uganda, Kenya, Burundi, and S. Sudan)	1929: UK and Egypt. 1959: Egypt and Sudan only. No upstream participation (i.e.; Ethiopia excluded)
Principles	(i) Equitable and reasonable use (Art. 5-6). (ii) Obligation not to cause significant harm (Art. 7). (iii) Duty to cooperate, give prior notification	(i) Same core principles as UN convention: equitable use, no significant harm. (ii) Explicitly rejects historical volumetric allocations. (iii) Creates Nile Basin Commission	(i) Allocations only: 1929 gave Egypt veto power over upstream projects, whilst 1959 allocated total Nile flow between Egypt (55.5 bcm) and Sudan (18.5 bcm). (ii) Exclude upstream rights entirely
Institutional Mechanism	No permanent basin institutions; relies on ad hoc state cooperation	Nile Basin Commission (COM, Secretariat)	None – purely bilateral allocation agreements
Allocations	No fixed quotas; instead, a balancing of factors (population, climate, dependence, and alternatives)	No fixed quotas; promotes equitable shares and cooperative development	Fixed volumetric allocations to Egypt and Sudan (74 bcm total)
Dispute Settlement	Negotiation, mediation, arbitration, and the ICJ (Arts. 33-35)	Stepwise: Commission mechanisms, then AU/mediation, then arbitration/ICJ	No clear dispute resolution beyond bilateral political negotiation
Political Status	Universally recognized as global customary framework but politically resisted by some (Egypt emphasizes "no significant harm")	Regionally negotiated; reflects upstream demands for inclusion. Still politically contested	Egypt and Sudan continue to cite these agreements as legally binding; upstream states reject them as colonial and exclusionary
Strengths	Universally recognized legal principles; balances use and harm; flexible	Region-specific; institutionalized; reflects modern water law; aims at inclusivity	Clear allocations; downstream certainty (for Egypt/Sudan)
Weaknesses	Lacks basin-specific institutions; vague balancing of principles; not all Nile states are parties	Not ratified by Egypt or Sudan; remains politically divisive	Outdated; exclusionary; ignores upstream states; entrenches zero-sum conflict

Sources: Compiled from various sources cited in the text.

The Nile dispute is often presented as a contest between legal principles. Upstream states invoke reasonable and equitable utilization; Egypt emphasizes protection against significant harm and its over-

dependence on Nile waters. Both principles matter, yet neither determines how many cubic meters each state may consume, how drought burdens will be shared, or how new irrigation should be phased in.

These questions of asymmetrical need and water ownership require negotiated operational rules that are informed by reason and evidence. An ideal NRB Treaty would include both the principles and practices embodied in modern international water conventions and treaties governing the world's major transboundary rivers. And to be enforceable, any water settlement must involve all stakeholder states; must cover equitable water allocation and sustainable utilization practices; must provide for timely data sharing and cost-sharing arrangements for major water projects and for the joint management of the entire basin to minimize negative spillover effects; and must include effective dispute resolution mechanisms.

More specifically, the major stakeholders need to craft an implementable, comprehensive treaty covering transboundary rivers and connected aquifers by adopting and adapting the legal principles, guidelines, and actual practices that are informed by the UN Watercourses Convention (UN, 1997; Stoa, 2014; McCaffrey, 2019), the Berlin Rules on Water Resources (ILA, 2004), an improved institutional design of the CFA that unpacks water securitization (Mekonnen, 2010), and the peculiarities of the NRB ecosystem itself.

A durable settlement must also answer how all parties will share water, risk, costs, and benefits under changing conditions. The CFA entered into force for its parties on October 13, 2024, an important step towards a permanent Nile River Basin Commission. But it is not yet a comprehensive agreement among all stakeholders: Egypt and Sudan remain outside the framework and continue to articulate concerns about water security (Nile Basin Initiative, 2025).

The CFA process should also include pertinent lessons from previous treaties, which offer concrete ways to implement broad norms (Kimenyi and Mbaku, 2015). The extant agreements do not bind many of the Nile states and may reflect unequal bargaining power. However, they show how some countries have designed measurable commitments, safeguards, and dispute procedures. The bottom line is that international principles identify considerations for a settlement; comparative practice illustrates some of the possible institutional forms this might take.

