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State responsibility in international law for transboundary water-related harm: The emergence of a new ecosystems-based paradigm?

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Though one might reasonably expect that transboundary harm caused to the riparian interests of watercourse States should quite easily give rise to findings of legal responsibility on the part of the State causing such harm, this has rarely been the case. One reason commonly advanced is that the primary rules of international water law, breach of which would give rise to State responsibility, are vague and uncertain as regards their precise normative implications. However, recent developments regarding the requirement to protect riverine ecosystems and to maintain related ecosystem services provide an important degree of clarity as regards the standard of conduct expected of watercourse States, and the types of harm which may be compensable. This is welcome considering the important role that State responsibility might be presumed to play in giving effect to the values and commitments enshrined in the rules and principles of international water law.

1 INTRODUCTION

Whilst transboundary harm caused to the riparian interests of States sharing international watercourses should lead to findings of legal responsibility on the part of the State causing or permitting such harm, this has only rarely occurred. Whereas the secondary rules on State responsibility are reasonably well developed and understood, the primary rules of international water law, breach of which would give rise to State responsibility, have to date proven legally indeterminate and normatively unclear. Thus, the due diligence standards of conduct expected of States in managing shared waters have lacked the clarity to support claims of State responsibility, which has in turn undermined States' reliance on the doctrine and discouraged the practice required to provide such clarity. However, recent conventional, judicial and arbitral developments regarding the requirement in international law to protect riverine ecosystems provide an important degree of guidance regarding such standards of conduct, the types of harm which may be compensable, and how any damages might be calculated. Greater clarity of this sort is welcome, considering the important role that State responsibility might play in guaranteeing the values and commitments enshrined in international water law, which contribute very significantly to human welfare globally.

This article commences by framing the problem it seeks to address, which involves an exploration of why State responsibility has not played a greater role in transboundary water-related disputes. It then outlines the role of primary and secondary rules of international law in the operation of State responsibility, focusing on the critical importance of the due diligence standards of conduct expected of watercourse States under international water law. In so doing, it notes the contextual relevance, and thus the relative normative uncertainty, of such standards, which may have discouraged reliance to date upon State responsibility. Next, the article examines the normative implications of the key rules of international water law, highlighting the indeterminate nature of each and speculating on how this has impeded findings of State responsibility in watercourse disputes. It then focuses more closely on the factors determining the due diligence expected of States and, particularly, on the contextual determinants which play such a critically important role in the primary rules of international water law. Prominent among these are the ecological obligations which play an increasingly prominent role among

the normative commitments of water and environmental conventions. Before concluding, the article speculates on how the emergence and continuing elaboration of ecosystems protection obligations under the guise of the so-called 'ecosystem approach' in international water law can provide a good deal of the normative clarity required in order for the primary rules in the field to serve as the basis for findings of State responsibility. It focuses particularly on the emergence of a suite of technical methodological approaches, regarding minimum environmental flows and maintenance of ecosystem services, for example, which can readily assist in determination of a breach of such primary rules.

2 THE UNFULFILLED PROMISE OF STATE RESPONSIBILITY

Despite its undoubted customary status and position as 'a cardinal institution of international law',¹ key aspects of State responsibility 'remain controversial and on uncertain legal footing', especially '[a]s far as responsibility for environmental harm is concerned, [where] the picture is even less settled'.² Though the International Law Commission's (ILC) 2001 Draft Articles on State Responsibility³ provide the practical and conceptual framework for the application of State responsibility, uncertainty has persisted regarding 'the extent to which purely ecological harm would be compensable',⁴ 'the multiplicity of polluters and victims [that] would likely pose insurmountable evidentiary difficulties', and the 'opaque ... legal status and content of several key norms' of international environmental law which must inevitably 'impact on their usefulness in a litigation context'.⁵ Most significantly, uncertainty surrounds the 'constraints [that] flow from the standard of liability in international environmental law ... encapsulated in the requirement of due diligence', so that '[t]he difficulties that a claimant would face in establishing a lack of diligence on the part of another State compound other evidentiary challenges, such as those related to causation'.⁶ Likewise, Peel includes amongst such causes of 'substantial uncertainty', hampering application of State responsibility to transboundary pollution, the fact that the 'standard of care required of a State in acting to prevent transboundary pollution ... remains exceptionally vague' and can only be determined having regard to all relevant circumstances.⁷ Further compounding this situation, normative uncertainty may give rise to 'a vicious circle of sorts' by inhibiting formative practice in respect of State responsibility.⁸

¹ J Crawford, 'State Responsibility' in R Wolfrum (ed), *Max Planck Encyclopaedia of International Law* (2006) 2.

