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Swimming Against the Current: Revisiting the Principles of International Water Law in the Resolution of Fresh Water Disputes

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Demands for fresh water are rising around the world, its availability is increasingly unpredictable, and it is unequally distributed across political boundaries. As a result, disputes between states over the use of shared fresh water resources are increasingly likely to arise. This Article addresses the need to resolve these disputes peacefully and the ability of international water law to facilitate such resolution. Specifically, the Article proposes a reconfiguration of the two core principles of international water law—"equitable and reasonable utilization" and "no significant harm." The former principle suggests that states sharing fresh water resources should do so in a manner that is fair and equitable, while the latter suggests that they must do so in a manner that avoids or minimizes significant harm. The Article traces the evolution of these principles and examines their conceptual underpinnings. It observes that the relationship between the two principles remains unsettled and they may therefore frustrate, rather than facilitate, the resolution of interstate fresh water disputes.

The Article proceeds to challenge the most commonly held views in the international water law literature regarding the interrelationship and application of these principles. One such view contends that "equitable and reasonable utilization" should be the governing principle of international water law and treats harm as merely one factor to consider in any given use of shared fresh water. Another view asserts that the two principles complement each other and should be applied in tandem. In contrast, this Article argues that "no significant harm" is the superior principle, both in theory and in practice, and should therefore guide the resolution of interstate fresh water disputes. From a theoretical standpoint, the Article explains how the due diligence standard of the "no significant harm" principle and its reciprocal goal of harm prevention enable it to balance states' competing interests in the use of shared fresh water resources. The Article then examines the actual use of both principles in previous interstate fresh water disputes submitted to arbitration and judicial settlement. Its findings lend further support to the proposition that, notwithstanding the visceral appeal of "equitable and reasonable utilization," states should use the "no significant harm" principle to guide the resolution of their fresh water disputes. The Article concludes with the application of "no significant harm" as a guiding principle to the ongoing Nile River dispute between Ethiopia and Egypt.

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Introduction

A non-navigational use or diversion of fresh water[1] in one part of a transboundary lake or river[2] is likely to affect its other parts, making states sharing such fresh water resources both interconnected and interdependent.[3] This interdependence should theoretically provide fertile grounds for interstate cooperation.[4] However, due to political mistrust and power asymmetry, divergent national water ethos and approaches, an imbalance in supply and demand, and fragile internal governance,[5] states sharing fresh water re-

1. This Article concerns non-navigational uses of fresh water, to be distinguished from issues relating to navigation, maritime, and the High Seas. Fresh water is unlike any other natural resource—it is essential, irreplaceable, finite, and "a primordial concern that touches on issues of survival and basic sustenance," Selina Ho, *Introduction to Transboundary River Cooperation: Actors, Strategies and Impact*, 42 Water Int'l 97, 98 (2017). Of the total amount of water on Earth, only 2.5 percent is fresh water and only around one third of this water is in liquid, rather than frozen, form. Edith B. Weiss, *The Coming Water Crisis: A Common Concern of Humankind*, 1 Transnat'l Envtl. L. 153, 154 (2012). Fresh water also has unique hydrological and geographic qualities. The movement of water through a watercourse is but one phase of the operation of what is known as the "hydrologic cycle"—water evaporates from the sea and land, is drawn into the atmosphere, falls as rain and snow, sinks into the earth to reappear in watercourses, and then drains back into the sea. Int'l Law Comm'n, Rep. on the Work of Its Thirty-First Session, U.N. Doc. A/34/10, at 453 (1979). In other words, "the water going out from the surface of the earth must come back in equal amount—a perpetual cycle with no beginning, middle or end." Stephen C. McCaffrey, The Law of International Watercourses 29 (3d ed. 2019).

2. There are 148 states whose territory falls within international river basins and more than 30 states that are located almost entirely within such basins. Some of these basins are shared by multiple states, such as the Danube and the Nile river basins, which are shared by 19 and 11 states, respectively. *See, e.g.*, Annika Kramer et al., *The Key to Managing Conflict and Cooperation over Water*, 11 A World of Sci. 4, 4 (2013). Most international fresh water resources are also unevenly distributed in comparison to the world's population distribution. Asia, for instance, is home to 60 percent of the world's population but only 36 percent of water that is available for human use. In contrast, South America has only 6 percent of the world's population but 26 percent of its available water. Colleen P. Graffy, *Water, Water, Everywhere, Not Any Drop to Drink: The Urgency of Transnational Solutions to International Riparian Disputes*, 10 Geo. Int'l Envtl. L. Rev. 399, 404 (1998).

3. David G. LeMarquand, International Rivers: The Politics of Cooperation 1 (1977); Nicolas W. Jager, *Transboundary Cooperation in European Water Governance – A Set-Theoretic Analysis of International River Basins*, 26 Envtl. Pol'y & Governance 278, 280 (2016).

4. This is because "unilateral actions by states sharing a waterbasin only coincidentally optimized utilization of the resource," Joseph W. Dellapenna, *The Work of International Legal Expert Bodies*, *in* Research Handbook on International Water Law 26, 33–34 (Stephen C. McCaffrey et al. eds., 2019). *See generally* Diane Arjoon et al., *Sharing Water and Benefits in Transboundary River Basins*, 20 Hydrol. Earth Syst. Sci. 2135 (2016) (where the authors propose a benefit-sharing mechanism that could produce economically efficient as well as equitable outcomes); Seemanta Sharma Bhagabati et al., *A Cooperative Framework for Optimizing Transboundary Hydropower Development*, 42 Water Int'l 945 (2017) (where the authors propose an optimization framework for a transboundary sub-basin on the basis of a cooperative game theoretical approach); Shlomi Dinar et al., *Scarperation: An Empirical Inquiry Into the Role of Scarcity in Fostering Cooperation Between International River Riparians*, The World Bank Dev. Res. Group Pol'y Res. Working Paper No. 4294 (2007), 1, (in which the authors argue that "it is the 'critical need' for a given transboundary resource, and the dispute that may ensue, that provides the impetus for interstate cooperation codified in international water agreements").

5. Salman M.A. Salman & Kishor Uprety, *Shared Watercourses and Water Security in South Asia: Challenges of Negotiating and Enforcing Treaties*, 3 Int'l Water L. 1, 10 (2018).

sources often behave in a self-interested manner and exhibit mere "coexistence" rather than cooperation.[6]

As a result, interstate fresh water disputes have arisen in every part of the world,[7] and are likely to continue arising in the future.[8] Such disputes can be resolved peacefully, but left unsettled they may deteriorate to violent conflict.[9] Violent interstate confrontations over fresh water resources have occurred, for instance, in the case of the Senegal River between Mauritania

6. *See generally* Christina Leb, Cooperation in the Law of Transboundary Water Resources 35 (2013). *See also*, Ho, *supra* note 1, at 98 (noting that most states regard rivers "as a national resource [they] have sovereign rights to utilize as they deem appropriate for their self-interests").

7. Most vulnerable to such conflicts is Africa, the continent with the largest number of shared fresh water resources, and especially the Middle East and North Africa regions, which are considered the driest areas in the world. *See* Salman M.A. Salman, *Good Offices and Mediation and International Water Disputes*, *in* Resolution of International Water Disputes 155, 158 (International Bureau of the Permanent Court of Arbitration ed., 2002). Previous and ongoing interstate fresh water disputes in these regions concern the Nile River, the Jordan River, the Euphrates and Tigris Rivers, and Lake Malawi. *See id*. With all these conflicts over water in the Middle East region, even ISIS managed to get involved with its brief control of the Mosul Dam. *See* Dexter Filkins, *A Bigger Problem than ISIS?*, The New Yorker (Jan. 2, 2017).

Asia has also seen its fair share of interstate fresh water disputes, mostly attributed to the lack of agreements governing the use of dozens of rivers shared by countries such as India, Bangladesh, Nepal, and China, as well as ineffective agreements and mistrust among the post-Soviet countries of Central Asia. Previous and ongoing interstate fresh water disputes in this part of the world concern the Indus River, the Ganges River, the Helmand River, the Mekong River, the Syr Darya basin, and the Aral Sea. *See* Salman, *Good Offices*, *supra*, at 160–62; Sharmila L. Murthy & Fatima Mendikulova, *Water, Conflict, and Cooperation in Central Asia: The Role of International Law and Diplomacy*, 18 Vt. J. Envtl. L. 400 (2017).

In South America, socio-economic issues, water quality and reservoir management problems, and competing demands for human consumption and for industrial uses or irrigation during the dry months have all been frequent causes of interstate fresh water disputes. Previous and ongoing disputes in this region concern the Uruguay River, the Silala River, and the Lauca River. *See UNEP Global International Waters Assessment: Patagonian Shelf*, GIWA Regional Assessment 38, at 35–36, 38–39, 80 (2004).

Finally, in Europe and North America, water quality and quantity issues have also given rise to interstate fresh water disputes. Previous disputes in these regions concerned Lake Lanoux, the Danube River, and the Meuse River in Europe, and the Colorado, Rio Grande, Columbia, and Red Rivers in North America. *See, e.g.*, Salman, *Good Offices*, *supra*, at 162–63.

Disputes over fresh water have also arisen domestically in federal countries. Fresh water has been at the forefront of many disputes in the western United States, for instance. *See generally* Mitchell S. Ashkenaz, *Man v. Mussel, The Gloves are Coming Off: Supreme Court Equitable Apportionment and the Tri-State Water Wars*, 18 U. Denver Water L. Rev. 1 (2014) (examining the conflict over the Apalachicola-Chattahoochee-Flint River Basin and the history of interstate river allocation in the United States); Alexandra Campbell-Ferrari, *Managing Interstate Water Resources*: *Tarrant Regional and* Beyond, 44 Tex. Envtl. L.J. 235 (2014) (examining the resolution of water disputes in the United States through interstate compacts). *See also* Roman Polanski, Chinatown (Paramount Pictures 1974). For an illustrative portrayal of such disputes, see Marc Reisner, Cadillac Desert (KQEH 1986).

8. *See, e.g.*, Alistair Rieu-Clarke, *Transboundary Hydropower Projects Seen Through the Lens of Three International Legal Regimes – Foreign Investment, Environmental Protection and Human Rights*, 3 Int'l J. Water Governance 27, 32.

9. Moreover, "[i]f not solved appropriately, such disputes can harm overall country relations and hence also affect other fields of cooperation and/or negatively affect the sustainable management of the respective watercourse or even the overall peaceful development of the entire region." Sabine Blumstein & Susanne Schmeier, *Disputes Over International Watercourses: Can River Basin Organizations Make a Difference?*, *in* Management of Transboundary Water Resources Under Scarcity: A Multidisciplinary Approach (Ariel Dinar & Yacov Tsur eds., 2017) 191, 194.

and Senegal, the Nile River between Egypt and Sudan, and the Euphrates-Tigris River between Turkey and Syria.[10] The long-standing conflict between Israel and its neighbors over the management of the Jordan River is representative of the tinder-box politics characteristic of interstate fresh water disputes.[11] This conflict involves multiple states sharing limited fresh water resources in an arid region, both actual and threatened military action, and a myriad of mediation and negotiation attempts. Having been involved in thirty-one water-related violent events since 1948,[12] Israel and its neighbors illustrate how interstate fresh water disputes may be dragged on through violence.

Consider also the ongoing fresh water dispute between Egypt and Ethiopia. Since 2011, the two countries have been engulfed in an intractable conflict surrounding the construction by Ethiopia of the Grand Ethiopian Renaissance Dam ("GERD") on the Blue Nile River.[13] Aside from its importance to Ethiopia for the purposes of electricity generation, flood control, and irrigation schemes, the GERD has been accorded a highly symbolic meaning by the Ethiopian ruling elite. It embodies the reawakening of the Ethiopian nation and represents an essential element in the process aimed at reinventing and redefining Ethiopia's identity.[14] Government officials in Ethiopia have also framed the GERD as a foreign policy issue, emphasizing that it is being built in spite of Egypt's opposition, and have "represented

10. The United Nations Educational, Scientific and Cultural Organization World Water Assessment Programme ("UNESCO WWAP"), *Managing Water under Uncertainty and Risk* (4th ed., 2012), https://perma.cc/5F8N-CRBF. *See also* Pacific Institute Water Conflict Chronology, https://perma.cc/HMP8-Y9JJ; Aaron T. Wolf, *Conflict and Cooperation Along International Waterways*, 1 Water Policy 251, 256 (1998).

However, no modern interstate dispute over fresh water has escalated into a full-blown "water war" in thousands of years. *See* Juha I. Uitto & Aaron T. Wolf, *Water Wars? Geographical Perspectives: Introduction*, 168 Geographic J. 289, 289 (2002) (defining "water wars" as "interstate violence that involve[s] water *specifically* as a scarce and/or consumable resource or as a quantity to be managed"). *See also* Patricia Wouters, *Universal and Regional Approaches to Resolving International Water Disputes: What Lessons Learned From State Practice?*, *in* Resolution of International Water Disputes 111, 112 (Int'l Bureau of the PCA ed., 2003) (noting that the last known water war was fought some 4500 years ago between the ancient Mesopotamian states of Lagash and Umma).

11. *See generally* Miriam R. Lowi, Water and Power: The Politics of a Scarce Resource in the Jordan River Basin (1995); Melanne Andromecca Civic, *A New Conceptual Framework for Jordan River Basin Management: A Proposal for a Trusteeship Commission*, 9 Colo. J. Int'l Envtl. L. & Pol'y 285 (1998); Philip A. Williams, *Peace like a River: Institutionalizing Cooperation over Water Resources in the Jordan River Basin*, 28 Colo. Nat. Resources Energy & Envtl. L. Rev. 313 (2017).

12. Jacob D. Petersen-Perlman, Jennifer C. Veilleux & Aaron T. Wolf, *International Water Conflict and Cooperation: Challenges and Opportunities* 42 Water International 105, 107–08 (2017).

13. The GERD is now mostly complete, yet the parties continue in their attempts to resolve outstanding contentious issues. *See, e.g.*, *Egypt, Ethiopia Talk on Filing GERD Reservoir with Water*, Egypt Today (Aug. 2, 2019), https://perma.cc/T6U9-PY8Z; Al-Masry Al-Youm, *Egypt Hands Ethiopia Its Vision for the GERD*, Egypt Independent (Aug. 10, 2019), https://perma.cc/U7YK-K73D; Aidan Lewis, *Egypt to press for outside mediator in Ethiopia dam dispute* (Oct. 20, 2019), https://perma.cc/FNK7-WPWD. For a summary of the status of the negotiations at the time of writing, see Doaa El-Bey, *GERD Revisited*, Ahram Online (Aug. 10, 2019), https://perma.cc/8DRY-LWHD.

14. Filippo Menga, *Domestic and International Dimensions of Transboundary Water Politics*, 9 Water Alternatives 704, 713 (2016).

the GERD as a symbol of national self-determination," with Egypt being the main rival.[15] The Egyptian government has adopted a similarly nationalist orientation toward the Nile, clinging to contested historic agreements that denied Ethiopia its share of the Nile waters,[16] and has included its "historic water rights" in the new Egyptian constitution adopted in 2013.[17] Accordingly, the political leadership in Egypt "has set a course that will strongly restrict its room for maneuver in the Nile question."[18] Egypt has also exhibited its willingness to use force by collaborating with Sudan to build an airstrip for the stated purpose of bombing the dam if necessary, and by declaring that "if our share of the Nile water decreases by a single drop, our blood will be the alternative."[19]

This complex interstate fresh water dispute engages not only conflicting claims of access to and use of the Nile waters, but also divergent historical accounts, shifting power relations, and a complicated political context involving eleven riparian countries sharing the mighty river. It thus illustrates that any attempt to confine water or to subject it to exclusive control is futile.[20] Most importantly for present purposes, the GERD dispute reflects the limited ability of international water law[21] to provide an effective response to interstate fresh water disputes. This body of law purports to ensure the "utilization, development, conservation, management and protection of international watercourses and the promotion of the optimal and sustainable utilization thereof for present and future generations."[22] The two core substantive principles of international water law tasked with achieving these goals are "equitable and reasonable utilization" and "no significant harm."[23] Essentially, the equitable and reasonable utilization principle enti-

15. *Id.*

16. These agreements include the 1902 Agreement between Britain and Ethiopia, the 1929 Agreement between Britain and Egypt, and the 1959 Nile Waters Agreement between Egypt and Sudan. *See* Salman M.A. Salman, *The Grand Ethiopian Renaissance Dam: The Road to the Declaration of Principles and The Khartoum Document*, 41 Water Int'l 512, 512–13 (2016).

17. *Id. See also* Tobias von Lossow & Stephan Roll, *Egypt's Nile Water Policy under Sisi: Security Interests Promote Rapprochement with Ethiopia*, 11 German Institute for International and Security Affairs SWP Comments, 3–4 (2015).

18. *Id.*

19. Jenny R. Kehl, *Water Security in Transboundary Systems: Cooperation in Intractable Conflicts and the Nile System*, *in* Water Security in the Middle East Essays in Scientific and Social Cooperation 39, 40 (Jean A. Cahan ed., 2017).

20. Laurence Boisson de Chazournes, Fresh Water in International Law 4 (2013).

21. Also referred to as the "law of international watercourses."

22. Convention on the Law of the Non-Navigational Uses of International Watercourses, May 21, 1997, 36 I.L.M. 700 [hereinafter UNWC].

23. The so-called "procedural" principle of international water law—the duty to cooperate—includes the obligations to cooperate, notify, consult and exchange data and information. While this Article refers to the equitable and reasonable utilization and no significant harm principles as "substantive," this is a somewhat artificial distinction. As recently noted by Judge Donoghue in her Separate Opinion in Certain Activities Carried out by Nicaragua in the Border Area (Costa Rica v. Nicar.) joined with Construction of Road in Costa Rica Along the San Juan River (Nicar. v. Costa Rica), Judgment, 2015 I.C.J. 665, it is not "useful to draw distinctions between 'procedural' and 'substantive' obligations, as the Court has done," *id.*, at ¶ 9. Some scholars agree that a more holistic approach to these principles, which views them as

tles each basin state to a reasonable and equitable share of an international watercourse and obligates it to use the watercourse in a manner that is equitable and reasonable vis-à-vis other states sharing it.[24] The no significant harm principle prohibits states from using their territory in such a way as to cause significant harm to another state.[25]

Whereas in the early days of international water law no significant harm was considered the leading principle, it is now predominantly seen as either subordinate to the equitable and reasonable utilization principle or equal to it. Partially driving this shift are perceptions of equitable and reasonable utilization as the more flexible and fair principle, as well as misperceptions of the no significant harm principle as designed to unilaterally and unconditionally protect prior uses, or as relevant only to issues of water quality, such as pollution, rather than to issues of water quantity, such as allocation and use. The position that equitable and reasonable utilization should serve as the leading principle of international water law is reflected in the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses ("UNWC")[26] and in some decisions of the International

integrated and interconnected, is crucial for their effective application. *See, e.g.*, Attila M. Tanzi, *Substantializing the Procedural Obligations of International Water Law Between Retributive and Distributive Justice*, *in* A Bridge Over Troubled Waters: Dispute Resolution in the Law of International Watercourses and the Law of the Sea (Hélène Ruiz Fabri et al. eds., forthcoming 2020) (on file with author); Owen McIntyre, *The World Court's Ongoing Contribution to International Water Law: The Pulp Mills Case between Argentina and Uruguay*, 4 Water Alternatives 124, 143 (2011).