In my considered opinion, four assumptions deserve particularly close attention:

- 1) That hydrological and technical measures alone can settle the dispute. Scientific work is essential, but estimates of effects and acceptable risks often differ. Unresolved points of contention also concern the allocation of benefits and burdens, the treatment of established uses, and the terms of future development.
- 2) That the upstream countries (mainly Ethiopia) and the downstream countries (mainly Egypt) can begin to reconcile their conflictual interests through partial agreements such as shared management protocols governing projects such as the Renaissance Dam of Ethiopia, the Rosiere dam of Sudan, or the Aswan Dam of Egypt. Nile Basin countries lack a tradition of systematic data-sharing or prior consultation when initiating and implementing mega hydropower or irrigation projects. Furthermore, sources of conflict go well beyond unilateral dam building and management; they also involve irrigation and basin health amid rapid population growth, the commercialization of agriculture, industrial water use, and the ongoing degradation of the highland ecosystem that is reducing the total volume of available water for all.
- 3) That the root cause of the conflict is over-water sharing. For instance, reducing silt outflow from the upper riparian states would benefit downstream countries, too, by reducing the silting of their dams. Given the basin's topography, Ethiopia's huge annual silt loss is arguably more damaging to its agriculture than water loss itself. On the other hand, if Egypt were to receive the same volume of water from the Ethiopian Nile that it does now, but free of silt, the sandy soils of the Nile Valley and Delta could not support a rich agricultural base. Fertilizer use notwithstanding, silt matters as much as water, if not more.

- 4) That international conventions and comparative treaties supply ready-made answers. Conventions set broad principles, while agreements on the Colorado, Niger, Danube, Euphrates-Tigris, Ganges, Indus, and Mekong rivers offer context-specific approaches. Neither source can determine a Nile allocation scheme in advance. A substantial change in downstream shares is one possible outcome of an inclusive allocation agreement. A scenario in which Egypt receives roughly one-third of its current agreed allocable flow illustrates the scale of the bargaining challenge. Still, such a scenario is neither a legal rule nor a forecast. Its implications depend on the definition of allocable flow, the baseline flow, the protection of vital uses, and the pace of transition.

INSTRUCTIVE LESSONS FROM INTERNATIONAL WATER TREATIES

Treaty practice does not yield one universal formula, but a repertoire. As shown in Table 2, some agreements prescribe fixed deliveries; some divide percentages according to seasonal flow bands; some partition tributaries; some protect a minimum downstream flow while leaving the upstream state the residual; and others avoid quotas but impose notification, consultation, monitoring, or water-quality duties.

The useful comparison is therefore not "which treaty should the NRB copy?" but rather "which operational devices have states used, under what conditions, and with what distributive consequences?" Three notable findings emerge from the comparative cross-basin treaty evidence:

First, *practice is more determinate than principle*. "Equitable use" often becomes a protected annual delivery, a percentage at a specified flow, a partition of tributaries, a seasonal schedule, or a reserve for future development. "No significant harm" becomes a drought floor, a notification period, a construction constraint, compensation, or a requirement to finance replacement works. "Cooperation" may take the form of a commission with gauges, reports, inspections, and procedures.

Second, *practice reflects power but does not move in only one direction*. The Colorado and Euphrates arrangements illustrate the leverage of powerful upper riparian states: The downstream state receives a defined delivery, and the upstream state retains extensive residual control. The Ganges arrangement gives India strategic upstream leverage while still protecting Bangladesh through critical low-flow periods. The Indus Treaty is the necessary counterexample: Despite India's upstream position, Pakistan obtained the western rivers, carrying most of the system's flow, because downstream dependence, partition risk, third-party mediation, and financing all shaped the bargain.

Third, *the form of allocation matters as much as the percentage*. Fixed volumes can provide predictability, while variable shares can distribute hydrological risk. A 35% downstream share can be examined as an illustrative boundary scenario alongside alternatives with greater protection for existing uses; that said, comparative cases do not establish that figure as an appropriate Nile entitlement.

Some arrangements provide stronger downstream protection than others: The Indus treaty responds to Pakistan's dependence, while the Ganges formula can approach equal sharing in some flow bands. These illustrative cases define possible bargaining approaches rather than an answer for the Nile. Egypt and Sudan pursue a reliable water supply; Ethiopia and other upstream states seek recognized development opportunities. Negotiating the long-term allocation, project schedules, and drought rules together could significantly enlarge the space for agreement.

So, what might an operational Nile water allocation architecture look like? The reconciled framework calls for a treaty with a constitutional layer *and* an operational layer.