² J Brunnée, 'Of Sense and Sensibility: Reflections on International Liability Regimes as Tools for Environmental Protection' (2004) 53 *International and Comparative Law Quarterly* 351, 352–353. See further T Scovazzi, 'State Responsibility for Environmental Harm' (2001) 12 *Yearbook of International Environmental Law* 43, 51; J Peel, 'New State Responsibility Rules and Compliance with Multilateral Environmental Obligations: Some Case Studies of How the New Rules Might Apply in the International Environmental Context' (2001) 10 *Review of European Community and International Environmental Law* 2.

³ Draft Articles on the Responsibility of States for Internationally Wrongful Acts, in ILC 'Yearbook of the International Law Commission 2001, Volume II' UN Doc A/CN.4/SER.A/2001/Add.1 (Part 2) (Draft Articles on State Responsibility).

⁴ See further A. Boyle, 'Reparation for Environmental Damage in International Law: Some Preliminary Problems' in M Bowman and A Boyle (eds), *Environmental Damage in International and Comparative Law* (Oxford University Press 2002) 17.

⁵ See Brunnée (n 2) 354, who cites Bodansky's critique of the customary status of key norms and principles of international environmental law: D Bodansky, 'Customary (and not so Customary) International Environmental Law' (1995) 3 *Indiana Journal of Global Legal Studies* 105.

⁶ Brunnée (n 2) 354.

⁷ J Peel, 'Unpacking the Elements of State Responsibility for Transboundary Pollution' in S Jayakumar et al (eds), *Transboundary Pollution: Emerging Issues of International Law and Policy* (Edward Elgar 2015) 51, 52 and 63.

⁸ Brunnée (n 2) 354.

Such uncertainty may figure even more prominently in the sub-field of international water law. As it has developed into a stable and reasonably coherent body of rules,⁹ efforts (sometimes futile) have focused on clarifying the primary rules creating substantive and procedural obligations for watercourse States, with less consideration of the application of secondary rules regarding the international responsibility of States for breach of the former. Thus, the practical application of principles of State responsibility has remained untested, even though the physical nature of the subject matter of international water law suggests that it ought to produce regular findings of legal responsibility on the part of one watercourse State for harm caused to the interests of another. Implementation of major water-related projects in one watercourse State, along with many other classes of activity or incident, pose an obvious risk of significant harm to the interests of another watercourse State or to the watercourse ecosystem itself,¹⁰ normally producing immediate effects and allowing for relatively easy identification of the responsible parties.¹¹ Attribution of the wrongful conduct giving rise to harm ought, therefore, to be more straightforward than in many other instances of environmental harm.¹² Ever greater emphasis on the ecosystems-related obligations of watercourse States provides further scope for State responsibility to arise,¹³ as does more nuanced understanding of the types of harm that one watercourse State might cause to the interests of another,¹⁴ and the spectre of ‘shared responsibility’ of several watercourse States who together cause harm, either through coordinated joint action or through the cumulative impacts of independent activities.¹⁵ Therefore, though ‘the law of State responsibility has not played a large practical role in the environmental liability context’,¹⁶ one might at first glance expect more abundant practice regarding harm to an international watercourse. Taking these elements into account, the task of establishing that the harmful act of a watercourse State satisfies the key requirements of the 2001 ILC Draft Articles ought not to be insurmountable.

Yet, examples of State responsibility arising in relation to shared watercourses are rare. One commonly advanced explanation is that the primary rules of international water law, and of international environmental law more generally, breach of which would give rise to State responsibility, are legally indeterminate and uncertain as regards their precise normative

⁹ Recent handbooks assessing the current state of international water law attest to a broad consensus regarding the status and content of the key rules in the field: SC McCaffrey, C Leb and R Denoon (eds), *Research Handbook of International Water Law* (Edward Elgar 2018); L Boisson de Chazournes et al (eds), *The United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses: A Commentary* (Oxford University Press 2018); M Tignino and C Bréthaut (eds), *Research Handbook on Freshwater Law and International Relations* (Edward Elgar 2018); A Rieu-Clarke, A Allen and S Hendry (eds), *Routledge Handbook of Water Law and Policy* (Routledge 2017).

¹⁰ O McIntyre, ‘Responsibility and Liability in International Law for Damage to Transboundary Freshwater Resources’ in Tignino and Bréthaut (n 9) 335, 335.

¹¹ See Brunnée (n 2) 366–367.

¹² See Crawford (n 1) 5–6.

¹³ J Brunnée and SJ Toope, ‘Environmental Security and Freshwater Resources: A Case for International Ecosystem Law’ (1994) 5 *Yearbook of International Environmental Law* 41; O McIntyre, ‘The Protection of Freshwater Ecosystems Revisited: Towards a Common Understanding of the “Ecosystems Approach” to the Protection of Transboundary Water Resources’ (2014) 23 *Review of European, Comparative and International Environmental Law* 88; O McIntyre, ‘The Emergence of an “Ecosystem Approach” to the Protection of International Watercourses under International Law’ (2004) 13 *Review of European Community and International Environmental Law* 1.