24. Muhammad Mizanur Rahaman, *Principles of International Water Law: Creating Effective Transboundary Water Resources Management*, 1 International Journal of Sustainable Society 207, 210 (2009) (The principle "entitles each basin state to a reasonable and equitable share of water resources for the beneficial uses within its own territory."); Stephen McCaffrey, *The Law of International Watercourses: Present Problems, Future Trends*, *in* A Law for the Environment: Essays in Honour of Wolfgang E. Burhenne 114 (W. E. Burhenne et al. eds., 1994) (Under this principle, "a State sharing an international watercourse with other States is under an obligation to use the watercourse in a manner that is equitable and reasonable vis-à-vis those other States.").

25. Jutta Brunnée, *The Sources of International Environmental Law: Interactional Law*, *in* Oxford Handbook on the Sources of International Law (Samantha Besson & Jean d'Aspremont eds., 2017). The no significant harm principle has been recently endorsed as "particularly relevant with regard to shared natural resources, such as . . . international watercourses and transboundary aquifers" by the International Law Commission in its 2019 Report. *See* Int'l Law Comm'n, Rep. on the Work of Its Seventy-First Session, U.N. Doc. A/74/10 at 278 (2019), advance unofficial version (Aug. 20, 2019), 278.

26. UNWC, *supra* note 22; *see also* Alistair Rieu-Clarke, *International Freshwater Law*, *in* Routledge Handbook of International Environmental Law 253 (Shawkat Alam et al. eds., 2013); Salman M.A. Salman, *The Helsinki Rules, the UN Watercourses Convention and the Berlin Rules: Perspectives on International Water Law* 23 Int'l J. of Water Resources Development 625, 633 (2007).

Some view any subordination of the no significant harm principle to the equitable and reasonable utilization principle as limited to water allocation and use issues. Pollution or environmental protection issues fall under Part IV of the Convention, which provides in Article 21 that states shall "prevent, reduce and control the pollution of an international watercourse that may cause significant harm to other watercourse States or to their environment, including harm to human health or safety, to the use of the waters for any beneficial purpose or to the living resources of the watercourse." *See, e.g.*, Albert E. Utton, *Which Rule Should Prevail in International Water Disputes: That of Reasonableness or that of No Harm?*, 36 Nat. Resources J. 635, 639–40 (1996); McCaffrey, *supra* note 1, at 430–31. This argument seems to be undermined, however, by the commentary to the UNWC, which states that Part IV is "a specific application of the general principles contained in [A]rticles 5 and 7," and in light of the "interconnection

Court of Justice ("ICJ").[27] Other international instruments[28] and some commentators[29] consider the two principles as complementary.

Despite these efforts to clarify the relationship between no significant harm and equitable and reasonable utilization, the two principles continue to be susceptible to contradictory interpretations. As a result, their practical application in the resolution of interstate fresh water disputes remains uncertain and confused. Indeed, states sharing fresh water resources frequently exhibit a "weak understanding" of these principles, "leading to difficulties in executing" them.[30] This is evident, for instance, in the GERD dispute described above. As is frequently the case in disputes between upstream and downstream states, the upstream state (in this case Ethiopia) claims an equitable and reasonable right to build the GERD, while the downstream state (in this case Egypt) maintains its right to be free from significant harm that it claims would be caused to it by the dam. The potential for the no significant harm and equitable and reasonable utilization principles in their current formulation to effectively guide the resolution of this, and other, interstate fresh water disputes is therefore questionable.[31]

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between water quantity and water quality issues and the indivisibility of international regulation thereof," McCaffrey, *id*. at 450, 511.

27. *See, e.g.*, Gabčíkovo-Nagymaros Project (Hung. v. Slovk.), Judgment, 1997 I.C.J. 7 (Sept. 25).

28. *See, e.g.*, Int'l Law Association Berlin Conference (2004), Water Resource Law, Berlin Rules on Water Resources, art. 12, ¶ 1 ("Basin States shall in their respective territories manage the waters of an international drainage basin in an equitable and reasonable manner having due regard for the obligation not to cause significant harm to other basin States.").

29. Some commentators argue that the fact that significant harm appears as one factor in the determination of the equitable nature of a use in the UNWC was not intended to render the no harm rule subservient to the equitable utilization principle, but rather merely stresses that the latter is inherent in the former and vice versa. *See, e.g.*, Attila Tanzi & Maurizio Arcari, The United Nations Convention on the Law of International Watercourses 179 (2001); *see also* McCaffrey, *supra* note 1, at 497.

30. Salman & Uprety, *supra* note 5, at 10. *See also* Blumstein & Schmeier, *supra* note 9, at 194 (noting that "[i]n spite of the relatively broad acceptance of these principles within the international community, disagreements over the use, and the protection of shared water resources arise quite often across the world's river and lake basins—often concerning exactly the question of equitable and reasonable use and the avoidance of significant harm").

31. *See*, *e.g.*, Frederick W. Frey, *The Political Context of Conflict and Cooperation Over International River Basins*, 18 Water Int'l 54, 58 (1993) (noting that in light of disagreements over the application of these principles, "the prospects for consensus on a legal doctrine for international rivers still seem slim"); Aaron T. Wolf, *International Water Conflict Resolution: Lessons from Comparative Analysis*, 13 Water Resources Dev. 333, 336–37 (1997) (noting the problems involved in attempting to apply these principles to specific water conflicts); Erik Mostert, *A Framework for Conflict Resolution*, 23 Water Int'l 206, 207 (1998) (noting that: "[In water management conflicts,] [u]ncertainty concerning the relevant laws results from the difficulties of proving the existence of some legal rules, the abstract nature of most legal rules, and conflicts between the rules. This applies especially to international water law, where rules of customary law are hard to prove and treaties are often vague."); Jutta Brunnée, *Law and Politics in the Nile Basin*, 102 Am. Soc'y Int'l L. Proc. 353, 361 (2008) ("The opposition between these two principles promotes adversarial roles and also tends to promote absolute positions being taken by upstream and downstream states, respectively."); Anna Spain, *Beyond Adjudication: Resolving International Resource Disputes In an Era Of Climate Change*, 30 Stan. Envtl. L.J. 343, 360–61 (2011) (noting generally that treaty "provisions can be vague, leading to confusion about questions of breach or enforcement," and noting that the UNWC "calls for equitable and reasonable use, cooperation, exchange of information, and duty not to cause significant harm, but fails to clarify what constitutes an appreciable harm under the treaty");

The goal of this Article is to offer a fresh perspective on the equitable and reasonable utilization and no significant harm principles in order to reinforce their role in the resolution of interstate fresh water disputes. To do so, I challenge the conventional understandings of these principles both conceptually and empirically, highlight the attributes of no significant harm that enable it to provide sensible and workable outcomes to such disputes, and outline a "balance of harms"[32] analysis for its practical application. If the no significant harm principle is understood and applied as proposed, it would be able to balance disputing states' competing interests in the use of shared fresh water resources, as well as provide them with the common goal of avoiding the most significant harm that may result from such use, thereby facilitating dispute settlement.

I chose to focus on the efficacy of equitable and reasonable utilization and no significant harm in the resolution of interstate fresh water disputes for two reasons. First, fresh water *disputes* in which real interests are at stake, rather than general state practice in fresh water resource management designed to *prevent* disputes,[33] where there is no immediate threat, present an important test for the resilience of any rule or regime governing shared fresh water resources.[34] Such disputes, moreover, are "important moments" in the development of international water law since "conflict tests international law; both its content and its relevance become clearer in times of contro-

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Bruce Lankford, *Does Article 6 (Factors Relevant to Equitable and Reasonable Utilization) in the UN Watercourses Convention Misdirect Riparian Countries?*, 38 WATER INT'L 130, 130 (2013) ("Article 6 [of the UNWC], in its current formulation, cannot guide adjustments to current water shares between countries.").

32. The "balance of harms" concept has played a central role in the Supreme Court of the United States' determination of interstate water disputes. *See, e.g.*, Florida v. Georgia, 138 S. Ct. 2502, 2535–36 (2018) (Thomas J. dissenting on other grounds: "The State seeking an apportionment must 'demonstrat[e] by clear and convincing evidence that the benefits of the [apportionment] substantially outweigh the harm that might result.' . . . [T]his balance-of-harms test has been the basic merits inquiry that decides whether a State is entitled to an apportionment."). In *Washington v. Oregon*, 297 U.S. 517, 522 (1936), the Court refused to cap Oregon's water use because it "would materially injure Oregon users without a compensating benefit to Washington users." *See also* Colorado v. New Mexico, 459 U.S. 176, 183 (1982); Colorado v. New Mexico, 467 U.S. 310, 316–17 (1984).

33. For various aspects of the management of shared fresh water resources, see, e.g., SALMAN M.A. SALMAN & DANIEL D. BRADLOW, REGULATORY FRAMEWORKS FOR WATER RESOURCES MANAGEMENT: A COMPARATIVE STUDY (Salman M.A. Salman et al. eds., 2006) (examining how regulatory frameworks in sixteen jurisdictions have addressed various issues relating to water resource management); Water Res. Lab., Helsinki Univ. of Tech, MANAGEMENT OF TRANSBOUNDARY RIVERS AND LAKES (Olli Varis et al. eds., 2008) (analyzing the operation of transboundary river and lake basin organizations from a global perspective); SUSANNE SCHMEIER, GOVERNING INTERNATIONAL WATERCOURSES: RIVER BASIN ORGANIZATIONS AND THE SUSTAINABLE GOVERNANCE OF INTERNATIONALLY SHARED RIVERS AND LAKES (2013) (analyzing river basin organizations as the key institutions for managing internationally shared water resources); Alexander Ovodenko, *Regional Water Cooperation: Creating Incentives for Integrated Management*, 60 J. CONFLICT RESOL. 1071 (2016) (examining the conditions for integrated water resources management); Marleen van Rijswick et al., *Ten Building Blocks for Sustainable Water Governance: An Integrated Method to Assess the Governance of Water*, 39 WATER INT'L 725 (2014) (proposing an interdisciplinary and scientific method to water governance).

34. ALLEN L. SPRINGER, CASES OF CONFLICT: TRANSBOUNDARY DISPUTES AND THE DEVELOPMENT OF INTERNATIONAL ENVIRONMENTAL LAW 1 (2016).

versy."[35] Interstate fresh water disputes can also have a "catalytic effect," exposing the need for a normative framework in which effective regulatory and institutional development can be designed.[36] Power imbalances, domestic constraints, and competing interests[37] are common features of these disputes that evidence the need for cooperative agreements and institutions in order to resolve them peacefully. Yet most states sharing fresh water resources do not have such mechanisms in place.[38] Second, I focus on the role of equitable and reasonable utilization and no significant harm in fresh water dispute resolution since there exists a vast body of scholarship on other efforts to prevent and resolve interstate fresh water disputes.[39] However, relatively little attention has been paid to the use and role of these principles of international water law in the peaceful and effective resolution of such disputes.

Whereas the principles of international water law as currently formulated may be helpful in the dispute *prevention* context, for instance by promoting states' ongoing cooperation,[40] I argue that they are deficient in the dispute *resolution* stage. At this stage, where each state becomes convinced that its vital interests are at stake, it can be extremely difficult to resolve the dispute

35. *Id.*

36. *Id.* at 1–2.

37. *See, e.g.*, Beth Simmons, *See You in "Court"? The Appeal to Quasi-Judicial Legal Processes in the Settlement of Territorial Disputes*, *in* A Road Map to War: Territorial Dimensions of International Conflict 205, 226 (Paul F. Diehl ed., 1999); David N. Cassuto & Romulo S.R. Sampaio, *Hard, Soft & Uncertain: The Guarani Aquifer and the Challenges of Transboundary Groundwater*, 24 Colo. J. Int'l Envtl. L. & Pol'y 1, 37 (2013).

38. Less than half of transboundary surface water resources are governed by an agreement, and only about one-fourth of such agreements include all relevant states. *See, e.g.*, Ken Conca, *5 Focal Points for U.S. Global Water Strategy*, New Security Beat (Nov. 3, 2016). Only a handful of international aquifers and groundwater basins in the world are subject to a legal arrangement, and some of these arrangements are not binding. *Id.* For a representative list of such arrangements, see Francesco Sindico & Stephanie Hawkins, *The Guarani Aquifer Agreement and Transboundary Aquifer Law in the SADC: Comparing Apples and Oranges?*, 24 Rev. Eur. Comp. Int'l Envtl. L. 318, 319 (2015).

39. *See, e.g.*, Shlomi Dinar, International Water Treaties: Negotiation and Cooperation Along Transboundary Rivers (2008) (examining negotiated agreements and their embodied side-payment and cost-sharing regimes); Molly Espey & Basman Towfique, *International Bilateral Water Treaty Formation*, 40 Water Resources Res. W05S05 (2004) (examining the influence of the size of a water basin and a country's control over it on the formation of bilateral international water treaties); Shira Yoffe, Aaron T. Wolf & Mark Giordano, *Conflict and Cooperation over International Freshwater Resources: Indicators of Basins at Risk*, 39 J. Am. Water Resources Ass'n 1109 (2003) (examining the impact of biophysical, socioeconomic, and geopolitical indicators on international fresh water conflict and cooperation); Paul R. Hensel, Sara McLaughlin Mitchell & Thomas E. Sowers II, *Conflict Management of Riparian Disputes*, 25 Pol. Geography 383 (2006) (examining the effects of water scarcity and institutions on states' use of settlement mechanisms to resolve contentious claims over shared rivers); Stephen E. Gent & Megan Shannon, *Decision Control and the Pursuit of Binding Conflict Management: Choosing the Ties that Bind*, 55 J. Conflict Resol. 710 (2011) (examining the effects of issue salience, availability of outside options, and uncertainty about the outcome on states' choice of binding third party mechanisms to resolve river claims); and Marit Brochmann & Paul R. Hensel, *Peaceful Management of International River Claims*, 14 Int'l Negot. 393 (2009) (examining the effects of water scarcity and the existence of river treaties on negotiations of water conflicts).

40. Cooperative obligations underlie the equitable and reasonable utilization and the no significant harm principles, as well as the duty to cooperate, the core "procedural" principle of international water law.

on the basis of cooperative action alone.[41] Rather, legal principles should provide disputing states with sufficiently objective, clear, and well-defined rules and standards to effectively limit unilateral claims to fresh water flowing through their territory.[42] I argue that equitable and reasonable utilization and no significant harm, as currently understood, do not provide the required measure of predictability and stability to the resolution of interstate fresh water disputes, and are therefore unable to serve as "reference point[s]" or useful guiding tools in such resolution.[43]

Part 1 of the Article sets out a working definition of "interstate fresh water disputes" and provides a brief overview of the body of international law purporting to govern their resolution. Part 2 then focuses on the historical evolution of the equitable and reasonable utilization and no significant harm principles in key international legal instruments and in the scholarship. This part aims to illustrate the lingering confusion regarding the relationship between these two principles as well as the uncertainty surrounding their practical application in fresh water dispute settlement. It then proposes an alternative approach that aims to resolve these difficulties by designating the no significant harm principle as the guiding principle of international water law. This approach emphasizes the due diligence nature of the no significant harm principle, as well as its ability to objectively balance states' competing interests in the resolution of fresh water disputes. The no significant harm principle is then applied by way of a "balance of harms" analysis that weighs the detrimental effects of a challenged activity against its benefits—or, in other words, the harm caused by prohibiting it. I proceed to evaluate this proposed approach in Part 3 of the Article by examining the actual use of the equitable and reasonable utilization and no significant harm principles in interstate fresh water disputes submitted to arbitration and judicial settlement.[44] The results of this examination corroborate my proposition that no significant harm ought to be the guiding principle of international water law in the resolution of interstate fresh water disputes. Finally, Part 4 offers conclusions and revisits the GERD dispute in light of this alternative international water law framework.

41. Int'l Law Comm'n, Thirty-First Session, *supra* note 1, at 164.

42. *See* William W. Van Alstyne, *The Justiciability of International River Disputes: A Study in the Case Method*, 13 DUKE L.J. 307, 309 (1964).

43. NAHID ISLAM, THE LAW OF NON-NAVIGATIONAL USES OF INTERNATIONAL WATERCOURSES 177 (Kurt Deketelaere et al. eds., 2010). *See also* LEB, *supra* note 6, at 30; Int'l Law Comm'n, *supra* note 1, at 166.

44. While these principles have likely also been used in disputes submitted to negotiation and mediation, the confidentiality of these processes makes it difficult, if not impossible, to obtain accurate and reliable data on such use.

I. Interstate Fresh Water Disputes and International Water Law

I.A Interstate Fresh Water Disputes

In order to delineate the precise problem this Article aims to resolve, the term "interstate fresh water dispute" must be defined. The definition set out below is designed to achieve three interrelated objectives. First, it is intended to focus on disputes that concern the actual *use* of fresh water, rather than the ownership of territory, or water as an instrument of war. Second, it is intended to focus on those disputes that are most salient to states and their national interests, rather than the interests of individuals or companies. Finally, it is intended to focus on the most complex and contentious disputes, rather than those that give rise to mild disagreements that are relatively straightforward to resolve, or that are governed by clear and widely accepted international laws or norms. The definition is comprised of the following elements:

"Interstate": disputes between two or more states, including non-contiguous states, sharing an "international watercourse," "international river," "international river basin," or "international drainage basin."[45] Excluded are fresh water-related disputes between states and individuals, organizations, or communities (e.g., before investment or human rights tribunals), claims made on behalf of nationals or companies,[46] domestic disputes between states or provinces of federal countries, and disputes between private individuals or communities.

"Fresh water": disputes concerning the use (e.g., dams, diversions, hydropower, pollution, etc.) of fresh surface water (e.g., rivers, lakes) and/or groundwater resources (e.g., aquifers), including confined underground water resources.[47] Excluded are disputes that concern the ownership of terri-

45. The term "international drainage basin" was used in the Int'l Law Ass'n, Helsinki Rules on the Uses of Waters of International Rivers, art. 2 (August 1966) (defined as "a geographical area extending over two or more States determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus"). The term "watercourse" was used in the UNWC, art. 2 (defined as "a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus," an "international watercourse" being defined as "a watercourse, parts of which are situated in different states").