Table 2. Treaties governing major transboundary rivers

Basin	Allocation device	Distributional signal	Flexibility / Institution	Lessons for NRB
Nile, 1959	Fixed national volumes: 55.5 bcm Egypt; 18.5 bcm Sudan; 10 bcm evaporation.	100% of recognized national allocations to two lower riparian states; upper states excluded.	Bilateral technical commission; no basin-wide allocation forum.	The inherited baseline is itself a treaty practice – but an exclusionary one that cannot bind non-parties.
Colorado, 1944	Fixed annual delivery of 1.5 million acre-feet to lower-riparian Mexico, with extraordinary surplus and drought adjustment.	Powerful upper state retains the residual after a protected downstream delivery.	International Boundary and Water Commission; adaptable "minutes" process.	It is possible to combine a downstream security floor with upstream residual use and proportional drought rules.
Euphrates, 1987/1990	Turkey assures an average 500 m ³ /s at the Syrian border; Syria and Iraq divide received flow 42/58%.	Minimum-delivery architecture leaves substantial control and residual use upstream.	Thin basin-wide institutions and recurring compliance disputes.	An agreed-upon number without monitoring or a strong commission remains politically fragile.
Ganges, 1996	Ten-day seasonal schedule: 50/50% at low bands, protected 35,000-cusec periods, and residual formulas at higher flows.	Neither territorial contribution nor prior use alone controls; scarcity is scheduled and alternated.	Joint monitoring; 30-year term; consultation below specified flow.	Use flow-contingent shares, short accounting periods, alternating drought protection, and review.
Indus, 1960	Partition of eastern rivers to India and western rivers principally to Pakistan, with specified exceptions.	Lower-riparian dependence outweighs a simple upstream-favouring prediction; roughly four-fifths of system flow assigned to western rivers.	Permanent Commission, neutral expert/arbitration architecture, and third-party-financed transition works.	Comparative practice can protect a highly dependent lower riparian while preserving defined upstream uses.
Mekong, 1995	No volumetric quota; notification, prior consultation, and specific agreement vary by season and type of diversion.	Procedural allocation of decision rights rather than division of the entire flow.	Mekong River Commission, data and consultation procedures.	A Nile treaty needs procedural rules, but procedure cannot substitute indefinitely for allocation.
Danube, 1994	No basin-wide volumetric division; sustainable and equitable management, pollution, and risk control.	A mature basin may prioritize quality, ecosystems, floods, and coordination over quotas.	Strong commission, monitoring, programs, and dispute settlement.	Management models are valuable after – and only where – distributional conflict is not evaded.

Sources: Compiled from various forces, including RTSAR, 1987; MRB, 1995; DRPC, 1994; GWS, 1996; IWT, 1960; NWA, 1959; USAM, 1944; Zeitoun and Warner 2006.

The *constitutional layer* sets the durable rules of the game. They include:

- i. universal standing: All significant riparian parties participate; the 1929 and 1959 bilateral agreements remain relevant historical markers but cannot allocate the rights of non-parties.
- ii. reciprocal entitlement: Every riparian state has a right to fair and equitable utilization and a corresponding duty of due diligence, cooperation, and conservation.
- iii. no veto: Prior notification and consultation do not confer unilateral approval authority on either upstream or downstream states.
- iv. recognized development reserve: A specified portion of allocable flow or future consumptive growth is reserved for upper riparian states that currently are grossly underutilizing their flows;
- v. protected vital needs: A downstream security floor protects drinking water and a negotiated core of highly dependent uses, especially during transition; and
- vi. review and adjustment: The allocation is reassessed at fixed intervals using agreed-upon indicators without reopening the treaty's foundational recognition of the water rights of every riparian state.

The *operational layer*, on the other hand, sets the rules that change with the river:

- i. normal-year formula: a hybrid of volumetric floors and percentage shares, preventing either absolute downstream priority or unrestricted upstream residual use;
- ii. seasonal accounting: monthly schedules where timing matters, following the practical logic of the Ganges arrangement;
- iii. drought bands: objective triggers grounded in observed inflow and combined GERD-High Aswan storage, with progressively shared reductions rather than a single cliff;
- iv. surplus rule: pre-agreed treatment of flows above the normal band, including storage recovery and ecosystem needs;
- v. project protocols: symmetric notice, impact assessment, data exchange, and mitigation for major projects throughout the basin;
- vi. watershed and sediment account: downstream beneficiaries co-finance verified soil conservation and reservoir-life services in Ethiopian source areas; and
- vii. annual public water account: independently audited measurements of withdrawals, return flows, storage, evaporation, and compliance.

TOWARDS AN INCLUSIVE NILE TREATY

If we accept the argument that the disagreement is ultimately about power and legality rather than hydrology, then a treaty solution will have to focus on optimal water allocation. Zaerpoor (2019) and Basheer et al. (2023) explain why a promising treaty package could still encounter obstacles. Zaerpoor's comparison of the CFA and GERD negotiations sheds important light on the foundational issues of representation, framing, sequencing, knowledge production, trust, domestic constraints, and negotiating forums. These factors collectively imply that comparative treaty analysis should inform a joint negotiating process.