¹⁴ See SMA Salman, ‘Downstream Riparians Can Also Harm Upstream Riparians: The Concept of Foreclosure of Future Uses’ (2010) 35 *Water International* 350, arguing that downstream utilization of shared waters might ‘foreclose’ options for future upstream water utilization.

¹⁵ O McIntyre, ‘Transboundary Water Resources’ in A Nollkaemper and I Plakokefalos (eds), *The Practice of Shared Responsibility in International Law* (Cambridge University Press 2017) 905.

¹⁶ Brunnée (n 2) 351.

implications.¹⁷ Such lack of clarity has resulted in limited practice informing the nature of State behaviour required for compliance with such primary rules or identification of suitable techniques for valuing transboundary damage or harm in the specific context of international watercourses, all of which has tended to obviate the deterrent role of State responsibility.¹⁸ However, recent developments in international water law practice regarding the increasingly prominent and pervasive requirement to protect riverine ecosystems, and to maintain related ecosystem services, provides welcome clarity regarding the standard of State conduct expected and the types of compensable harm in respect of which State responsibility may be assessed. It is increasingly apparent that an effective framework for establishing State responsibility in respect of harm to ecosystems has a role in ensuring the commitments of States to equitable and sustainable use of water resources enshrined in international water law. State responsibility and liability ‘contribute in themselves to the prevention of environmental harm, particularly by means of encouraging the fulfilment of specific obligations and of deterring potentially damaging types of conduct’, and thus ‘should not always be regarded as a negative sanction but rather, and to the extent possible, as a positive inducement to prevention’.¹⁹

3 TENTATIVE APPLICATION OF STATE RESPONSIBILITY

Though the broad principle of State responsibility for transboundary harm, including environmental harm, has been firmly established as customary international law for some 80 years, since the celebrated decision in the *Trail Smelter Arbitration*,²⁰ some normative uncertainty has persisted as scholars have debated its key principles²¹ and the various forms of State responsibility arising in different circumstances.²² This uncertainty prompted the ILC to dedicate decades of research and deliberation to the topic,²³ resulting in the adoption of multiple codifications of the relevant rules,²⁴ each addressing different aspects of the closely interconnected ‘preventive’ and ‘curative’ approaches to environmental harm.²⁵ However, it is apparent that the 2001 Draft Articles on State Responsibility, widely regarded as the most

¹⁷ McIntyre (n 10) 336–345.

¹⁸ See generally, J Rudall, *Compensation for Environmental Damage Under International Law* (Routledge 2020).

¹⁹ F Orrego Vicuña, ‘Responsibility and Liability for Environmental Damage under International Law: Issues and Trends’ (1998) 10 *Georgetown International Environmental Law Review* 279, 280.

²⁰ *Trail Smelter Arbitration (United States v Canada)* (1941) 3 RIAA 1905. See further RM Bratspies and RA Miller (eds), *Transboundary Harm in International Law: Lessons from the Trail Smelter Arbitration* (Cambridge University Press 2006). See also, *Corfu Channel (United Kingdom v Albania)* (Judgment) [1949] ICJ Rep 22, 4 and 22; Declaration of the United Nations Conference on the Human Environment in ‘Report of the United Nations Conference on the Human Environment’ UN Doc A/CONF.48/14/Rev.1 (1973) (Stockholm Declaration) Principle 21; Rio Declaration on Environment and Development in ‘Report of the United Nations Conference on Environment and Development’ UN Doc A/CONF.151/26 (vol I) (12 August 1992) Annex (Rio Declaration), Principle 2; *Legality of the Threat or Use of Nuclear Weapons* (Advisory Opinion) [1996] ICJ Rep 226 para 29; *Gabčíkovo-Nagymaros Project (Hungary v Slovakia)* (Judgment) [1997] ICJ Rep 7 para 140; *Pulp Mills on the River Uruguay (Argentina v Uruguay)* (Judgment) [2010] ICJ Rep 14 (*Pulp Mills*) para 101.

²¹ RP Barnidge, ‘The Due Diligence Principle under International Law’ (2006) 8 *International Community Law Review* 81, 82–85.

²² R Pisillo Mazzeschi, ‘Forms of International Responsibility for Environmental Harm’ in F Francioni and T Scovazzi (eds), *International Responsibility for Environmental Harm* (Graham & Trotman 1991) 15.

²³ Crawford (n 1) 2, notes that ‘[w]ork on State responsibility began in the ILC in 1956’.