46. These have generally been considered to be issues of little value to states.

47. The term "confined" is used here in a legal sense—i.e., to mean groundwater that has no hydrological relationship to surface water. This is also the meaning of the term used by the International Law Commission in its Draft Articles on the Law of the Non-Navigational Uses of International Watercourses, 2 Y.B. Int'l L. Comm'n 90, U.N. Doc. A/CN.4/SER.A/1994/Add.l (1994) [hereinafter Draft Articles], and later on in the UNWC, *supra* note 22. For the meaning of the term "confined" in hydrogeology, see Gabriel E. Eckstein, *A Hydrogeological Perspective of the Status of Ground Water Resources under the UN Watercourse Convention*, 30 Colum. J. Envtl. L. 525, 550 (2005) (noting that the term "relates to ground water contained and flowing through an aquifer that is under pressure between overlaying and underlain impermeable strata").

tory in which fresh water is located or of islands, river boundaries,[48] navigational uses, maritime issues (e.g., offshore waters, maritime boundaries, continental shelves, territorial seas, Exclusive Economic Zones, and the High Seas), water as an instrument of conflict rather than the object of conflict,[49] and claims ancillary to the use of shared water.[50]

"Dispute": a dispute can encompass "a spectrum of situations, ranging from minor disagreements to serious controversies."[51] It includes "a disagreement on a point of law or fact, a conflict of legal views or of interests between two persons,"[52] but the two sides must "'hold clearly opposite views concerning the question of the performance or non-performance of certain' international obligations."[53] Whether a dispute exists is to be determined on the particular facts, including any statements or documents exchanged between the parties, any exchanges made in multilateral settings, and the conduct of the parties.[54] Ultimately, "a dispute exists when it is demonstrated, on the basis of the evidence, that the respondent was aware, or could not have been unaware, that its views were 'positively opposed' by the applicant."[55]

In addition, a "dispute" should exhibit a sufficient level of conflictual interaction between the relevant states.[56] It is not limited to disputes involving formal declarations of war or military acts,[57] but includes also those in which there is evidence of "verbal expressions displaying hostility," "[d]iplomatic-economic hostile actions," or "[p]olitical-military hostile actions."[58] In contrast, an interaction, claim, or event is excluded if it is not

48. Disputes that involve both water utilization issues and territorial/boundary issues and in which the water-related issues are sufficiently significant are included in the definition.

49. *See* Sergey Vinogradov, Patricia Wouters & Patricia Jones, Transforming Potential Conflict into Cooperation Potential: The Role of International Water Law, 26, U.N. Educational, Scientific and Cultural Organization (2003).

50. *See, e.g.*, The Rhine Chlorides Arbitration concerning the Auditing of Accounts (Neth. v. Fr.), PCA Case Repository (Perm. Ct. Arb. 2004).

51. Stephen C. McCaffrey, *Water Disputes Defined: Characteristics and Trends for Resolving Them*, *in* Resolution of International Water Disputes 49, 50–51 (Perm. Ct. Arb. ed., 2003).

52. Mavrommatis Palestine Concessions (Ger. v. U.K), Objection to the Jurisdiction of the Court, 1924 P.C.I.J. (ser. A) No. 2, 6 (Aug. 30).

53. Alleged Violations of Sovereign Rights and Maritime Spaces in the Caribbean Sea (Nicar. v. Colom.), Preliminary Objections, 2016 I.C.J. 27 (Mar. 17) (citing Interpretation of Peace Treaties with Bulgaria, Hungary and Romania, Advisory Opinion, 1950 I.C.J. 74 (Mar. 30)).

54. Obligations Concerning Negotiations Relating to Cessation of the Nuclear Arms Race and to Nuclear Disarmament (Marsh. Is. v. U.K.), Preliminary Objections, 2016 I.C.J. 19–20 (Oct. 5).

55. *Id.* at 20. While this definition of a "dispute" has been criticized for being overly formalistic and restrictive, it is useful for present purposes in order to ensure that only actual disputes, rather than mere disagreements or differences, are examined.

56. This is assessed on the basis of the Conflict and Peace Databank's (COPDAB) International Cooperation and Conflict Scale, as adapted to water-related disputes. *See infra* Appendix 1 (as used in Vitto & Wolf, *supra* note 10, at 290). This scale has been used in various forms in previous studies—e.g., the Basins at Risk Water Event Database, the Transboundary Freshwater Dispute Database, and the International River Basin Conflict and Cooperation Database. The scale between 0 and 7 measures levels of cooperation rather than conflict, and is therefore not included here.

57. *See, e.g.*, Petersen-Perlman, Veilleux & Wolf, *supra* note 12, at 107.

58. Infra Appendix 1.

sufficiently significant and meaningful. Such situations may involve "[m]ild verbal expressions displaying discord in interaction,"[59] "[n]eutral or non-significant acts for the inter-nation situation,"[60] mere "indicators of conflict,"[61] or mere potential for conflict.

I.B International Water Law

This section will briefly introduce the history of international water law and the origin of its two core substantive principles—equitable and reasonable utilization and no significant harm. This introduction is important for understanding the current confusion in the application of these principles and my proposal, set out in Part 2 below, of treating no significant harm as the guiding principle in the resolution of interstate fresh water disputes.

International law, through treaties, state practice, custom, and judicial decisions, has been progressively developing in the regulation of international fresh water resources. An early theory developed for this purpose was that of an international watercourse as a "shared natural resource,"[62] which required states to cooperate in accordance with the concept of equitable utilization and with a view to controlling, preventing, reducing, or eliminating adverse environmental effects that may result from the utilization of such resources.[63] The International Law Commission ("ILC") applied this theory to the non-navigational uses of transboundary waters during its 1980 session, considering the waters of an international watercourse system to be "the archetype of the shared natural resource."[64] The ILC also incorporated this notion in early versions of the Draft Articles on the Law of the Non-

59. *Id.*

60. *Id.*

61. Shira Yoffe et al., *Geography of International Water Conflict and Cooperation: Data Sets and Applications*, 40 Water Resources Res. 10 (2014).

62. Int'l Law Comm'n, Rep. on the Work of Its Thirty-Second Session, U.N. Doc. A/35/10, at 132–35 (1980). This concept was introduced in the *Draft Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States*, formulated by an intergovernmental working group of experts established by the United Nations Environment Programme ("UNEP"). These *Draft Principles* were based on a UN General Assembly Resolution titled "Co-operation in the Field of the Environment Concerning Natural Resources Shared by Two or More States," G.A. Res. 3129 (XXVIII) (Dec. 13, 1973). They were ultimately adopted by the UN General Assembly in G.A. Res. 34/186 (Dec. 18, 1979).

Another theory discussed at this time was that of "a community of interest" of riparian states, which connotes "the perfect equality of all riparian States in the use of the whole course of the river and the exclusion of any preferential privilege of any one riparian State in relation to the others," and extends to all uses of international watercourses. Int'l Law Comm'n, Thirty-Second Session, *supra*, at 127–28.

63. Int'l Law Comm'n, Thirty-Second Session, *supra* note 62, at 124.

64. *Id.* at 120. For a description of the role and purpose of the International Law Commission, *see* International Law Commission, https://perma.cc/WF89-VCQ5 (last visited Sept. 28, 2019). The organization was established by the UN General Assembly to undertake the mandate of the Assembly to "initiate studies and make recommendations for the purpose of . . . encouraging the progressive development of international law and its codification." *Id.* The task of the Commission in relation to a given topic is completed when it presents to the General Assembly a final product on that topic, which is usually accompanied by the Commission's recommendation on further action with respect to it. *Id.*

Navigational Uses of International Watercourses (Draft Articles), which formed the basis for the UNWC, stating that

> [t]o the extent that the use of waters of an international watercourse system in the territory of one system State affects the use of waters of that system in the territory of another system State, the waters are, for the purposes of the present articles, a shared natural resource.[65]

In later sessions, the ILC removed the reference to an international watercourse as a shared natural resource from the Draft Articles in light of objections that the term did not adequately express the basic principle of sovereignty.[66] Nonetheless, the underlying rationale of this concept was retained, since "[t]he whole idea of drawing up a framework agreement was that there existed a unity of interests and an interdependence between watercourse States which, by its very nature, entailed the sharing of the utilization and benefits of the waters of an international watercourse."[67] This rationale is also reflected in the doctrine that is widely considered to be the foundation of modern international water law—"limited territorial sovereignty." According to this doctrine, the sovereignty of a state over its territory is limited by the obligation not to use that territory in such a way as to cause significant harm to other states.[68] It thus recognizes that the territorial sovereignty of a state over shared fresh water must be of a provisional character in light of the mobile nature of water and its "hydrographical unity."[69] The limited territorial sovereignty theory purports to serve as a mutual limitation on the sovereign rights of states sharing fresh water resources in order to prevent and resolve conflicts.[70]

The two core principles of the limited territorial sovereignty theory—equitable and reasonable utilization and no significant harm—are generally viewed as having customary law status.[71] Equitable and reasonable utiliza-

65. Int'l Law Comm'n, Thirty-Second Session, *supra* note 62, at 120.

66. *See* Jens Evensen, *Second Rep. on the Law of the Non-Navigational Uses of International Watercourses*, U.N. Doc. A/CN.4/381, ¶¶ 47–51 (Apr. 24, 1984).

67. Int'l Law Comm'n, Rep. on the Work of Its Thirty-Sixth Session, U.N. Doc. A/39/10, at 95 (1984).

68. McCaffrey, *supra* note 1, at 125–26. This theory has replaced earlier, more extreme theories, such as: "absolute territorial sovereignty" (the "Harmon Doctrine"), according to which a state is entitled to do as it pleases with waters within its boundaries without regard to the interests of other states sharing those waters; and "absolute territorial integrity," according to which no state sharing a water resource may make any changes to it that restrict the supply of water to another state. *See, e.g.*, Leb, *supra* note 6, at 44; McCaffrey, *supra* note 1, at 99, 116.

69. McCaffrey, *supra* note 1, at 136–37.

70. Jutta Brunnée & Stephen J. Toope, *The Nile Basin Regime: A Role for Law?*, *in* Water Resources Perspectives: Evaluation, Management and Policy 93, 106 (Abdulraman S. Alsharhan & Warren W. Woods eds., 2003).

71. *See, e.g.*, Stephen C. McCaffrey, *International Water Cooperation in the 21st Century: Recent Developments in the Law of International Watercourses*, 23 Rev. Eur. Comp. & Int'l Envtl. L. 4, 5 (2014) ("[The UNWC] contains general principles that may be regarded as reflecting customary international law."); Stephen C. McCaffrey, *The UN Convention on the Law of the Non-Navigational Uses of International Water-*

tion is rooted in the sovereign equality of states. In basic terms, it entitles each basin state to an "equitable and reasonable share" of an international watercourse, and obligates it to use the watercourse in a manner that is "equitable and reasonable" vis-à-vis other states sharing it.[72] "Equity," in turn, has been defined as the "body of principles constituting what is fair and right," such principles being "constitutive rules of distribution deduced from the principle of equity granting lawfulness to the exercise of a right."[73] A variety of equitable principles, such as good faith and abuse of rights, have developed in connection with the general utilization of shared resources, while other equitable principles have been applied in specific areas, such as equidistance and proportionality in maritime delimitation disputes.[74] In the international fresh water context, "equitable utilization" has been linked to benefit sharing, while "reasonable utilization" has been interpreted as "indicating a suitable and beneficial use . . . applicable to the optimal and the sustainable elements of water utilization."[75] The no significant harm principle has its roots in the Latin maxim *sic utere tuo ut alienum non laeda*, prohibiting states from using their territory in such a way as to cause harm to another state.[76] It has appeared prominently in international environmental agreements and has been affirmed in decisions of international courts and tribunals.[77] While the precise meaning of this principle in relation to international watercourses will be discussed in detail below, it may generally be said that "the practice of states . . . seems now to admit that . . . no one state

courses: Prospects and Pitfalls, *in* INTERNATIONAL WATERCOURSES-ENHANCING COOPERATION AND MANAGING CONFLICT, 17, 26 (Salman M.A. Salman & Laurence Boisson de Chazournes eds., 1998) ("[I]t may be said with some confidence that the most fundamental obligations contained in the [UNWC] do indeed reflect customary norms."); Gabriel Eckstein, *Water Scarcity, Conflict, and Security in a Climate Change World: Challenges and Opportunities for International Law and Policy*, 27 WIS. INT'L L.J. 409, 434 (2009–2010) ("Customary international law applicable to transboundary water resources offers a number of principles that are applicable to cross-border water issues," including equitable and reasonable utilization and no significant harm.).

72. Mohammed S. Helal, *Sharing Blue Gold: The 1997 UN Convention on the Law of the Non-Navigational Uses of International Watercourses Ten Years On*, 18 COLO. J. INT'L ENVTL L. & POL'Y 337, 342 (2007); Muhammad Mizanur Rahaman, *Principles of International Water Law: Creating Effective Transboundary Water Resources Management*, 1 INT'L J. SUSTAINABLE SOCIETY 207, 210 (2009); McCaffrey, *Law of International Watercourses*, *supra* note 24, at 113, 114.

73. Lilian del Castillo-Laborde, *Equitable Utilization of Shared Resources*, *in* MAX PLANCK ENCYCLOPEDIA OF PUB. INT'L L. (2010).

74. *See*, *e.g.*, cases noted in Lilian del Castillo-Laborde, *Equitable Utilization of Shared Resources*, *supra* note 73, such as the North Sea Continental Shelf (Ger. v. Den.; Ger. v. Neth.), Judgment, 1969 I.C.J. 3 (Feb. 20); Case Concerning the Continental Shelf (Tunis. v. Libya), Judgment, 1982 I.C.J. 18 (Feb. 24); Case Concerning the Continental Shelf (Libya v. Malta), Judgment, 1985 I.C.J. 13 (June 3); Maritime Delimitation and Territorial Questions Between Qatar and Bahrain (Qatar v. Bahr.), Judgment, 2001 I.C.J. 40 (Mar. 16).

75. Castillo-Laborde, *supra* note 73.

76. Brunnée, *Sources*, *supra* note 25.

77. For international agreements, see, e.g., those cited in PHILIPPE SANDS ET AL., PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW 198 (3d. ed., 2012). International decisions include, e.g., Trail Smelter Case (U.S. v. Can.), 3 R.I.A.A. 1905 (1941); Corfu Channel (U.K. v. Alb.), Judgment, 1949 I.C.J. 4 (Mar. 25), 22 (where the Court referred to "every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States").

may claim to use the waters in such a way as to cause material injury to the interests of another, or to oppose their use by another state unless this causes material injury to itself."[78]

The UNWC, which was adopted by the UN General Assembly in 1997 and entered into force in 2014, is the main global instrument codifying the equitable and reasonable utilization and no significant harm principles in international water law.[79] The process leading to the conclusion of the Convention was lengthy and fraught with disagreements among the negotiating

78. J.L. Brierly, The Law of Nations 204 (5th ed., 1955), as cited in Ibrahim Kaya, Equitable Utilization: The Law of Non-Navigational Uses of International Watercourses 82 (2003).

79. UNWC, *supra* note 22.

> Article 5: Equitable and reasonable utilization and participation
>
> 1. Watercourse states shall in their respective territories utilize an international watercourse in an equitable and reasonable manner. In particular, an international watercourse shall be used and developed by watercourse states with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse states concerned, consistent with adequate protection of the watercourse.
>
> 2. Watercourse states shall participate in the use, development and protection of an international watercourse in an equitable and reasonable manner. Such participation includes both the right to utilize the watercourse and the duty to cooperate in the protection and development thereof, as provided in the present Convention.
>
> Article 6: Factors relevant to equitable and reasonable utilization
>
> a) Geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;
> b) The social and economic needs of the watercourse states concerned;
> c) The population dependent on the watercourse in each watercourse state;
> d) The effects of the use or uses of the watercourses in one watercourse state on other watercourse states;
> e) Existing and potential uses of the watercourse;
> f) Conservation, protection, development and economy of use of the water resources of the watercourse and the costs of measures taken to that effect;
> g) The availability of alternatives, of comparable value, to a particular planned or existing use.
>
> Article 7: Obligation not to cause significant harm
>
> 1. Watercourse states shall, in utilizing an international watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to other watercourse states.
>
> 2. Where significant harm nevertheless is caused to another watercourse state, the states whose use causes such harm shall, in the absence of agreement to such use, take all appropriate measures, having due regard for the provisions of [A]rticles 5 and 6, in consultation with the affected state, to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation.
>
> Article 8: General obligation to cooperate
>
> 1. Watercourse States shall cooperate on the basis of sovereign equality, territorial integrity, mutual benefit and good faith in order to attain optimal utilization and adequate protection of an international watercourse.
>
> 2. In determining the manner of such cooperation, watercourse States may consider the establishment of joint mechanisms or commissions, as deemed necessary by them, to facilitate cooperation on relevant measures and procedures in the light of experience gained through cooperation in existing joint mechanisms and commissions in various regions.

Id.

parties, including with respect to the relationship between these two principles.[80] As will be shown in the next section, this relationship remains inconsistent and controversial to this day, hindering the use of these principles in the resolution of interstate fresh water disputes. Indeed, some of these disputes, such as the GERD dispute discussed above, invoke conflicting claims of "historic" uses under the no significant harm principle and "equitable" uses under the equitable and reasonable utilization principle. In these situations, the unclear relationship between the two principles enables states to cling to contradictory interpretations that suit their unilateral interests, thereby aggravating the dispute rather than resolving it.

Such conflicting interpretations evidence the difficulty in providing general legal principles that would be applicable to all international fresh water resources and disputes. At the same time, these challenges also reflect the need to continuously revisit and develop such principles so that they may, at the very least, constitute effective default rules for states to consider when faced with fresh water disputes. As the examination of the equitable and reasonable utilization and no significant harm principles in the next section will illustrate, their current formulation prevents them from serving as such default rules. There is thus a need to revisit these principles, and, as this Article will contend, apply no significant harm as the guiding principle in the resolution of interstate fresh water disputes.

II. The Equitable and Reasonable Utilization and No Significant Harm Principles

II.A Evolution

Non-binding declarations and resolutions of international non-governmental organizations dedicated to the study and development of international law, such as the Institute of International Law ("IIL") and the International Law Association ("ILA"), have played a significant role in the evolution of the equitable and reasonable utilization and no significant harm principles in international water law.[81] Also significant have been efforts to develop this body of law in international treaties by the United Nations

80. *See* Stephen C. McCaffrey, *Second Rep. on the Law of the Non-Navigational Uses of International Watercourses*, 1986 Y.B. Int'l L. Comm'n, A/CN.4/399 and Add. 1 and 2 (1986), ¶ 43 ("[C]ertain representatives referred to a potential conflict between the determination of reasonable and equitable use of a watercourse . . . and the prohibition of activities causing appreciable harm."). For some of the discussions arising out of these negotiations, see *Replies of Governments to the Commission's Questionnaire on the Law of the Non-Navigational Uses of International Watercourses*, 2(1) Y.B. Int'l L. Comm'n, U.N. Doc. A/CN.4/314 (1978); *The Law of the Non-Navigational Uses of International Watercourses-Comments and Observations Received from Governments*, 2(1) Y.B. Int'l L. Comm'n, U.N. Doc. A/CN.4/447 (1993).

81. For a description of the role and purpose of the Institute of International Law, see Institute of International Law, https://perma.cc/C4P6-V6F6 [hereinafter IIL]. The IIL adopts resolutions of a normative character pursuant to work undertaken by its scientific commissions. These resolutions are then brought to the attention of governmental authorities, international organizations, and the scientific community. Their aim is to highlight the characteristics of the *lex lata* in order to promote its respect

Economic Commission for Europe,[82] culminating in the adoption of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes ("UNECE Water Convention"),[83] and by the ILC in the Draft Articles leading to the adoption of the UNWC.