A joint, independent team should prepare a treaty practices dossier using primary texts and common metrics. For each relevant comparator, it would distinguish source contributions, dependences, recognized uses, allocation forms, drought rules, implementation institutions, dispute procedures, and actual compliance. The parties would then test several allocational proposals against the same

hydrological sequences and economic assumptions. Informal problem-solving could uncover trade-offs that positional bargaining hides (Susskind and Zaerpoor, 2017).

An international court faced with a dispute over Nile waters would have to assess the parties' consent to jurisdiction, the applicable law, equitable and reasonable utilization, significant harm, and established uses. Predicting a specific allocation or judicial recommendation would be difficult. Negotiating in good faith therefore remains the only practical route out of this quagmire. A basin-wide negotiated framework could combine international watercourse principles, CFA institutions, and safeguards for established uses. Joint monitoring and adjustment rules would help translate these commitments into a workable arrangement.

Ethiopia could energize this process by publishing a detailed transboundary water strategy and a model allocation proposal with clear hydrological and economic assumptions. Such a proposal should candidly acknowledge Egypt's established dependence while explaining why bilateral allocations cannot settle non-parties' claims. It could draw on downstream protections in the Indus and Ganges agreements, development provisions in other basins, and cooperative institutions from the Mekong and the Danube.

An Ethiopian proposal could commit to equitable and reasonable use, significant-harm prevention, timely data sharing, and a negotiated downstream security floor (MoWR, 2002). It could also seek an agreed timetable for recognizing and developing upstream uses. Interim GERD arrangements would be easier to sustain if connected to this wider framework (Matthews and Vivoda, 2023).

More specifically, four practicable steps may strengthen Ethiopia's contribution to basin negotiations:

- 1) Issue a comprehensive and coherent water strategy, much like Egypt's (MoWR, 2021; MWRI, 2005). This should include a pledge to international principles; sustainable plans for hydropower, irrigation, and industrial use; schemes for exporting surplus electricity and unutilized water; and a plan for water and basin health that includes reforestation, tributary diversion, and extensive terracing.
- 2) Push for negotiations on an inclusive treaty addressing allocation, joint basin management, and regional economic cooperation, while keeping open to reasonable interim arrangements.
- 3) Ensure that interim technical and data-sharing arrangements for major projects apply reciprocally where relevant; expressly leave future basin-wide allocation questions open.
- 4) Develop watershed and soil-conservation plans, preferably in consultation with stakeholders, with options for equitable shared financing.

Egypt and Sudan also have important opportunities to shape a mutually acceptable agreement:

- 1) Egypt could set out the minimum water supply and drought protections it considers absolutely necessary, supported by transparent data, and engage with upstream water-use proposals through the CFA process or another inclusive forum. Reciprocal notice, independent assessment, and financing for efficient use would help turn water-security concerns into negotiable safeguards.
- 2) Egypt could also reassess investments in water efficiency, reuse, and other supply options alongside negotiated adjustments in Nile use (Tayia et al., 2021). The parties should evaluate the costs, feasibility, and environmental effects of each option openly. Regional electricity trade and watershed investments could offer additional benefits to all parties.
- 3) Sudan, less dependent on the Nile than Egypt, has distinct interests in flood management, irrigation, dam safety, and dependable flows. It could use its position between Ethiopia and Egypt to advance shared monitoring, coordinated operations, and safeguards customized to its own needs.

CONCLUSION: FROM PRINCIPLES TO WORKABLE RULES

The NBI does not lack principles; it lacks an agreed mechanism for turning principles into shares, schedules, safeguards, and institutions. International water conventions can help close these gaps, but they cannot do it alone, because they were designed to *frame* equitable bargaining, not replace it. Existing treaties outside the region cannot answer these questions alone, because practice records power as well as wisdom. Reconciliation is therefore a more beneficial approach: Convention principles identify the morally and legally relevant considerations; comparative treaty practices supply the realistic operational devices; and NRB negotiations select and adapt them within a transparent and innovative framework of cooperation (Safaei et al., 2026).

In sum, the paramount unresolved issue is how to negotiate allocation while protecting essential existing uses *and* making room for upstream development. Downstream states may fear large losses under some scenarios, but comparative treaties alone cannot infer the size of any adjustment. A transparent range of modelled options would make the trade-offs easier to assess.

Water diplomacy should turn these competing concerns into a phased, verifiable agreement. A comprehensive treaty would address allocation, drought, project operations, and basin stewardship together, with embedded review provisions for responding to ever-present hydrological and economic changes.

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This opinion-based contribution reflects the views of the author, who bears sole responsibility for its content.

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