At first, the general tendency was to apply the no harm principle as the superior principle of international water law. For instance, the IIL provided in its 1911 Madrid Resolution that states sharing fresh water resources may not use them in such a way as "to seriously interfere with its utilization" by the other riparian states or make "alterations therein detrimental to the bank of the other State."[84] More specifically, the Madrid Resolution purported to prohibit changing the point where a stream crosses the frontier of two states, emptying injurious matter into the water, seriously modifying the essential character of the stream, and constructions by a downstream state that would pose a danger of flooding to an upstream state.[85]

The IIL qualified the strong language used in the Madrid Resolution, which prohibited *any* changes to shared fresh water resources, fifty years later in its 1961 Salzburg Resolution.[86] This declaration still referred to the no harm principle as "one of the basic principles governing neighborly relations" and as applicable to "relations arising from different utilizations of waters," but declared that any dispute concerning states' rights to use a shared resource "shall be settled on the basis of equity."[87] The approach adopted in the Salzburg Resolution to the resolution of interstate fresh water

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and to make determinations *de lege ferenda* in order to contribute to the development of international law. *Id*.

For a description of the role and purpose of the International Law Association ("ILA"), see INTERNATIONAL LAW ASSOCIATION, https://perma.cc/XV5U-4ZBQ. The objectives of the ILA are "the study, clarification and development of international law, both public and private, and the furtherance of international understanding and respect for international law," which it carries out by way of consultation to UN agencies, work undertaken by international committees, and biennial conferences. The ILA embarked in 1954 on a study of the legal aspects of the use of the waters of international drainage basins. Three committees have been engaged in this work. The first committee produced the 1966 Helsinki Rules; the second formulated a number of articles amplifying particular aspects of the Helsinki Rules; and the third committee continued this work of amplification. In its 2004 Berlin Congress, the ILA adopted the Berlin Rules on Water Resources, *supra* note 28. *Id*. *See also* Charles B. Bourne, *The International Law Association's Contribution to International Water Resources Law*, 36 NAT. RESOURCES J. 155 (1996).

82. The major aim of the United Nations Economic Commission for Europe is to promote pan-European economic integration. It includes 56 member States in Europe, North America and Asia. However, all interested United Nations member States may participate in the work of the Commission.

83. Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Helsinki, Mar. 17, 1992, 1936 U.N.T.S. 269 [hereinafter UNECE Water Convention].

84. Inst. Int'l Law, *International Regulation regarding the Use of International Watercourses for Purposes Other Than Navigation – Declaration of Madrid* (Apr. 20, 1911), 24 ANNUAIRE DE L'INSTITUT DE DROIT INTERNATIONAL 365 [hereinafter Madrid Resolution]. On the role and objectives of the IIL, see IIL, *supra* note 81.

85. *See* Madrid Resolution, *supra* note 84.

86. *See* Inst. Int'l Law, *Resolution on the Use of International Non-Maritime Waters – Resolution of Salzburg* (Sep. 11, 1961), 49 ANNUAIRE DE L'INSTITUT DE DROIT INTERNATIONAL 381, 381–84.

87. *Id*.

disputes therefore reflected the principle of equitable utilization, rather than no harm.[88] This trend continued in the ILA's 1966 Helsinki Rules, in which the causing of harm to another state was not prohibited, other than in the pollution context, and was dealt with merely as a factor to be taken into account in determining whether a use was equitable.[89] Thus, while the Helsinki Rules confirmed the existence of a broad no harm principle in international law, they did not treat it as determinative in the use of shared fresh water resources, instead subjecting such use to the equitable and reasonable utilization principle.[90]

The evolution of the Draft Articles in the work of the ILC, which became the foundation for the UNWC, further reflects the inconsistent approach to the relationship between the equitable and reasonable utilization and no harm principles in international water law. The ILC's first attempt to formulate these principles in 1981 clearly stated that equitable and reasonable utilization was the primary principle of international water law, to which the "no appreciable harm" principle had to yield.[91] However, this approach changed the following year and, while the equitable and reasonable utilization principle was still endorsed, "no appreciable harm" became the dominant rule once more, and "was not to yield to considerations of equity and reasonableness in the sharing of the uses of the waters."[92] In the 1983 Report of the ILC, it was similarly noted that the general principles governing international watercourses should bear in mind the maxim *sic utere tuo ut alienum non laedas*.[93] According to the Report:

> [The draft article pertaining to the prohibition of causing appreciable harm] was approved by most members who spoke about it. It was considered essential to emphasize the duty of system States to refrain from uses or activities that might cause appreciable harm to the rights or interests of other system States. It was said that, taken together with [the article on the equitable sharing in the uses of an international watercourse system and its waters], the

88. McCaffrey, *supra* note 1, at 490.

89. Helsinki Rules, *supra* note 45, art. 5. These rules are still considered as having significant authoritative value. *See* McCaffrey, *supra* note 1, at 191–92.

90. McCaffrey, *supra* note 1, at 413, 491.

91. The term "appreciable" was interpreted to mean more than "perceptible" but less than "serious" or "substantial." *See* Charles B. Bourne, *The International Law Commission's Draft Articles on the Law of International Watercourses: Principles and Planned Measures*, 3 Colo. J. Int'l Envtl. L. & Pol'y 65, 81 (1992); Islam, *supra* note 43, at 146.

92. *See* Bourne, *Draft Articles on the Law of International Watercourses*, *supra* note 91, at 75. *See also* Patricia Wouters, *An Assessment of Recent Developments in International Watercourse Law through the Prism of the Substantive Rules Governing Use Allocation*, 36 Nat. Resources J. 417, 420, 423, 438 (1996) (where the author criticizes the ILC's "nuanced version of the no significant harm principle as the primary rule of watercourse law," in contrast to the ILA's embrace of "equitable utilization as the overarching principle").

93. Int'l Law Comm'n, Rep. on the Work of Its Thirty-Fifth Session, U.N. Doc. A/38/10 (1983), at 70.

> two articles constituted a legal standard: reasonable and equitable use must not cause appreciable harm.[94]

In 1984, some members of the ILC expressed the similar view that "the maxim *sic utere tuo ut alienum non laedas* should occupy a privileged place in the draft, since the obligation not to cause harm to other States was a basic obligation which was recognized as a generally accepted principle of international law."[95] Doubts were also raised with regard to the article concerning "reasonable and equitable use."[96] By 1985, it was accepted that the doctrine of equitable utilization was a general, guiding principle of law, but that its bedrock was in "the fundamental principle represented by the maxim *sic utere tuo ut alienum non laedas*," i.e., in the no harm principle.[97]

As a result, in its 1988 session the ILC suggested a more forceful formulation of the no harm principle as "an obligation to ensure that no appreciable harm was caused, rather than in terms of a duty to refrain from causing harm."[98] In the same session, the ILC also recognized that "a watercourse State's right to utilize an international watercourse [system] in an equitable and reasonable manner has its limit in the duty of that State not to cause appreciable harm to other watercourse States," and that "a watercourse State may not justify a use that causes appreciable harm to another watercourse State on the ground that the use is equitable."[99]

By 1991, however, the pendulum swung back in favor of the equitable and reasonable utilization principle. The "no appreciable harm" principle was interpreted restrictively as prohibiting only *legal* harm to other states, i.e., depriving them of an equitable and reasonable share of an international resource, rather than *factual* harm, for instance in the form of water diversion.[100] The only exception was in the case of pollution, where "appreciable harm" was strictly prohibited and was not qualified by the equitable and reasonable utilization principle.[101] However, this subordination of the no harm principle to the equitable and reasonable utilization principle remained controversial. During its 1993 session, some members of the ILC objected to the "imprecise notion of 'equitable and reasonable use,' which did not offer an objective standard and thus could not be accepted, by itself,

94. *Id.* at 72.

95. Evensen, *Second Rep.*, *supra* note 66, at 95.

96. For instance, some members of the ILC raised the concern that the factors to be considered in determining reasonable and equitable use "had no relationship to each other, were listed in no order of priority, and appeared unrelated to the various uses of the waters of an international watercourse and to the priorities between such uses," Evensen, *Second Rep.*, *supra* note 66, at 96.

97. Bourne, *Draft Articles on the Law of International Watercourses*, *supra* note 91, at 77–78; McCaffrey, *Second Rep. on the Law of the Non-Navigational Uses of International Watercourses*, *supra* note 80, ¶ 171.

98. Draft Articles, *supra* note 47, at 180.

99. Int'l Law Comm'n, Rep. on the Work of Its Fortieth Session, U.N. Doc. A/43/10 (1988), at 36.

100. McCaffrey, *supra* note 1, at 448–49.

101. Bourne, *Draft Articles on the Law of International Watercourses*, *supra* note 91, at 73–81.

as the basic principle for regulating problems arising out of the uses of watercourses that might cause transboundary harm."[102]

Commentators during this time period were also struggling to reconcile these two principles. Some suggested that "no appreciable harm" should take priority, which was also the approach adopted in the UNECE Water Convention.[103] Others took the view that the ILC's Draft Articles clearly favored the no harm rule but that treaty practice suggested that equitable use was more advisable, while still others described the no harm rule as a water quality principle, rather than water quantity or utilization principle, and advised that the Convention be written as such.[104] The currently prevailing interpretation of the UNWC seems to subordinate the no significant harm principle to the equitable and reasonable utilization principle,[105] thereby steering the course of international water law "from 'no harm' to equitable utilization."[106] According to this view, states are subject to the no harm principle, but ultimately any harm caused is only considered as one factor in determining an "equitable" allocation,[107] whatever such an alloca-

102. Int'l Law Comm'n, Rep. on the Work of Its Forty-Fifth Session, U.N. Doc. A/48/10 (1993), at 92.

103. *See* UNECE Water Convention, *supra* note 83. The Convention sets out as its first general principle states' obligation to "prevent, control and reduce any transboundary impact," and the use of transboundary waters in a "reasonable and equitable way" appears as merely one factor to consider in preventing such impact along with the precautionary principle, the polluter-pays principle, and the principle of sustainable development. *Id.* at arts. 2(1), (2)I, (2)(5)(a)–(c).

104. *See* Aaron T. Wolf, *Criteria for Equitable Allocations: The Heart of International Water Conflict*, 23 Nat. Resources F. 3, 7 (1999).

105. *See, e.g.*, McCaffrey, *supra* note 1, at 428–29 ("[T]he 'no-harm' rule would not automatically override that of equitable utilization in the event the two came into conflict. . . . [T]he state whose use causes the harm, in taking measures to eliminate or mitigate it, is to aim at achieving a result that is equitable and reasonable under the circumstances. . . . [T]he 'no-harm' rule does not enjoy inherent preeminence."); Rieu-Clarke, *International Freshwater Law*, *supra* note 26, at 253 ("[B]y the reference to Article[s] 5 and 6, the [UNWC] clearly puts the no significant harm principle beneath the principle of equitable and reasonable utilization."); Salman, *Helsinki Rules*, *supra* note 26, at 633 (2007) ("[T]he prevailing view is that the [UNWC] has, like the Helsinki Rules, subordinated the obligation not to cause significant harm to the principle of equitable and reasonable utilization."); Richard Paisley, *Adversaries into Partners: International Water Law and the Equitable Sharing of Downstream Benefits*, 3 Melb. J. Int'l L. 280, 283 (2002) (viewing equitable utilization as "the basic governing principle of customary international water law"); Owen McIntyre, *Utilization of Shared International Freshwater Resources – The Meaning and Role of "Equity" in International Water Law*, 38 Water Int'l 112, 112 (2013) (noting that "[t]he principle of 'equitable and reasonable utilization' is the pre-eminent rule applying to the utilization of an international watercourse, at least in the case of a conflict of uses").

106. McCaffrey, *supra* note 1, at 94.

107. *Id.* at 445 ("[A]ny harm sustained by one state or another, as a result of an insufficient quantity of water, plays only a subsidiary role in the process of arriving at an equitable allocation."). *See also* Salman M.A. Salman, *The Future of International Water Law: Regional Approaches to Shared Watercourses?*, *in* Looking to the Future: Essays on International Law in Honor of W. Michael Reisman 907, 915 (Mahnoush H. Arsanjani et al. eds., 2011) ("Article 7(2) requires giving due regard to the principle of equitable and reasonable utilization when significant harm has nevertheless been caused to another watercourse state."); Alistair Rieu-Clarke & Flavia Rocha Loures, *Still Not in Force: Should States Support the 1997 UN Watercourses Convention?*, 18 Rev. Eur. Comp. & Int'l Envtl. L. 185, 188, 190 (2009) ("[T]he [UNWC] provides that some harm may be tolerated if it can be proven that such harm is consistent with the principle of equitable and reasonable utilization."); Owen McIntyre, Environmental Protection of International Watercourses Under International Law 105 (2007)

tion may entail. Therefore, a state must ensure that a use causing significant harm is equitable and reasonable, but there is no reciprocal obligation to ensure that significant harm is prevented or mitigated when determining if a particular use is equitable and reasonable.[108] As the official reception of the Convention has been less than widespread,[109] however, this position should not be viewed as "the definitive word on the problem that one might hope to see available to those who must cope with the looming global water crisis."[110]

Indeed, different approaches have been taken to the application of these two principles since the conclusion of the UNWC. For instance, the ILA's 2004 Berlin Rules present the equitable and reasonable utilization and the no significant harm principles as complementary.[111] The ILC's 2008 Draft Articles on the Law of Transboundary Aquifers preserve a leading role for the equitable and reasonable utilization principle, but also broaden the no significant harm principle by including "activities other than utilization of a transboundary aquifer or aquifer system that have, or are likely to have, an impact upon that transboundary aquifer or aquifer system."[112] The Draft Articles on the Law of Transboundary Aquifers further require that significant harm be prevented not only with respect to other states sharing a transboundary aquifer, but also with respect to those "in whose territory a

("[T]he prohibition on causing significant harm, and the other substantive rules [in the UNWC], are subject to the doctrine of equitable utilization."); Lucius Caflisch, *The Law of International Watercourses: Achievements and Challenges*, *in* INTERNATIONAL LAW AND FRESHWATER: THE MULTIPLE CHALLENGES 24, 31 (Laurence Boisson de Chazournes et al. eds., 2013) ("[T]he no-harm rule must give way to that of equitable utilization.").

108. U.N. Watercourses Convention User's Guide, *Fact Sheet Series: Number 5, No Significant Harm Rule*, https://perma.cc/7PWD-YEEM. In other words, "[s]tates [are] . . . obliged to 'take all appropriate measures to prevent the causing of significant harm to other watercourse States,' but where such harm nevertheless occurred, its lawfulness [i]s to be determined on the basis of whether it might be deemed equitable and reasonable." *See also* Alistair Rieu-Clarke, *From Treaty Practice to the UN Watercourses Convention*, *in* RESEARCH HANDBOOK ON INTERNATIONAL WATER LAW 19 (Stephen C. McCaffrey et al. eds., 2019) (Under the UNWC, states were "obliged to 'take all appropriate measures to prevent the causing of significant harm to other watercourse States,' but where such harm nevertheless occurred, its lawfulness was to be determined on the basis of whether it might be deemed equitable and reasonable.").

109. As of 2019, the UNWC had thirty-six parties. While there was vast support for the adoption of the United Nations General Assembly Resolution inviting states to become parties to the UNWC (103 in favor, 3 against, and 27 abstentions), in the voting on Articles 5, 6, and 7 as a package, only 38 states voted in favor, 4 voted against, 22 abstained, and 129 did not vote. *See* KAYA, *supra* note 78, at 171; Mark Zeitoun, *The Relevance of International Water Law to Later Developing Upstream States*, 40 WATER INT'L 949, 962 (2015). In its comments on the ILC's Draft Articles that formed the basis for the UNWC, Hungary, for instance, posited that "[t]he relationship between [A]rticle 5 on equitable and reasonable utilization and participation and [A]rticle 7 on the obligation not to cause significant harm is problematic and does not strike the appropriate balance between the rights and concerns of downstream and upstream States." *See* U.N. Secretary-General, *Draft Articles on the Law of the Non-Navigational Uses of International Watercourses and Resolution on Confined Transboundary Groundwater: Rep. of the Secretary-General*, U.N. Doc. A/51/275 (Aug. 6, 1996).

110. Joseph W. Dellapenna, *The Customary International Law of Internationally Shared Fresh Waters*, *in* SHARED WATER SYSTEMS AND TRANSBOUNDARY ISSUES (WITH SPECIAL EMPHASIS ON THE IBERIAN PENINSULA) 79, 127 (Luso-American Foundation ed., 1999).

111. *See* Berlin Rules on Water Resources, *supra* note 28, art. 12(1).

112. Int'l Law Comm'n, Rep. on the Work of Its Sixtieth Session, U.N. Doc. A/63/10 (2008), at 22.

discharge zone is located," since they are "most likely to be affected by the circumstances envisaged in the draft article."[113] Therefore, efforts to clarify the scope and relationship between the equitable and reasonable utilization and no significant harm principles seem to continue, but with no lasting consensus in sight.[114]

Decisions of international courts and tribunals have also failed to provide sufficient clarification in this regard. In its 1997 decision in the *Gabčíkovo-Nagymaros* dispute,[115] the ICJ reiterated the position adopted in the UNWC of prioritizing the equitable and reasonable utilization principle over no significant harm.[116] The Court declared that equitable and reasonable utilization was the guiding principle of international water law and made no explicit reference to the no significant harm principle, even though the latter was heavily relied upon by Hungary.[117] Moreover, the Court's finding that environmental protection was not an overriding consideration in the application of the equitable and reasonable utilization principle has been interpreted to constitute a rejection "of the more general principle . . . that a utilization of a watercourse is not lawful if it will cause significant harm to other watercourse states—a 'no significant harm' rule."[118]

In contrast, in its 2010 decision in the *Pulp Mills* case the ICJ found that attaining "optimum and rational utilization . . . could not be considered to be equitable and reasonable if the interests of the other riparian state in the shared resource and the environmental protection of the latter were not taken into account."[119] Accordingly, the Court held the parties to their obligation "to prevent any significant transboundary harm which might be caused by potentially harmful activities planned by either one of them."[120] While a dominant aspect of this case was the environmental and ecological impacts of pulp mills, which may explain the Court's prioritization of the no

113. *Id*. at 46. *See also* Stephen C. McCaffrey, *The International Law Commission Adopts Draft Articles on Transboundary Aquifers*, 103 Am. J. Int'l L. 272, 276 (2009) (noting that these additions "help to prevent an unduly narrow reading of the obligation to prevent the causing of significant harm"); Owen McIntyre, *International Water Resources Law and the International Law Commission Draft Articles on Transboundary Aquifers: A Missed Opportunity for Cross-Fertilisation?*, 13 Int'l Comm. L. Rev. 237, 244 (2011) (noting that "it is not now implicit that the principle of equitable and reasonable utilization enjoys priority over the duty to prevent significant harm in the case of transboundary aquifers").

114. Ryan B. Stoa, *The United Nations Watercourses Convention on the Dawn of Entry into Force*, 47 Vand. J. Trans'at'l L. 1321, 1324 (2014).

115. Gabčíkovo-Nagymaros Project (Hung. v. Slovk.), Judgment, 1997 I.C.J. 7 (Sept. 25). The dispute between Czechoslovakia and Hungary concerned the construction of an integrated system of major dams and other works on the Danube River. *Id*.

116. *See, e.g.*, Charles B. Bourne, *The Case Concerning the Gabčíkovo-Nagymaros Project: An Important Milestone in International Water Law*, 8 Y.B. Int'l Envtl. L. 6, 10 (1997).

117. Gabčíkovo-Nagymaros, Memorial of the Republic of Hungary, 1997 I.C.J. 7, ¶¶ 1.04, 3.93, 5.44, 5.139, 7.44–7.56, 7.81 (May 2, 1994).

118. Bourne, *The Case Concerning the Gabčíkovo-Nagymaros Project*, *supra* note 116, at 7–8.

119. Pulp Mills on River Uruguay (Arg. v. Uru.), Judgment, 2010 I.C.J. 14, ¶¶ 175, 177 (Apr. 20). The dispute between Argentina and Uruguay concerned the construction of two pulp mills on the Uruguay River. *Id*.

120. *Id*. at ¶ 139.

significant harm principle, there were additional non-environmental issues raised by the parties pursuant to the equitable and reasonable utilization principle, including recreational and touristic uses of the river.[121] In this regard, it should be recalled that the obligation not to cause harm is applicable not only to quality issues such as pollution, but also more generally to any harm concerning the "regime of the river,"[122] including quantity and usage issues.[123] Finally, in the 2012 *Indus River* arbitration, the tribunal similarly emphasized the no significant harm principle, noting the "customary international law requirements of avoiding or mitigating trans-boundary harm."[124] Therefore, while courts and tribunals have referenced both principles of international water law in deciding interstate fresh water disputes, such decisions have failed to clarify how these principles are to be simultaneously applied.

In sum, the equitable and reasonable utilization and no significant harm principles may have been intended to serve as "two sides of the same coin,"[125] and indeed remain the core substantive legal principles governing states' management and use of shared fresh water resources. However, the ambiguity and confusion surrounding the relationship between these two principles has resulted in "two concepts competing for the bedrock position" in international water law.[126] This, in turn, may encourage extreme positions and hinder the ability of this body of law to guide states in the resolution of fresh water disputes. A clearer and more concrete approach to the application of these principles in such resolution is therefore warranted.

II.B An Alternative Approach to the Equitable and Reasonable Utilization and No Significant Harm Principles

How, then, should the equitable and reasonable utilization and no significant harm principles be applied in the resolution of interstate fresh water disputes? One approach is to treat the two principles as complementary. This could be achieved, for instance, by defining the no significant harm principle as prohibiting only the causation of *legal* injury, i.e., an injury to a state's legally protected right to an equitable share of the uses of an international fresh water resource, rather than as prohibiting *factual* harm.[127] Viewed in this way, the two principles seem compatible since a state may

121. *Id.* at ¶ 170.

122. Jens Evensen, *First Rep. on the Law of the Non-Navigational Uses of International Watercourses*, U.N. Doc. A/CN.4/367 (Apr. 19, 1983), ¶ 100 (citing the 1975 Statute for the Uruguay River concluded between Uruguay and Argentina).

123. McCaffrey, *supra* note 1, at 514–15.

124. Indus Waters Kishenganga Arbitration (Pak. v. Ind.), Final Award and Partial Award, 31 R.I.A.A. 1, ¶¶ 87, 112 (Perm. Ct. Arb. 2013). The dispute between India and Pakistan concerned the construction of a hydroelectric project on the Indus River. *Id.*

125. McCaffrey, *supra* note 1, at 497.

126. Utton, *supra* note 26, at 638.

127. *See, e.g.*, McCaffrey, *supra* note 1, at 469.

not invoke the no significant harm principle without showing that its equitable interest in the shared resource has been implicated. However, since this requires that "the initiating state's use or other conduct resulting in harm [be] unreasonable (inequitable) in respect of the affected state,"[128] it effectively conditions the finding of a violation of the no significant harm principle on a finding of violation of the equitable and reasonable utilization principle. Another way that has been suggested for applying no significant harm and equitable and reasonable utilization on an equal footing is to require a state that has caused significant harm "in an overall context of equitable and reasonable utilization . . . to do its best to stop or mitigate the harm, within the context of consultations with the affected state," in order to "find a mutually acceptable solution, guided by the end goal of equitable and reasonable utilization."[129] This approach recognizes the importance of the no significant harm principle's due diligence obligations, discussed in detail below, yet remains guided by equitable and reasonable utilization since, ultimately, "a use can cause significant harm and still be equitable and reasonable, and thus permissible."[130]

These suggestions for applying both principles in tandem[131] are compelling in theory. However, in practice they continue to rely on the equitable and reasonable utilization principle to determine whether an activity or use that causes significant harm should be permitted. They are therefore tantamount to treating equitable and reasonable utilization as the governing principle and no significant harm as subsidiary to it. As noted above, the UNWC and some scholars favor such a prioritization[132] and consider the equitable and reasonable utilization principle as the "governing"[133] or "preeminent"[134] principle of international water law. This approach, however, is fraught with difficulties.

II.B.1 *Equitable and Reasonable Utilization as a Guiding Principle*

Advocates of treating equitable and reasonable utilization as the governing principle of international water law stress its flexibility and ability to account for all relevant circumstances beyond merely "who got to the river first."[135] Moreover, the principle purports to regulate not only the quantity of water a state is entitled to, which must be "equitable," but also the use such water is put to, which must be "reasonable."[136] These concepts of "eq-

128. *Id.* at 495.

129. Stephen C. McCaffrey, *Intertwined General Principles*, in RESEARCH HANDBOOK ON INTERNATIONAL WATER LAW 91 (Stephen C. McCaffrey et al. eds., 2019).

130. *Id.*

131. MCCAFFREY, *supra* note 1, at 506.

132. *See* notes 104–07, *supra*, and sources therein.

133. Paisley, *supra* note 105, at 283; Wouters, *An Assessment*, *supra* note 92, at 438.

134. McIntyre, *Utilization of Shared International Freshwater Resources*, *supra* note 105, at 112.

135. MCCAFFREY, *supra* note 1, at 447.

136. Id. at 449; Margaret J. Vick, *The Law of International Waters: Reasonable Utilization*, 12 CHI.-KENT J. INT'L & COMP. L. 122, 141 (2012).

uitable" and "reasonable" allocation and use may assist in the management of shared fresh water resources by bolstering interstate cooperation and thereby preventing disputes. They stand to contribute less, however, to the resolution of an actual dispute arising from a new or altered use of such resources where the acting state has determined that the use is "equitable and reasonable" vis-à-vis the complaining state yet the latter disagrees.[137]

The UNWC attempts to facilitate the application of the equitable and reasonable utilization principle by providing in Article 6 a non-exhaustive list of factors to be considered in determining whether a particular use of a shared fresh water resource is "equitable and reasonable." However, this list does not provide a method or process for applying the factors to a given dispute, and runs the risk of steering states towards *equalization* rather than *equitable* water allocation.[138] Indeed, Article 6 merely suggests that "the weight to be given to each factor is to be determined by its importance" and that "all relevant factors are to be considered together."[139] Doing so is likely to be a tall order considering the vast scope of the factors listed in the article. For instance, the first factor—the "geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character"—includes virtually every physical feature that has some relationship to fresh water.[140]

Moreover, the equitable and reasonable utilization principle as articulated in the UNWC is less suited to guide the resolution of disputes concerning fresh water uses that may harm the environment[141] or the resource itself. Indeed, it has been criticized for permitting significant harm whenever "inflicted in the endeavour to achieve equitable and reasonable utilization of an international watercourse," even though such utilization may compromise environmental protection.[142] Article 5 of the UNWC refers to both "optimal" and "sustainable" utilization as its main objective and provides that "[w]atercourse States shall participate in the use, development and protection of an international watercourse in an equitable and reasonable manner."[143] However, "optimal" has been interpreted to concern merely

137. Even assuming sufficient cooperation and consultation between the disputing states concerning the "equitable and reasonable" nature of the use, these concepts remain subjective and value-driven, and therefore susceptible to contradictory interpretations.

138. Lankford, *supra* note 31, at 131.

139. UNWC, *supra* note 22, art. 6(3); *see also* Meredith A. Giordano & Aaron T. Wolf, *Transboundary Freshwater Treaties*, *in* INTERNATIONAL WATERS IN SOUTHERN AFRICA 71, 74–75 (Mikiyasu Nakayama ed., 2003). However, Article 10 does give "special regard" to "vital human needs" in resolving conflicts between different uses of an international watercourse. UNWC, *supra* note 22, art. 10.

140. Stephen M. Schwebel, *First Rep. on the Law of the Non-Navigational Uses of International Watercourse*, U.N. Doc. A/CN.4/320, at 162 (May 21, 1979).

141. The "environment" has been defined in treaties and other international instruments to include four possible elements: (1) fauna, flora, soil, water and climatic factors; (2) material assets, including archaeological and cultural heritage; (3) the landscape and environmental amenity; and (4) the interrelationship between these factors. *See* PHILIPPE SANDS, JAQUELINE PEEL, ADRIANA FABRA & RUTH MACKENZIE, PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW 700 (3d ed. 2012).

142. Helal, *supra* note 72, at 364.

143. UNWC, *supra* note 22, arts. 5(1) and (2).

"maximizing benefits for states and avoid[ing] harm to states, not minimizing harm to watercourses themselves."[144] The concepts of "optimal" and "sustainable" utilization therefore do not necessarily align, and the ultimate objective of Article 5 remains "the attainment of optimal utilization and benefits . . . by watercourse states in utilizing an international watercourse."[145] This objective is also in line with the original purpose of the equitable and reasonable utilization principle—to govern the apportionment or allocation of shared fresh waters, rather than to prevent adverse effects on other states or the environment.[146]

As a result, the use of equitable and reasonable utilization as the guiding principle of interstate fresh water dispute resolution may neglect socio-environmental impacts such as climate change, which are important to ensuring both adequate quantity and quality of water.[147] Such neglect is evident, for instance, in the ICJ's decision in the *Gabčíkovo-Nagymaros* dispute mentioned above. While the Court recognized that "the Project's impact upon, and its implications for, the environment are of necessity a key issue,"[148] it failed to assess the impacts of the river diversion on the region's ecology or to evaluate the data concerning the quantity and quality of water required to maintain a balanced natural and human environment.[149] Such an exercise would have allowed the Court to better balance equitable utilization and sustainable utilization, or "economic imperatives and ecological impera-

144. Marjon Kroes, *The Protection of International Watercourses as Sources of Fresh Water in the Interest of Future Generations*, *in* THE SCARCITY OF WATER: EMERGING LEGAL AND POLICY RESPONSES 80, 86 (Edward H. P. Brans ed., 1997).

145. ISLAM, *supra* note 43, at 132, 388; Draft Articles, *supra* note 47, Commentary to art. 5, paras. 3, 4. Some argue that this language is softened by the addition of "taking into account the interests of the watercourse states concerned" to the article. *See*, *e.g.*, Attila Tanzi, *The Economic Commission for Europe Water Convention and the United Nations Watercourses Convention: An Analysis of their Harmonized Contribution to International Water Law*, 6 UNITED NATIONAL ECONOMIC COMMISSION FOR EUROPE WATER SERIES 44 (2015). Article 5 of the Draft Articles also provided that the "equitable and reasonable" use of an international watercourse shall be "consistent with adequate protection of the watercourse." Draft Articles, *supra* note 47.

146. MCCAFFREY, *supra* note 1, at 445 (noting that: "[E]quitable utilization is chiefly a doctrine governing apportionment, or allocation, of water between states sharing an international watercourse. . . . [A]ny harm sustained by one state or another, as a result of an insufficient quantity of water, plays only a subsidiary role in the process of arriving at an equitable allocation. . . . The preferable approach would clearly be a holistic one, which explicitly takes into account considerations of both allocation and protection. On the international plane, the concept of equitable utilization itself has, to some extent, been asked to perform both of these functions, which has resulted in a degree of confusion and perhaps in an overloading of a principle whose implementation is already a complex matter.").

147. Flora Lu, Constanza Ocampo-Raeder & Ben Crow, *Equitable Water Governance: Future Directions in the Understanding and Analysis of Water Inequities in the Global South*, 39 WATER INT'L 129, 130 (2014).

148. Gabčíkovo-Nagymaros Project (Hung. v. Slovk.), Judgment, 1997 I.C.J. 7, ¶ 140 (Sept. 25).

149. *See* Stephen Stec & Gabriel E. Eckstein, *Of Solemn Oaths and Obligations: The Environmental Impact of the ICJ's Decision in the Case Concerning the Gabčíkovo-Nagymaros Project*, 8 Y.B. INT'L ENVTL. L. 41, 45–46 (1997) (The Court "neglected to substantively consider the more tangible injuries caused to Hungary and to its environment."); A.E. Boyle, *The Gabčíkovo-Nagymaros Case: New Law in Old Bottles*, 8 Y.B. INT'L ENVTL. L. 13, 18 (1997) (noting that "[t]he factors involved in determining what is sustainable are much broader and more subjective than the factors at issue in questions of equitable utilization," but that the ICJ in this case limited "its use of sustainable development to questions of process rather than substance").

tives,"[150] and to consider the overall harm that was, or might be, caused to both parties and to the environment.[151]

Beyond its problematic formulation in the UNWC, the general efficacy of the equitable and reasonable utilization principle in the resolution of interstate fresh water disputes is also questionable. First, some studies of international water agreements have found that the principle has been relatively underutilized by states.[152] Even where referenced, "existing formulations . . . provide little or no guidance as to the different weights to be given to alternative interpretations of law, competing legal provisions or competing preexisting rights."[153] This may result from the practical challenge of determining what constitutes each state's "fair share" and what conduct or use should be considered "equitable and reasonable"—concepts which are susceptible to subjective and contradictory interpretations.[154] Since the equitable and reasonable utilization principle was originally developed for areas where water was plentiful and conflicts were unlikely, it also provides only a limited restraint on states[155] and may not be able to advance the common interests of riparian states by reconciling their conflicting uses, safeguarding the environment, and protecting shared fresh water resources.[156] Finally, "it is unclear exactly what process might apply to any such equitable balancing, prompting leading commentators to conclude . . . that the language of eq-

150. Gabčíkovo-Nagymaros, 1997 I.C.J. 7, ¶ 103 (Sept. 25).

151. Gabriel E. Eckstein & Yoram Eckstein, *International Water Law, Groundwater Resources and the Danube Dam Case*, *in* GAMBLING WITH GROUNDWATER – PHYSICAL, CHEMICAL, AND BIOLOGICAL ASPECTS OF AQUIFER-STREAM RELATIONS 243, 247 (John Van Barahana et al. eds. 1998) ("[T]he Court neglected to address the social or economic costs associated with possible future harm stemming from operation of the dam scheme. In particular, it failed to consider the risks of proceeding with the project *vis a vis* the risks of modifying or abandoning it. Furthermore, this omission had a second and possibly more profound result: it effectively relegated the state of the environment as a secondary concern under the law behind financial investment.").

152. Meredith A. Giordano & Aaron T. Wolf, *Incorporating Equity into International Water Agreements*, 14 SOC. JUST. RES. 349 (2001). Giordano and Wolf review forty-nine water treaties that specifically describe water allocations for consumptive or nonconsumptive uses and find that "riparian nations have not widely adopted general principles for the equitable allocation of water resources in actual treaty practice." *Id.* However, other studies have found equity concepts in international water law to have a "tangible impact on basin level agreements." *See*, *e.g.*, Jonathan Lautze & Mark Giordano, *Equity in Transboundary Water Law: Valuable Paradigm or Merely Semantics?*, 17 COLO. J. INT'L ENVTL. L. & POL'Y 89, 89–90 (2006) (finding that agreements referring to equity in fact divide water in a more equitable manner). Some authors have also distinguished between "equitable utilization" and "reasonable utilization," finding the former to be used much more frequently in water agreements than the latter. *See*, *e.g.*, Vick, *supra* note 136, at 154.

153. McIntyre, *Utilization of Shared International Freshwater Resources*, *supra* note 105, at 121.

154. HILAL ELVER, PEACEFUL USES OF INTERNATIONAL RIVERS: THE EUPHRATES AND TIGERS RIVERS DISPUTE 136–38 (2002) ("[T]he principle is highly indeterminate" and allocation may be based on "a vague notion that each state is entitled to a 'reasonable share' of the water, an especially unsatisfactory approach considering the competing uses of water that are equally important to riparian countries.").

155. EDITH BROWN WEISS, INTERNATIONAL LAW FOR A WATER-SCARCE WORLD 26–27 (2013).

156. Marwa Daoudy, *Hydro-Hegemony and International Water Law: Laying Claims to Water Rights*, 10 WATER POL'Y, Supplement 2, 89, 95 (2008); ISLAM, *supra* note 43, at 140, 142.

uity provides no practical guidelines for water allocation,"[157] or for the resolution of interstate fresh water disputes generally.

In sum, the right of states to share equitably in the use of a transboundary fresh water resource may be "indisputable and undisputed"[158] in theory, and perhaps even useful in the dispute *prevention* context by bolstering interstate cooperation. However, the utility of the equitable and reasonable utilization principle in the *resolution* of interstate fresh water disputes is less obvious,[159] since its "normative vagueness"[160] "reinforce[s] insistence on entrenched positions"[161] and promotes adversarial roles and absolute claims by states. Equitable and reasonable utilization may therefore be more properly treated as an "interstate process of cooperation"[162] or as an ideal "result to be achieved,"[163] rather than as a substantive principle to guide states in the resolution of fresh water disputes.

II.B.2 *No Significant Harm as a Guiding Principle*

Since the equitable and reasonable utilization principle seems ill-suited to guide the resolution of interstate fresh water disputes, can and should the no significant harm principle take the lead? I argue that it indeed can, and should, for at least two reasons. First, the due diligence nature of the no significant harm principle, and second, its ability to objectively balance states' competing interests.

As states are unlikely to adhere to a general principle that imposes strict liability once harm is caused,[164] the no significant harm principle is one of due diligence—i.e., of conduct rather than result.[165] Due diligence obligations are beneficial since they constitute an important tool in dealing with the lack of uniformity in the standard of conduct expected of states.[166] Such obligations require a state to take "all measures it could reasonably be expected to take" to prevent significant harm.[167] While this reflects a standard

157. McIntyre, *Utilization of Shared International Freshwater Resources*, *supra* note 105, at 112.

158. Schwebel, *supra* note 140, at 85.

159. *See, e.g.*, Himanshu Tyagi, A. K. Gosain & Rakesh Khosa, *What Constitutes a Fair and Equitable Water Apportionment?*, *in* Water Resources and Environmental Engineering I: Surface and Groundwater (Maheswaran Rathinasamy et al. eds., 2019) (where the authors note that: "[D]octrines advocating appropriations based on the paradigms of equity and fairness, carry great appeal. But objective translation of this concept beyond philosophy has not been very successful . . . and consequently it is difficult to decide entitlements in real world conflicts on the basis of this vague concept.").

160. McIntyre, *Utilization of Shared International Freshwater Resources*, *supra* note 105, at 120.

161. Brunnée, *Nile Basin*, *supra* note 31, at 361.

162. McCaffrey, *supra* note 1, at 463; McIntyre, *International Water Resources Law*, *supra* note 113, at 247.

163. Castillo-Laborde, *supra* note 73, at 9.

164. This would resemble the discredited "absolute territorial integrity" doctrine defined in note 68, *supra*.

165. Tim Stephens & Duncan French, *Second Rep. of the ILA Study Group on Due Diligence in International Law* 2 (July 2016).

166. *Id*.

167. *Id*. at 8.

of "reasonableness,"[168] this standard is not left entirely to states' subjective and value-driven views of what is "reasonable." Rather, it triggers a state's international responsibility when it "manifestly fail[s]" to take all measures that were "within its power" to take[169] and that are generally considered to be appropriate and proportional to the degree of risk.[170] This standard therefore provides an "underlying legal framework," but one that is sufficiently flexible to take into account, for instance, the level of development of a state.[171] Moreover, a broad definition of what is considered as "significant harm," coupled with concrete due diligence obligations that minimize the risk of such harm occurring, make this standard of "reasonableness" more effective, and objectively assessable, than "equitable and reasonable utilization."

"Significant harm" requires something more than "trivial," "a real impairment of use, i.e. a detrimental impact of some consequence," but need not be at the level of "substantial."[172] Significant harm is not limited to harm directly related to the flow of water or the use of the watercourse. Rather, it includes "harm resulting from activities indirectly affecting a watercourse, and harm that is itself not necessarily connected with the use of the watercourse," such as deforestation in one country that causes flooding in another, or air pollution in one country that results in the pollution of a river or lake in another.[173] Moreover, such "significant harm" may include harm to "human health or safety, to the use of the waters for beneficial purposes, or to the living organisms of the watercourse systems."[174] Accordingly, harm that is "significant" may lead to a detrimental impact on matters such as human health, industry, property, environment, or agriculture, so long as such effects are susceptible of being measured by factual and objective standards.[175]

The due diligence standard of the no significant harm principle in turn guides states on how to prevent or minimize the risk of such significant harm. This standard can facilitate the resolution of fresh water disputes since

168. "[The concept of due diligence is generally concerned with] supplying a standard of care against which fault can be assessed. It is a standard of reasonableness, of reasonable care, that seeks to take account of the consequences of wrongful conduct and the extent to which such consequences could feasibly have been avoided." *Id.*

169. *Id.*

170. *See generally* Attila Tanzi, *Liability for Lawful Acts*, *in* MAX PLANCK ENCYCLOPEDIA OF PUBLIC INT'L L. (2013).

171. Stephens & French, *supra* note 165, at 9.

172. User's Guide, *Fact Sheet*, *supra* note 108; MCCAFFREY, *supra* note 1, at 470.

173. MCCAFFREY, *supra* note 1, at 470–71.

174. User's Guide, *Fact Sheet*, *supra* note 108; *see also* Otto Spijkers, *The Cross-Fertilization Between the Sustainable Development Goals and International Water Law*, 25 REV. EUR. COMMUNITY & INT'L ENVTL. L. 39, 44–45 (2016) (interpreting the no significant harm principle expansively to include harm "felt by the future generations of the same State in which the harm is caused," taking "both intergenerational and intragenerational harm into account").

175. Commentary 2, accompanying art. 2 International Law Commission Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities, with Commentaries (2001), Session 56, U.N. Doc. A/56/10, 152.

it does not simply impose an "amorphous negative duty" to avoid harm, but rather a "positive duty to take concrete steps" to prevent harm, making such harm not only more easily attributable to a particular state but also less likely to occur if diligence is exercised.[176] Guidance on the due diligence standard of the no significant harm principle can be found, for instance, in the advisory opinion of the International Tribunal for the Law of the Sea ("ITLOS") Seabed Chamber in *Activities in the Area*, in which the Tribunal noted that such standard

> may change over time as measures considered sufficiently diligent at a certain moment may become not diligent enough in light, for instance, of new scientific or technological knowledge. [It] may also change in relation to the risks involved in the activity . . . [and] be more severe for the riskier activities.[177]

Moreover, states must

> take all appropriate measures to prevent damage . . . [even] where scientific evidence concerning the scope and potential negative impact of the activity in question is insufficient but where there are plausible indications of potential risks.[178]

Therefore, states are obligated to act diligently not only where there is evidence of actual significant harm, but also where there is a *risk* of such harm, and are required to continuously monitor a project's potentially harmful effects.[179]

In the context of international fresh water resources, the due diligence standard of the no significant harm principle requires states to "take all appropriate measures to prevent the causing of significant harm to other watercourse States."[180] Diligent conduct to prevent or minimize such harm in this context takes into account generally accepted global and/or regional standards, the magnitude of the harm, as well as the capabilities of the state concerned.[181] The UNECE Water Convention further provides that in carrying out their due diligence obligations, states must use "best available technology" and "best environmental practices," define "water-quality objectives," and adopt "water-quality criteria."[182] Thus, due diligence entails not only consultation and negotiation, but also

176. Jutta Brunnée, *Procedure and Substance in International Environmental Law: Confused at a Higher Level?*, ESIL Reflection (2016), https://perma.cc/9VMV-R33C (internal quotations removed for clarity).

177. Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Case No. 17, Advisory Opinion of Feb. 1, 2011, ¶ 117.

178. *Id.* at ¶ 131.

179. Pulp Mills on River Uruguay (Arg. v. Uru.), Judgment, 2010 I.C.J. 14, ¶ 205 (Apr. 20).

180. UNWC, *supra* note 22, art. 7.

181. McCaffrey, *supra* note 1, at 499, 505.

182. UNECE Water Convention, *supra* note 83.

> the adoption of appropriate rules and measures . . . [and] a certain level of vigilance in their enforcement and the exercise of administrative control applicable to public and private operators, such as the monitoring of activities undertaken by such operators, to safeguard the rights of the other party.[183]

Viewed in this way, the due diligence nature of no significant harm clarifies, first, that this principle does not serve as a rigid blanket prohibition of *all* harm, but rather as a more flexible rule[184] intended to enable states to prevent *significant* harm by requiring them to take concrete steps in accordance with a basic standard of conduct.[185] Such requirement is necessary since "[a] state wishing to do that which will affect an international watercourse cannot decide whether another state's interests will be affected."[186] Second, the no significant harm principle satisfies, to some extent, the goal of the equitable and reasonable utilization principle—to achieve reasonable use of shared fresh water resources.[187] However, this "reasonableness" of the no significant harm principle is couched in objectively assessable criteria of "harm" and "due diligence" obligations. These criteria provide states with reciprocal commitments and a common language that can guide them in the resolution of fresh water disputes.

In addition to its due diligence nature, the ability of the no significant harm principle to objectively balance states' competing interests in the use of shared fresh water resources further supports its treatment as a guiding principle in the resolution of interstate fresh water disputes. In contrast to a widespread misperception of this principle, it is not designed to unilaterally protect against significant harm caused to a state's (usually located downstream) prior uses by the new activities of another state (usually located upstream). Rather, the no significant harm principle is aimed at striking a balance between one state's development possibilities and another state's existing uses, regardless of geographic location.[188] It is able to achieve such a balance, moreover, by focusing on the mutual goal of avoiding the greater harm.

While it may be easier to visualize harm to a downstream state, an upstream state could equally show that an activity undertaken by a downstream state might cause it significant harm—for instance, as a result of pollution, obstruction of fish migration, or foreclosure of future uses. Indeed, "[j]ust as a downstream state may be harmed by uses upstream, so also

183. Pulp Mills, 2010 I.C.J. 14, ¶ 197.

184. McCaffrey, *supra* note 1, at 498–99.

185. Schwebel, *supra* note 140, at 109. Despite its due diligence nature, such an obligation "may in effect be more stringent than obligations of result because . . . they deprive the state of the choice of means," McCaffrey, *supra* note 1, at 505.

186. Lake Lanoux Arbitration (Fr. v. Spain), Tribunal Arbitral, 12 R.I.A.A. 281 (Nov. 16, 1957).

187. Vick, *supra* note 136, at 170.

188. McCaffrey, *supra* note 1, at 471.

may an upstream state be harmed if its present or future use is limited in favor of a state downstream."[189] Similarly, an upstream state could show that prohibiting an upstream project or proposed use on account of harm it might cause to a downstream state would deprive it of benefits that would result in greater harm than allowing the project or use. This may be the case, for instance, where the upstream use reduces the amount of water to a downstream state, but that state is not making full use of the available water supply,[190] or, conversely, the downstream state is fully consuming the water.[191]

By balancing states' competing uses with a view to preventing the greater harm, the no significant harm principle recognizes that "measures undertaken by any riparian, regardless of its location on the shared watercourse, will have effects on all other riparians."[192] It also acknowledges disputing states' mutual interest in preventing or minimizing such effects, and preserves shared fresh water resources for future generations. It is therefore not surprising that the ILC has acknowledged that "if the Commission could affirm that the old maxim *sic utere tuo ut alienum non laedas* applied to the law of the non navigational uses of international watercourses, it would be able to give valuable guidance."[193] As it is beyond doubt that the no significant harm principle indeed applies to non-navigational uses of international watercourses, it should be allowed to provide such "valuable guidance" by serving as the primary principle of international water law in the resolution of interstate fresh water disputes.

The application of no significant harm as such a guiding principle would begin with the complaining state showing[194] that the challenged activity carries a "risk of significant harm."[195] In other words, that "significant harm," as broadly defined above, has occurred or may occur to the complaining state and its citizens, the environment, or the shared resource itself. If it is not possible to show such "risk of significant harm," the no significant harm principle would not be triggered, and the challenged activity

189. *Id*. at 474.

190. *Id*. at 470.

191. *Id*. at 457.

192. Salman M.A. Salman, *Downstream Riparians Can Also Harm Upstream Riparians: The Concept of Foreclosure of Future Uses*, 35 Water Int'l 350, 363 (2010).

193. Int'l Law Comm'n, Rep. on the Work of Its Twenty-Eighth Session, U.N. Doc. A/31/10, 162 (1976).

194. The complaining state is not required to prove that the harm was caused with the intent to injure, unlike the doctrine of "abuse of rights," Ulrich Beyerlin & Thilo Marauhn, International Environmental Law 43 (2011). Moreover, certainty in scientific evidence should not be required since by the time such certainty is achieved it is often too late to prevent the harm, McCaffrey, *supra* note 1, at 523. There is likely to be little risk of states making frivolous claims as a result, since "[s]tates do not normally make claim against other states unless they consider that they have been injured or threatened," *id*. at 521–22.

195. McCaffrey, *supra* note 1, at 492–93. A "risk of significant harm" refers to "the combined effect of the probability of occurrence of an accident and the magnitude of its injurious impact" and requires "high probability of causing significant harm." Int'l Law Comm'n, Rep. on the Work of Its Fifty-Third Session, U.N. Doc. A/ 56/10 (Part 2) (2001), at 152.

would be allowed to continue.[196] If the complaining state is able to establish a risk of significant harm, an assessment would be required of whether the acting state has complied with its due diligence obligations. The burden of proof at this stage shifts to the acting state, which must show that it has acted diligently to prevent or minimize the actual or potential harm.[197] If the acting state fails to do so, it would be in violation of the no significant harm principle and would be internationally responsible to conform with its due diligence obligations.[198]

In the event that the acting state has complied with its due diligence obligations but significant harm is nonetheless caused or might be caused, a balancing exercise must be undertaken to determine which is the greater harm that should be avoided—the overall harm that would result from allowing the challenged activity or the overall harm that would result from prohibiting it.[199] This analysis may involve factors similar to those currently viewed as falling under the equitable and reasonable utilization principle. However, the question guiding this analysis is not whether the challenged activity is "equitable and reasonable" and should therefore be allowed regardless of the resulting harm, but rather what is the greater harm to be avoided—that caused by the challenged activity or that resulting from the

196. If the complaining state cannot show a risk of significant harm yet the acting state has nonetheless breached its due diligence obligations, I argue that this would amount to a violation of the duty to cooperate. *See* Tamar Meshel, *Unmasking the Substance Behind the Process: Why the Duty to Cooperate in International Water Law is Really a Substantive Principle*, 47 DENVER J. INT'L L. & POL'Y (forthcoming, 2020).

197. This reversal of the burden of proof is increasingly accepted in international law. *See* Tanzi, *The Economic Commission for Europe Water Convention*, *supra* note 145, at 55–56 (noting that it has been argued in legal scholarship that "the burden of proof should be reversed, establishing a presumption of the origin State's violation of its international obligation of control over private operators under its jurisdiction"). In contrast, see the ICJ's decision in the Pulp Mills case, finding that a precautionary approach does not operate as a reversal of the burden of proof, Pulp Mills on River Uruguay (Arg. v. Uru.), Judgment, 2010 I.C.J. 14, ¶ 164 (Apr. 20).

198. MCCAFFREY, *supra* note 1, at 502. This does not mean, necessarily, that the challenged activity will not be allowed once the acting state has complied with its obligations. If there remains a risk of significant harm, the next stage of the analysis would be triggered.

199. Some authors have suggested a similar approach. For example, Michael A. Hyman, *Under the Danube Canopy: the Future of International Waterway Law*, 23 WM. & MARY ENVTL. L. & POL'Y REV. 355, 362 (1998), and Albert E. Utton, *International Water Quality Law*, *in* INTERNATIONAL ENVIRONMENTAL LAW (Ludwik A. Teclaff & Albert E. Utton eds., 1974), view no significant harm as a "broad principle that demands that the user must balance the negative effects of his actions against the benefits obtained," Hyman at 362. This can be assessed, for instance, in terms of waste and efficiency: "Wasteful existing uses should not be accorded priority . . . when confronted with needs from other riparian States." Helal, *supra* note 72, at 369.

Harm to the environment, such as pollution, and to the fresh water resource itself, such as the rate of return flows and the availability of storage water, could also be considered. Another relevant, and perhaps even determinative, consideration would be vital human water needs. This is guided by recent developments concerning the human right to water, which guarantees access to water for personal and domestic uses including drinking, personal sanitation, washing of clothes, food preparation, and personal and household hygiene. It has also been suggested that "the priority to be accorded to vital human needs is part of customary international law," Attila Tanzi, *The Global Water Treaties and Their Relationship*, *in* RESEARCH HANDBOOK ON INTERNATIONAL WATER LAW 53 (Stephen C. McCaffrey, Christina Leb & Riley T. Denoon eds., 2019).

loss of its benefits.[200] This ensures that even where "equities presumptively [support] protection of the established senior uses, . . . the balance of benefit and harm" is considered.[201] Such a balancing of harm exercise was also contemplated by the ILA in 1959,[202] and is reflected in Article 8 of the Helsinki Rules:

> An existing reasonable use may continue in operation unless the factors justifying its continuance are outweighed by other factors leading to the conclusion that it be modified or terminated so as to accommodate a competing incompatible use.

If the acting state can show that the overall harm that would be caused by prohibiting the challenged activity is greater than the overall harm that would result from allowing it—or, in other words, if the benefits from the challenged activity outweigh its costs—the activity would be allowed since it is ultimately the greater harm that should be avoided. However, the acting state would remain under an obligation to continuously cooperate with the other co-riparian states concerning the implementation of the activity.[203] If, in contrast, the overall harm that would be caused by the challenged activity is greater than the overall harm that would result from prohibiting it, the acting state would be subject to an additional due diligence obligation to eliminate, mitigate, or compensate for the harm caused, in consultation with the affected state(s).[204] While this additional due diligence obligation remains a duty of conduct rather than of result, its violation would give rise to "state liability for acts not prohibited by international

200. As noted above, *supra* note 32, a similar balance-of-harms analysis was applied by the Supreme Court of the United States in several interstate fresh water disputes. For instance, in the dispute between Colorado and Kansas, the Supreme Court articulated the question to be decided as "whether, and to what extent, [the upper state's] action injures the lower state and her citizens by depriving them of a like, or an equally valuable, beneficial use." Colorado v. Kansas, 320 U.S. 383, 393 (1943). To this end, the Supreme Court compared "the diminution of the flow of water in the river by the irrigation of Colorado" against the "great benefit" which has resulted to Colorado. Kansas v. Colorado, 206 U.S. 46, 113–14 (1907). This balancing exercise was intended to give effect to the "equitable apportionment" doctrine devised by the Court in order to reach an "equitable division of benefits" between the disputing states. *Id*. at 117–18. It is from this doctrine that the equitable and reasonable utilization principle of international water law has largely developed, McCaffrey, *supra* note 1, at 445. Much like this principle, the equitable apportionment doctrine has been criticized for constituting a "vague, if not meaningless, standard," Charles J. Meyers, *The Colorado River*, 19 Stan. L. Rev. 1, 50 (1966), and for being "imprecise" and "unpredictable," Josh Patashnik, *Arizona v. California and the Equitable Apportionment of Interstate Waterways*, 56(1) Ariz. L. Rev. 1, 17 (2014). As a result, the Supreme Court has gradually "sought to move the doctrine of equitable apportionment away from this overarching concern for equity and toward a more rule-based approach," Patashnik, *id*. at 18.

201. Colorado v. New Mexico, 459 U.S. 176, 183 (1982); Colorado v. New Mexico, 467 U.S. 310, 316–17 (1984).

202. Islam, *supra* note 43, at 138.

203. The relevant states are to cooperate on a continuous basis regarding the challenged activity by way of exchange of information, notification of expected changes or events, and consultation, in accordance with their due diligence obligations and the duty to cooperate.

204. Compensation is not always possible or appropriate. Where it is, it could take the form of monetary compensation as well as sharing in the benefits of the new activity and concessions on other trade matters. McCaffrey, *Water Disputes Defined*, *supra* note 51, at 118.

law."[205] In this sense, it is similar to Article 7(2) of the UNWC, pursuant to which an acting state must "take all appropriate measures . . . in consultation with the affected State, to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation." This provision, however, also requires the acting state to "hav[e] due regard for the provisions of [A]rticles 5 and 6"—the equitable and reasonable utilization articles. Therefore, it continues to subordinate the acting state's obligations under the no significant harm principle to the equitable and reasonable utilization principle.

Applying no significant harm as the guiding principle of interstate fresh water dispute resolution in this way serves the common goal of preventing or minimizing the greatest harm that may result from the disputing states' unilateral activities, while avoiding endless disagreements over whether such activities may or may not be "equitable and reasonable." This approach, which weighs harms against benefits, is also in line with the recent trend promoting "benefit sharing" among co-riparians. According to this view, some nations have to forego the actual use of water but are entitled to monetary compensation for making it possible for other states to put the water to its most efficient use.[206] Finally, some contextual factors that may currently be seen as falling under the equitable and reasonable utilization principle are also accounted for in this application of no significant harm. However, these factors are considered as part of a structured "balancing of harms" analysis in which the focus remains on the goal of preventing the greater harm.

In sum, the due diligence nature and balancing capability of the no significant harm principle allow it to accomplish the two, at times competing, goals of international water law: harm prevention and reasonable use. Due diligence obligations provide a standard of conduct that states can hold each other to, and these obligations are likely to both reduce the risk of significant harm occurring and lead to reasonable use. The balancing of harms exercise provides disputing states with a common goal of harm prevention and a useful tool for determining whether a proposed use or activity of a shared fresh water resource is reasonable. Such a use or activity that carries the risk of significant harm would be permitted, subject to continuous interstate cooperation, where the harm resulting from prohibiting it is greater than the harm resulting from allowing it, or where the acting state has taken steps to mitigate or compensate for such harm. This, in turn, would also make the use or activity "reasonable."

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205. Tanzi, *The Economic Commission for Europe Water Convention*, *supra* note 145, at 32–33. For instance, a state that has caused or is likely to cause the greater harm would be held responsible for wrongful conduct if, for instance, it rejects a request for compensation, including in the form of a distribution of benefits in kind. *Id.* at 36.

206. A. Dan Tarlock, *Water Security, Fear Mitigation and International Water Law*, 31 HAMLINE L. REV. 703, 713 (2008).

Understood and applied in this way, the no significant harm principle seems conceptually better-suited to lead to the resolution of interstate fresh water disputes. How has this principle fared in the actual resolution of such disputes in the past, as compared with equitable and reasonable utilization? The next section examines the use of both principles in interstate fresh water disputes submitted to arbitration and judicial settlement. The results of this examination further support my proposal to treat no significant harm as the guiding principle of international water law in the resolution of these disputes.

III. Equitable and Reasonable Utilization and No Significant Harm in Practice

In order to assess the use of the no significant harm and equitable and reasonable utilization principles in the resolution of previous interstate fresh water disputes, this section examines the outcome of six such disputes that have been submitted to arbitration and judicial settlement between 1920 and 2018.[207] For the purpose of this analysis, the "use" of a principle means a reference to it by the court or arbitral tribunal, regardless of whether it formed the basis for the final determination, since such reference indicates that the principle was, at the very least, recognized and considered.[208] An interstate fresh water dispute is considered to be "successfully" resolved where the arbitration or adjudication ended the water-related claims, or such claims may be considered as ended because they no longer meet the definition of "interstate fresh water dispute" set out above, within one year from the end of the process.[209]

207. These disputes are: 1) Diversion of Water from Meuse (Neth. v. Belg.), Judgment, 1937 P.C.I.J. (ser. A/B) No. 70 (June 28); 2) Lake Lanoux Arbitration (Fr. v. Spain), Tribunal Arbitral, 12 R.I.A.A. 281 (Nov. 16, 1957); 3) Gabčíkovo-Nagymaros Project (Hung. v. Slovk.), Judgment, 1997 I.C.J. 7 (Sept. 25); 4) Pulp Mills on River Uruguay (Arg. v. Uru.), Judgment, 2010 I.C.J. 14 (Apr. 20); 5) Indus Waters Kishenganga Arbitration (Pak. v. Ind.), Final Award and Partial Award, 31 R.I.A.A. 1 (Perm. Ct. Arb. 2013); 6) Certain Activities Carried out by Nicaragua in Border Area (Costa Rica v. Nicar.) joined with Construction of Road in Costa Rica Along San Juan River (Nicar. v. Costa Rica), Judgment, 2015 I.C.J. 665 (Dec. 16).

To the author's knowledge, these are the only disputes that comply with the definition of an "interstate fresh water dispute" set out in this Article and that were submitted to arbitration or judicial settlement during this time period. (The Silala Waters dispute between Chile and Bolivia is still pending before the ICJ at the time of writing.) 1920 was selected as the starting year since it marks the establishment of the Permanent Court of International Justice, which for the first time provided states with a permanent international court to which they could submit their disputes.

208. Such references to the equitable and reasonable utilization and no significant harm principles should generally be explicit; however, in early decisions reference to "equity," "reasonableness," and the general obligation to prevent "harm" or "injury" are considered sufficient.

209. It is difficult to set a universal definition of "successful" interstate fresh water dispute resolution, since it may be subjectively and differently assessed depending on the circumstances of each case. The definition used for present purposes is based on: Paul R. Hensel & John Tures, Fla. State U., Presented Paper at the Annual Meeting of the American Political Science Association: International Law and the Settlement of Territorial Claims in South America, 1816–1992 (Aug. 1997), https://perma.cc/K53T-

In this analysis, a finding that the disputes in which the no significant harm principle was used were successfully resolved would support my suggested alternative approach of treating no significant harm as the governing principle of international water law. An additional finding that those disputes in which the equitable and reasonable utilization principle was used were *not* successfully resolved would lend further support to this proposition. The analysis reveals that where the equitable and reasonable utilization principle was used without the no significant harm principle, namely in the *Danube River* case, the dispute was not successfully resolved.[210] The absence of both principles in the *Meuse River* case also did not lead to successful resolution.[211] In contrast, in the four disputes that were successfully resolved—*Lake Lanoux*, *Indus River*, *San Juan River*, and *Uruguay River*—the no significant harm principle was used, either alone (in the first three) or together with the equitable and reasonable utilization principle (in the latter).[212]

In the *Danube River* case, the ICJ rejected the argument that "Hungary forfeited its basic right to an equitable and reasonable sharing of the resources of an international watercourse," and found that Czechoslovakia's unilateral control of a shared resource "depriv[ed] Hungary of its right to an equitable and reasonable share of the natural resources of the Danube."[213] The Court also noted that "vigilance and prevention are required on account of the often irreversible character of damage to the environment."[214] In this regard, the Court cited from its decision in the *Legality of the Threat or Use of Nuclear Weapons Advisory Opinion*, that "the existence of the general obligation of states to ensure that activities within their jurisdiction and control respect the environment of other states or of areas beyond national control is now part of the corpus of international law relating to the environment."[215] However, the Court did so specifically with respect to "environmental protection"[216] and the defense of necessity[217] and did not address the parties'

JHCM. The authors use as criteria for "successful" dispute settlement whether or not the settlement attempt led to an agreement between the claimants, ended political contention over the issues in question, and prevented militarized conflict between the claimants for ten years after the settlement. *See id.* The period of time was shortened from ten years to one year both in light of the different nature of territorial and fresh water disputes, and because, other than the dispute concerning the Meuse, the passage of time did not change the outcome of the cases. It should also be noted that this working definition of "success" does not require all stakeholders to be pleased with the outcome. Therefore, even though some were displeased with the arbitral award in the Indus River dispute, for instance, it ended (at least for the first year) India's and Pakistan's claims, and therefore is considered "successful." In contrast, the award in the Danube River dispute is considered "unsuccessful" since it did not resolve Hungary and Slovakia's claims within a year, and the parties continue to seek a negotiated resolution to this day.

210. Gabčíkovo-Nagymaros, 1997 I.C.J. 7, ¶¶ 79, 85 (Sept. 25).

211. Diversion of Water from Meuse, 1937 P.C.I.J. (ser. A/B) No. 70 (June 28).

212. Lake Lanoux, 12 R.I.A.A. 281 (1957); Pulp Mills, 2010 I.C.J. 14 (Apr. 20); Indus Waters, 31 R.I.A.A. 1 (Perm. Ct. Arb. 2013); Certain Activities, 2015 I.C.J. 665 (Dec. 16).

213. Gabčíkovo-Nagymaros, 1997 I.C.J. 7, ¶¶ 79, 85 (Sept. 25).

214. *Id.* at ¶ 140.

215. *Id.* at ¶ 53.

216. *Id.* at ¶ 140.

remaining arguments concerning the no significant harm principle. Also, since this decision was rendered immediately after the UNWC was concluded, and the Court explicitly referred to this Convention with regard to the equitable and reasonable utilization principle, the lack of an explicit reference to the no significant harm principle demonstrates the lack of "use" of the principle for present purposes. At the time of writing, the parties have yet to agree on how to implement the Court's judgment and resolve their dispute.[218]

In the *Meuse River* case, neither principle was referenced by the PCIJ, which noted that:

> In the course of the proceedings, both written and oral, occasional reference has been made to the application of the general rules of international law as regards rivers. In the opinion of the Court, the points submitted to it by the Parties in the present case do not entitle it to go outside the field covered by the Treaty of 1863. The points at issue must all be determined solely by the interpretation and application of that Treaty.[219]

The Court rejected the parties' arguments regarding breach of the Treaty, yet the dispute persisted and was only resolved by negotiation 50 years later.[220]

In contrast to these unsuccessful resolution attempts, consider the decision in the *Lake Lanoux* dispute, which has been viewed as "significant for its demonstration of the way a stumbling block to agreement can be removed by arbitration."[221] In its decision, the arbitral tribunal noted that "there is a rule prohibiting the upper riparian state from altering the waters of a river in circumstances calculated to do serious injury to the lower riparian state."[222] Even though the tribunal found this principle to be inapplicable in the case since no "significant harm" was actually caused to Spain, for present purposes this reference is sufficient to satisfy the "use" requirement, as defined above. The arbitral tribunal also noted that "consideration must be given to all interests, whatever their nature, which may be affected by the works undertaken, even if they do not amount to a right," and that "the

217. *Id.* at ¶ 53.

218. *See, e.g.*, Mari Nakamichi, *The International Court of Justice Decision Regarding the Gabcikovo-Nagymaros Project*, 9 FORDHAM ENVTL. L. REV. 337 (2017); Jana Liptáková, *Gabčíkovo Turns 25: The Hydropower Plant on the Danube Remains Controversial*, THE SLOVAK SPECTATOR (Nov. 3, 2017), https://perma.cc/2FKX-Y4WV.

219. Diversion of Water from Meuse (Neth. v. Belg.), Judgment, 1937 P.C.I.J. (ser. A/B) No. 70, at 16 (June 28).

220. Nicolette Bouman, *A New Regime for the Meuse*, 5 REV. EUR., COMP. & INT'L ENVTL. L. 161, 162 (1996); Pieter Huisman et al., *Transboundary Cooperation in Shared River Basins: Experiences from the Rhine, Meuse and North Sea*, 2 WATER POL'Y 83, 86 (2000).

221. John G. Laylin & Rinaldo L. Bianchi, *The Role of Adjudication in International River Disputes: The Lake Lanoux Case*, 53 AM. J. INT'L L. 30, 35 (1959).

222. Lake Lanoux Arbitration (Fr. v. Spain), Tribunal Arbitral, 12 R.I.A.A. 281, ¶ 13 (Nov. 16, 1957).

upstream state is under the obligation to take into consideration the various interests involved, to seek to give them every satisfaction compatible with the pursuit of its own interests, and to show that in this regard it is genuinely concerned to reconcile the interests of the other riparian state with its own."[223] These comments are the closest the tribunal came to the equitable and reasonable utilization principle, yet they fall short of explicitly referring to it and, therefore, "using" it. Eight months after the award, Spain and France concluded an agreement concerning the development of Lake Lanoux that reflected the arbitral award.[224] It has been said that "the Arbitral Tribunal facilitated the metamorphosis of French unilateral commitments into a freely negotiated agreement," and the regime established under the 1958 agreement has been working smoothly ever since.[225]

Similarly, in the *Indus River* dispute, the arbitral tribunal noted that the "adverse effects on downstream uses are a central element,"[226] and that in determining "a minimum flow that will mitigate adverse effects to Pakistan's agricultural and hydro-electric uses," it "must give due regard . . . to the customary international law requirements of avoiding or mitigating trans-boundary harm."[227] The parties implemented the award and, although tensions persist on the ground, both initially viewed it as rendered in their favor.[228] In the *San Juan River* dispute, the ICJ also found that "to fulfil its obligation to exercise due diligence in preventing significant transboundary environmental harm, a State must, before embarking on an activity having the potential adversely to affect the environment of another State, ascertain if there is a risk of significant transboundary harm, which would trigger the requirement to carry out an environmental impact assessment."[229] The Court then found that "[i]f the environmental impact assessment confirms that there is a risk of significant transboundary harm, the State planning to undertake the activity is required, in conformity with its due diligence obligation, to notify and consult in good faith with the potentially affected State, where that is necessary to determine the appropriate measures to pre-

223. *Id*. at ¶¶ 22–24.

224. Cesare P.R. Romano, The Peaceful Settlement of International Environmental Disputes: A Pragmatic Approach 227 (2000); Vinogradov, Wouters & Jones, *supra* note 49, at 7.

225. Romano, *supra* note 224, at 228.

226. Indus Waters Kishenganga Arbitration (Pak. v. Ind.), Partial Award, 31 R.I.A.A. 1, ¶ 399 (Perm. Ct. Arb. 2013).

227. Indus Waters Kishenganga Arbitration (Pak. v. Ind.), Final Award, 31 R.I.A.A. 1, ¶ 87 (Perm. Ct. Arb. 2013).

228. *See*, *e.g.*, Zafar Bhutta & Shahram Haq, Kishanganga Project: Victory Claims Cloud Final Arbitration Award, The Express Tribune (Dec. 22, 2013), https://perma.cc/CW3W-7FP3; *Khawaja Asif Terms PCA Award on Kishenganga Dam a 'Big Victory' for Pakistan*, The Express Tribune (Dec. 21, 2013), https://perma.cc/6RHW-D3L9.

229. Certain Activities Carried out by Nicaragua in Border Area (Costa Rica v. Nicar.) joined with Construction of Road in Costa Rica Along San Juan River (Nicar. v. Costa Rica), Judgment, 2015 I.C.J. 665, ¶ 104 (Dec. 16).

vent or mitigate that risk."[230] As with the disputes discussed above, both parties accepted the Court's ruling.[231]

Finally, in the *Uruguay River* dispute the ICJ noted the parties' obligation "to prevent any significant transboundary harm which might be caused by potentially harmful activities planned by either one of them."[232] The Court further noted that "the attainment of optimum and rational utilization requires a balance between the Parties' rights and needs to use the river for economic and commercial activities on the one hand, and the obligation to protect it from any damage to the environment that may be caused by such activities, on the other," and that "utilization could not be considered to be equitable and reasonable if the interests of the other riparian State in the shared resource and the environmental protection of the latter were not taken into account."[233] The Court therefore used both principles. Although tensions persist on the ground regarding other issues, the ICJ's decision settled the specific dispute submitted to it.[234]

Although limited from an empirical standpoint due to the small number of cases examined, this analysis reveals that successful resolution of past interstate fresh water disputes occurred when the no significant harm principle was used on its own by the court or tribunal (in the *Lake Lanoux*, *Indus River*, and *San Juan River* disputes), and where both the no significant harm and equitable and reasonable utilization principles were used (in the *Uruguay River* dispute).[235] At the same time, successful resolution did not occur where equitable and reasonable utilization was used without no significant harm (in the *Danube River* dispute). These results therefore lend some support to my proposition that no significant harm could serve as the guiding principle of interstate fresh water dispute resolution.

Interestingly, there appears to be a link between the inclusion of no significant harm and/or equitable and reasonable utilization by state parties in an applicable water agreement, the use of these principles in the dispute resolution process, and the outcome of the process. In the *San Juan River*, *Lake Lanoux*, and *Danube River* cases, the state parties had concluded an

230. *Id*. The ICJ has been criticized, however, for failing to follow its own account of the no significant harm principle in deciding the dispute: Despite finding that there was a risk of significant harm from Costa Rica's road construction that triggered its obligation to undertake an environmental impact assessment, the Court concluded that, absent evidence of "actual" significant transboundary harm, Costa Rica did not violate the no significant harm principle, *id*., at ¶¶ 216–17. *See, e.g.*, Brunnée, *Procedure and Substance*, *supra* note 176.

231. *Judges Side with Costa Rica in Territorial Dispute with Nicaragua*, The Guardian (Dec. 16, 2015), https://perma.cc/VK8A-W7L6.

232. Pulp Mills on River Uruguay (Arg. v. Uru.), Judgment, 2010 I.C.J. 14, ¶ 139 (Apr. 20).

233. *Id*. at ¶¶ 175, 177.

234. Cymie R. Payne, *Environmental Impact Assessment as a Duty under International Law: The International Court of Justice Judgment on Pulp Mills on the River Uruguay*, 3 Eur. J. Risk Reg. 317, 323 (2010).

235. Nonetheless, the ICJ in the *Uruguay River* dispute seemed to give more weight to the no significant harm principle when it found that "utilization could not be considered to be equitable and reasonable if the interests of the other riparian State in the shared resource and the environmental protection of the latter were not taken into account." Pulp Mills, 2010 I.C.J. 14, ¶¶ 175, 177 (Apr. 20).

agreement that referred to the no significant harm principle but not to the equitable and reasonable utilization principle.[236] In the unsuccessfully resolved *Danube River* dispute, the ICJ used the equitable and reasonable utilization principle but did not refer to the no significant harm principle, despite its inclusion in the parties' agreement. In contrast, in the successful *San Juan River* and *Lake Lanoux* cases, the ICJ and arbitral tribunal, respectively, referred to the no significant harm principle but not to the equitable and reasonable utilization principle. In the successful *Uruguay River* and *Indus River* cases, the parties' respective agreements had included both no significant harm and equitable and reasonable utilization. In the former the ICJ referred to both principles, whereas in the latter the arbitral tribunal referred only to the no significant harm principle, yet the dispute was nonetheless successfully resolved.[237]

Accordingly, one possible explanation for the successful resolution of disputes in which the no significant harm principle was used by the ICJ or arbitral tribunal may be its prior inclusion by the state parties in an applicable agreement. Such inclusion in itself shows the prominence of this principle in state practice, and its successful use in arbitration and judicial settlement further supports its treatment as a guiding principle. In contrast, the equitable and reasonable utilization principle was included by the state parties in an applicable agreement, along with no significant harm, only in two of these disputes. While both disputes were successfully resolved, equi-

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236. In the San Juan River case, Treaty of Limits between Costa Rica and Nicaragua, Costa-Rica-Nicar., Jul. 15, 1858, Art. 8 provides that Nicaragua is bound not to make any grants for canal purposes across her territory without first asking the opinion of the Republic of Costa Rica. This obligation was interpreted by President Cleveland, sitting as arbitrator in 1888, to mean that Costa Rica's rights "are to be deemed injured in any case where the territory belonging to the Republic of Costa Rica is occupied or flooded; where there is an encroachment upon either of the said harbors injurious to Costa Rica; or where there is such an obstruction or deviation of the River San Juan as to destroy or seriously impair the navigation of the said River or any of its branches at any point where Costa Rica is entitled to navigate the same." Award Regard to the Validity of the Treaty of Limits between Costa Rica and Nicaragua of 15 July 1858, 28 R.I.A.A. 189, 210 (Mar. 22, 1888).

In the Lake Lanoux case, art. 12 provides that "there may be constructed neither a dam, nor any obstacle capable of harming the upper riparian owners, to whom it is likewise forbidden to do anything which might increase the burdens attached to the servitude of the downstream lands." Lake Lanoux Arbitration (Fr. v. Spain), 12 R.I.A.A. 281 (Nov. 16, 1957) (unofficial English translation).

In the Danube case, Convention on the Regulation of Water Management Issues of Boundary Waters, Hung.-Czech., May 31, 1976, art. 3(1)(b) provides that the parties "shall maintain in good condition the beds of water courses, reservoirs, and equipment located on boundary waters on their own territories and shall operate them in such a manner as to cause no damage to each other." Memorial of the Republic of Hungary, Gabčíkovo-Nagymaros Project (Hung. v. Slovk.), 1997 I.C.J. 7, Annexes Vol. 3, at 227.

237. *See* Treaty Concerning the Rio de la Plata and the Corresponding Maritime Boundary, Arg.-Uru., Nov. 19, 1973, 1295 U.N.T.S. 293. Arts. 14, 17, 21, 43, 71, and 86 refer to "significant damage." Argentine-Uruguayan Declaration about Water, Arg.-Uru., 1971, refers to "equitable and reasonable utilization" (as cited in Griselda D. Capaldo, *The Río de la Plata Basin*, *in* THE EVOLUTION OF THE LAW AND POLITICS OF WATER 299, 309 (Joseph W. Dellapenna & Gupta Joyeeta eds., 2008)).

Indus Waters Treaty, Ind.-Pak., Sep. 19, 1960, 1962 U.N.T.S. 126. Arts. 4(2), 4(3)(a), (c), 4(6), and 4(9) refer to "material damage" and art. 4(10) refers to a "criterion of reasonableness." *Id.*

table and reasonable utilization was referred to by the Court or arbitral tribunal only in one of these successful cases.

Another possible explanation for the use of the no significant harm principle in the disputes that were successfully resolved links back to its due diligence nature and its ability to objectively balance disputing states' competing interests. These two qualities operate to reduce the incredibly high transaction costs involved in the resolution of interstate fresh water disputes, including coordination costs, negotiation costs, political costs, opportunity costs, information costs, monitoring costs, implementation costs, and enforcement costs.[238] The due diligence obligations of the no significant harm principle contribute to the reduction of these transaction costs since they provide states with concrete steps to follow in the use of shared fresh water resources. The resulting standard of conduct affords states reciprocal protection as well as an objective yardstick with which they can evaluate each other's behavior. The ability of the no significant harm principle to objectively account for disputing states' competing interests through a balancing of harms exercise similarly reduces transaction costs since it provides such states with the common goal of preventing the greater harm to each other, the environment, and the shared fresh water resource, as well as the tools to achieve it. This common goal provides a shared interest and reduces transaction costs arising from contradictory positions and the absence of a unifying, objectively assessable, guiding principle.[239]

The analysis presented in this section is not intended to, and would not be able to prove that the use of the no significant harm principle *necessarily* leads to the successful resolution of all interstate fresh water disputes. Nonetheless, it lends some empirical support to my conceptual proposition that no significant harm is well suited to guide states toward such successful resolution. The analysis also provides a systematic tool for understanding the relation of the no significant harm and equitable and reasonable utilization principles to the outcome of interstate fresh water disputes, and points to a potential pattern in this relationship. This pattern suggests that using the no significant harm principle, with or without the equitable and reasonable utilization principle, is conducive to the successful resolution of such disputes, while using the latter principle by itself is not.

Conclusion

Fresh water is a natural resource of unparalleled significance to human life, the well-being of societies, the development of economies, and the pres-

238. Ines Dombrowsky, *Revisiting the Potential for Benefit Sharing in the Management of Trans-boundary Rivers*, 11(2) Water Policy 125, 129 (2009).

239. This analysis is based on the "Coase theorem," which serves as a useful analytical tool to evaluate the efficiency of legal rules in situations of conflicting interests. *See, e.g.*, Ronald H. Coase, *The Problem of Social Cost*, 3 J. L. Econ. 1, 2 (1960); George J. Stigler, The Theory of Price (3d ed. 1966).

ervation of the environment, and its increasing scarcity falls unevenly on different states at different times. These characteristics of fresh water expose it to conflicting claims by competing users that may undermine interstate relations[240] and give rise to disputes. Such disputes are in turn linked to other fundamental risks of the 21st century, such as food crises, natural disasters, spread of infectious diseases, and extreme weather events.[241] Whereas attention has concentrated on developing new approaches to their prevention, the likely increase in these disputes in the future demands attention to their effective *resolution* as well.

Admittedly, the "[r]ules of international law cannot by themselves alleviate the scarcity of water"—a root cause of interstate fresh water disputes.[242] However, there is unlikely to be an effective solution to such disputes without international law.[243] Therefore, international water law should strive to provide effective guidance to states in the resolution of conflicts over the use of shared fresh water resources.[244] In this Article, I argued that in their current state, the two core substantive principles of this body of law—equitable and reasonable utilization and no significant harm—fail to achieve this objective due to their unsettled and unclear relationship. I also demonstrated that both the approach of subordinating the no significant harm principle to the equitable and reasonable utilization principle, and of purporting to apply these principles on an equal footing, are inadequate in practice. Instead, I proposed an alternative approach that treats the no significant harm principle as the guiding principle of international water law in the resolution of interstate fresh water disputes. My approach is intended to assist states in balancing competing interests in order both to achieve reasonable use and prevent harm. It does so by highlighting mutual concerns surrounding the causation of harm to other co-riparians, the environment, and the shared resource through due diligence obligations and a balancing of harms analysis. This approach therefore encourages a resource-focused, rather than a state use-focused, approach to the resolution of interstate fresh water disputes. The results of my empirical analysis also confirmed that no significant harm may be a more suitable guiding principle, in light of the "normative vagueness" of equitable and reasonable utilization.[245]

240. Bjorn-Oliver Magsig, *Overcoming State-Centrism in International Water Law: 'Regional Common Concern' as the Normative Foundation of Water Security*, 3 GOETTINGEN J. INT'L L. 317, 331 (2011).

241. WORLD ECONOMIC FORUM, *Global Risks Report* (14th ed., 2019).

242. Stephen C. McCaffrey, *Water Scarcity: Institutional and Legal Responses*, *in* THE SCARCITY OF WATER, EMERGING LEGAL AND POLICY RESPONSES 43, 56 (Edward Brans et al. eds., 1997).

243. Laurence Boisson de Chazournes, *The Role of Diplomatic Means of Solving Water Disputes: A Special Emphasis on Institutional Mechanisms*, *in* RESOLUTION OF INTERNATIONAL WATER DISPUTES 91, 91 (Perm Ct. Arb. Ed. 2003).

244. HERBERT ARTHUR SMITH, THE ECONOMIC USES OF INTERNATIONAL RIVERS 149–50 (1931).

245. McIntyre, *Utilization of Shared International Freshwater Resources*, *supra* note 105, at 120; Dellapenna, *The Customary International Law of Internationally Shared Fresh Waters*, *supra* note 110, at 107.

There are several advantages to my proposed reconfiguration of these two substantive principles of international water law. First, such reconfiguration ensures that the risk of significant harm is always considered in resolving interstate fresh water disputes. This prevents a situation where significant harm to the co-riparians, the environment, or the shared resource itself is permitted whenever "inflicted in the endeavour to achieve equitable and reasonable utilization of an international watercourse."[246] Moreover, having a single, concrete, guiding principle of no significant harm makes the goal of harm prevention central to the analysis. This goal provides disputing states with a shared objective of avoiding the greater harm and a more structured analysis to guide the resolution of their dispute.

In addition, my proposed approach ensures that the overarching goals of international water law are satisfied, while preventing contradictory interpretations and potential conflicts in the application of its two core principles. Significant harm may ultimately be caused, however due diligence obligations and the balancing of harms analysis facilitate the parties' continuous cooperation and ensure that the most significant harm is still eliminated, mitigated, or compensated for. At the same time, comparing the overall harm from allowing and prohibiting a challenged activity, and taking steps to prevent the greater harm, would limit states' tendency to be "eager dammers, diverters, and drainers, with little regard for the ecological, social, or even economic costs of those schemes,"[247] thereby leading to reasonable use. No significant harm as a guiding principle emphasizes the efficient, mindful, and sensible use of shared fresh water resources and encourages their conservation and long-term beneficial use by shifting the focus from the simple allocation of "equitable" water rights among competing users to the shared objective of such users in avoiding or reducing overall harm.[248]

My suggested approach could be adopted by states in water treaties or applied in the dispute resolution process itself. Since it emphasizes common concerns and a resource-protection approach, rather than individual interests and a state-use approach, it facilitates a shared understanding of the overall harm associated with a proposed activity or use, which can lead to successful negotiated resolution of interstate fresh water disputes. The approach could also be applied by a third party in the resolution of such disputes, for instance by way of mediation, arbitration, or judicial settlement. A third party would be able to objectively and systematically evaluate the harm resulting from a proposed activity or use and weigh it against the harm resulting from its prohibition. This would provide the disputing states with some predictability and certainty, if not with respect to the ultimate outcome of the

246. Helal, *supra* note 72, at 364.

247. Ken Conca, Governing Water: Contentious Transnational Politics and Global Institution Building 121 (2005).

248. Helal, *supra* note 72, at 377.

process then at least with respect to the procedure and principle to be applied.

Returning to the GERD dispute between Egypt and Ethiopia introduced in the beginning of this Article, my proposed approach could help to resolve some of the difficulties associated with the application of international water law to this, and other, fresh water disputes.[249]

Neither Egypt nor Ethiopia is a signatory to the UNWC or the UNECE Water Convention. Egypt is also not a party to the Nile Basin Cooperative Framework Agreement ("CFA"), negotiated by the 11 riparian states sharing the River.[250] However, Egypt has concluded several agreements with Ethiopia that relate to the Nile, including the 1993 Framework Agreement and the 2016 Declaration of Principles.[251] The Framework Agreement provides that "the issue of the use of the Nile waters shall be worked out . . . on the basis of the rules and principles of international law."[252] However, it only specifically refers to the no significant harm principle and does not mention the equitable and reasonable utilization principle.[253] The Declaration of Principles includes a principle of "not causing significant damage" as well as a principle of "fair and appropriate use," which resembles Articles 5 and 6 of the UNWC[254] but omits any explicit reference to "equitable" or "reasonable" use.[255]

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249. Another approach to the resolution of this dispute, applying transaction costs economics, has been suggested by Daniel Abebe, *Egypt, Ethiopia, and the Nile: The Economics of International Water Law*, 15 CHI. J. INT'L L. 27 (2014).

250. Agreement on the Nile River Basin Cooperative Framework, May 14, 2010 (not in force), HTTPS://PERMA.CC/XJ65-G9UN. Six riparian states have so far signed the agreement, and Ethiopia, Rwanda, and Tanzania have ratified it. Three more countries need to ratify it to make it enforceable. DRC, Egypt, and Sudan have yet to sign it. *Id.*

251. *See* Framework for General Cooperation, Egypt-Eth., Jul. 1, 1993, 2693 U.N.T.S. 71; Agreement on Declaration of Principles Between the Arab Republic of Egypt, the Federal Democratic Republic of Ethiopia and the Republic of the Sudan on the Grand Ethiopian Renaissance Dam Project, Mar. 23, 2015.

252. Framework for General Cooperation, *supra* note 251, art. 4.

253. *Id.*, art. 5 ("[E]ach party shall refrain from engaging in any activity related to the Nile waters that may cause appreciable harm to the interests of the other party.").

254. UNWC, arts. 5–6, *supra* note 22.

255. Agreement on Declaration of Principles, *supra* note 251.

> 3. Principle of not causing significant damage:
>
> - The three countries will take all the necessary procedures to avoid causing significant damage while using the Blue Nile (the Nile's main river).
> - In spite of that, in case significant damage is caused to one of these countries, the country causing the damage [. . .], in the absence of an agreement over that [damaging] action, [is to take] all the necessary procedures to alleviate this damage, and discuss compensation whenever convenient.
>
> 4. Principle of fair and appropriate use:
>
> - The three countries will use their common water sources in their provinces in a fair and appropriate manner.
> - To ensure fair and appropriate use, the three countries will take into consideration all guiding elements mentioned below:

The equitable and reasonable utilization and no significant harm principles are also applicable to the Nile River as customary international law. However, the ambiguity surrounding their relationship and application may hinder their use in the resolution of the GERD dispute. Indeed, the controversial relationship between these two principles has resulted in contradictory interpretations adopted by Egypt and Ethiopia, preventing any effective balancing of their competing interests in the Nile River. While Ethiopia has justified building the GERD by emphasizing its right to an equitable share of the Nile waters, Egypt has objected to the dam by stressing its "historic" rights to the river and Ethiopia's obligation not to cause it significant harm.[256] These principles as currently formulated thus "institutionalize" the conflict rather than resolve it.[257]

Treating no significant harm as a guiding principle would allow Egypt and Ethiopia to move beyond circular and endless debates about historical rights that arguably deserve protection vs. current and future developments that are arguably "equitable and reasonable." The no significant harm principle as presented in this Article would provide a mutually beneficial shared interest and goal that could help bridge political differences in Egypt and Ethiopia's continued negotiations: preventing, mitigating, or compensating for the greatest harm that may be caused to both states as well as to the Nile River itself. The use of no significant harm as a guiding principle is particularly justified in the GERD dispute in light of its acceptance by Egypt and Ethiopia in both the Framework Agreement and the Declaration of Principles. As noted above, the Declaration of Principles also sets out a principle of "fair and appropriate use," which may be seen as equivalent to "equitable and reasonable utilization." However, the tenets of this principle would in any event be incorporated within the balancing of harms analysis of the no significant harm principle.

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a. The geographic, the geographic aquatic, the aquatic, the climatical, environmental elements, and the rest of all natural elements.
b. Social and economic needs for the concerned Nile Basin countries.
c. The residents who depend on water sources in each of the Nile Basin countries.
d. The effects of using or the uses of water sources in one of the Nile Basin countries on another Nile Basin country.
e. The current and possible uses of water sources.
f. Elements of preserving, protecting, [and] developing [water sources] and the economics of water sources, and the cost of the procedures taken in this regard.
g. The extent of the availability of alternatives with a comparable value for a planned or a specific use.
h. The extent of contribution from each of the Nile Basin countries in the Nile River system.
i. The extent of the percentage of the Nile Basin's space within the territories of each Nile Basin country.

256. Habatamu Alebachew, *International Legal Perspectives on the Utilization of Trans-Boundary Rivers: The Case of the Ethiopian Renaissance (Nile) Dam*, *in* WATER AND THE LAW: TOWARDS SUSTAINABILITY 66, 73–74, 80–81 (Michael Kidd et al. eds., 2014).

257. Jasmine Moussa, International Water Law & Allocation in the Nile Basin: A Coherent System of Law or Empty Rhetoric?, University of East Anglia Development Research Seminar (Mar. 8, 2013).

The application of no significant harm as a guiding principle would entail an assessment of the GERD as constructed by Ethiopia and any significant harm that it has caused or may cause to Egypt or the Nile River itself. If a risk of such harm exists, Ethiopia would have to show that it has acted diligently to prevent it and, if it fails to do so, it would be internationally responsible for violating the no significant harm principle and would have to comply with its due diligence obligations to prevent or mitigate the harm. Even if Ethiopia has complied with its due diligence obligations, it must be determined, through a balance of harms exercise, which harm is greater and is thus to be avoided—that resulting from the GERD or that resulting from prohibiting its operation, in light of its potential benefits.[258] If the overall harm resulting from prohibiting the GERD, including the effects of Egypt's continued unaltered use of the Nile waters, is considered to be greater, then the construction of the dam should be allowed. This does not mean, of course, that Ethiopia would receive *carte blanche* to do as it pleases with the Nile waters and the GERD from that point on. Rather, it would remain obligated to cooperate with Egypt continuously regarding the operation of the dam through the exchange of information, notification of planned measures, consultation, etc., in accordance with the due diligence requirements of the no significant harm principle and the duty to cooperate. If the harm resulting from the operation of the dam is considered to be greater than the harm resulting from prohibiting it, Ethiopia would be subject to an additional due diligence obligation to eliminate, mitigate, or compensate for such harm.

My proposed reconfiguration of the equitable and reasonable utilization and no significant harm principles challenges the more accepted views that the former should be the leading principle of international water law or that the two principles are complementary. Indeed, equitable and reasonable utilization offers flexibility and, at least in theory, fairness. However, when actual interstate fresh water conflicts unfold and real interests are at stake, equitable and reasonable utilization may prove too vague and indeterminate to effectively guide their resolution, and the two principles become susceptible to divergent and contradictory interpretations. The goal of this Article is to offer an alternative approach to the application of these principles in such situations, which does not sacrifice structure at the altar of flexibility. By giving weight to existing uses while avoiding the grant of "a perpetual vested right" to the first user,[259] my proposed approach can resolve the increasingly frequent clashes between states' new unilateral water develop-

258. For instance, "Ethiopia claims that the dam will benefit Egypt and Sudan through flood and sediments control, and regulation of the river flow, and will generate electricity at a low cost that could be sold to the other Nile riparians, including Egypt and Sudan." Salman M.A. Salman, *The Nile Basin Cooperative Framework Agreement: Disentangling the Gordian Knot*, *in* THE GRAND ETHIOPIAN RENAISSANCE DAM AND THE NILE BASIN: IMPLICATIONS FOR TRANSBOUNDARY WATER COOPERATION 45 (Zeray Yihdego et al. eds., 2017).

259. Helal, *supra* note 72, at 371.

ments and established long-standing uses.[260] Ultimately, placing no significant harm at the forefront of international water law in this way would provide disputing states with a guiding principle that is sufficiently flexible to accommodate new water uses, while at the same time "concrete enough to avoid conflict generated by incompatible activities pursued by states, each claiming adherence to ambiguous standards."[261]

260. Tarlock, *supra* note 206, at 718.

261. Jutta Brunnée & Stephen J. Toope, *Environmental Security and Freshwater Resources: Ecosystem Regime Building*, 91 Am. J. Int'l Law 26, 42 (1997).

Appendix 1 - Conflict and Peace Databank's ("COPDAB") International Co-operation and Conflict Scale

COPDAB scale	Conflict/cooperation event description
15	*Formal Declaration of War*; extensive war acts causing deaths, dislocation or high strategic costs. Use of nuclear weapons; full-scale air, naval or land battle; invasion of territory; occupation of territory; massive bombing of civilian areas; capturing of soldiers in battle; large-scale bombing of military installations; chemical or biological warfare.
14	*Extensive Military Acts*; limited war acts. Intermittent shelling or clashes; sporadic bombing of military or industrial areas; small-scale interception or sinking of ships; mining of territorial waters. *Official actions only.*
13	Small-scale military acts; limited air, sea or border skirmishes; border police acts; annexing territory already occupied; seizing material of target country; imposing blockades; assassinating leaders of target country; material support of subversive activities against target country. *Official actions only.*
12	Political-military hostile actions. Inciting riots or rebellions (training or financial aid for rebellions); encouraging guerrilla activities against target country; limited and sporadic terrorist actions; kidnapping or torturing foreign citizens or prisoners of war; giving sanctuary to terrorists; breaking diplomatic relations; attacking diplomats or embassies; expelling military advisors; executing alleged spies; nationalizing companies without compensation. *Unofficial actions.*
11	Diplomatic-economic hostile actions. Increasing troop mobilization; boycotts; imposing economic sanctions; hindering movement on land, waterways or in the air; embargoing goods; refusing mutual trade rights; closing borders and blocking free communication; manipulating trade or currency to cause economic problems; halting aid; granting sanctuary to opposition leaders; mobilizing hostile demonstrations against target country; refusing to support foreign military allies; recalling ambassador for emergency consultations regarding target country; refusing visas to other nationals or restricting movement in country; expelling or arresting nationals or press; spying on foreign government officials; terminating major agreements. *Unilateral construction of water projects against another country's protests; reducing flow of water to another country, abrogation of a water agreement.*
10	Strong verbal expressions displaying hostility in interaction. Warning retaliation for acts; making threatening demands and accusations; condemning strongly specific actions or policies; denouncing leaders, system, or ideology; postponing heads of state visits; refusing participation in meetings or summits; levelling strong propaganda attacks; denying support; blocking or vetoing policy or proposals in the UN or other international bodies. *Official interactions only.*
9	Mild verbal expressions displaying discord in interaction. Low-key objection to policies or behaviour; communicating dissatisfaction through third party; failing to reach an agreement; refusing protest note; denying accusations; objecting to explanation of goals, position, etc.; requesting change in policy. *Both unofficial and official, including diplomatic notes of protest.*
8	Neutral or non-significant acts for the inter-nation situation. Rhetorical policy statements; non-consequential news items; non-governmental visitors; indifference statements; compensating for nationalized enterprises or private properly; no comment statements.

Source: Modified from E. Azar's COPDAB International Conflict and Co-operation Scale