²⁴ In addition to the Draft Articles on State Responsibility (n 3), the ILC has adopted the 2001 Draft Articles on the Prevention of Harm (in ILC ‘Yearbook of the International Law Commission 2001, Volume II’ UN Doc A/CN.4/SER.A/2001/Add.1 (Part 2)); and the 2006 Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities (in ILC ‘Yearbook of the International Law Commission 2006, Volume II’ UN Doc A/CN.4/SER.A/2001/Add.1 (Part 2)).

²⁵ LA Duvic-Paoli, *The Prevention Principle in International Environmental Law* (Cambridge University Press 2018) 331–332.

authoritative statement on the position in customary international law, adopt an ‘essentially neutral position’ as regards the form of State responsibility arising in any particular situation.²⁶ Where Article 2 defines an ‘internationally wrongful act of the State’ as ‘conduct consisting on an act or omission [that] (a) is attributable to the State under international law; and (b) constitutes a breach of an international obligation of the State’, the latter element refers to breach of a primary rule of international water law. As Crawford explains, ‘[i]f the primary rules require fault (of a particular character) or damage (of a particular kind) then they do; if not, then not’.²⁷ Thus, the form of responsibility arising depends on the primary rule(s) breached. The relevant ‘primary rules’ of international water law would include ‘those customary or treaty rules laying down substantive obligations for States, while the ‘secondary rules’ of State responsibility comprise ‘rules establishing (i) on what conditions a breach of a “primary rule” may be held to have occurred, and (ii) the legal consequences of this breach’.²⁸ Suggesting the practical significance of the role of State responsibility, leading commentators explain that such ‘secondary rules’ can also be understood as the ‘framework for the application of these [primary] obligations, whatever they may be’.²⁹

It is clearly understood in international water law practice that the applicable regime of State responsibility arises in respect of breach of the various due diligence obligations owed by a watercourse State, where due diligence may be considered ‘as an objective and international standard of behaviour’,³⁰ yet a standard that can only be identified having due regard to the particular circumstances of each case. Barnidge confirms that ‘the nature of the due diligence obligation is a matter to be resolved by the underlying primary rules, not the secondary rules of state responsibility’, and might have had in mind the normative flexibility of the primary rules of international water law when explaining the position as follows:

*Assuming that the primary rules at issue impose a due diligence standard of conduct on the state, then the nature of the rights and interests at issue, as well as a number of other factors, will determine whether the conduct breaches the state’s international obligation.*³¹

This reflects, for example, the inherent flexibility of the duty of prevention, or ‘no-harm’ rule, as applied in international water law and codified in Article 7 of the 1997 United Nations (UN) Watercourses Convention³² and Article 2(1) of the 1992 UN Economic Commission for Europe (UNECE) Water Convention.³³ This fundamental rule appears to be subordinated to, or at least informed in its application by, the highly indeterminate cardinal

²⁶ J Crawford, *The International Law Commission’s Articles on State Responsibility: Introduction, Text and Commentaries* (Cambridge University Press 2007) 13.

²⁷ J Crawford, ‘Revising the Draft Articles on State Responsibility’ (1999) 10 *European Journal of International Law* 435, 438.

²⁸ A Cassese, *International Law* (2nd edn, Oxford University Press 2005) 244.

²⁹ J Crawford and S Olleson, ‘The Continuing Debate on a UN Convention on State Responsibility’ (2005) 54 *International and Comparative Law Quarterly* 959, 968. See further, J Crawford and Solleson, ‘The Nature and Forms of International Responsibility’ in MD Evans (ed), *International Law* (5th edn, Oxford University Press 2018) 415.

³⁰ Pisillo Mazzeschi (n 22) 16. See further, R Pisillo Mazzeschi, ‘The Due Diligence Rule and the Nature of the International Responsibility of States’ (1992) 35 *German Yearbook of International Law* 9.

³¹ Barnidge (n 21) 87.

³² Convention on the Law of the Non-navigational Uses of International Watercourses (adopted 21 May 1997, entered into force 17 August 2014) 36 ILM 700 (UN Watercourses Convention).

³³ Convention on the Protection and Use of Transboundary Rivers and Lakes (adopted 17 March 1992, entered into force 6 October 1996) 1936 UNTS 269 (UNECE Water Convention).

principle of equitable and reasonable utilization,³⁴ which requires watercourse States to take account of the water-related interests of co-riparian States, having regard to a range of factors considered relevant in identifying and quantifying such interests. The commentary to the 2001 Draft Articles on State Responsibility supports the view that the normative implications of the primary rules giving rise to responsibility may be highly contextually relative, explaining that '[s]uch standards vary from one context to another for reasons which essentially relate to the object and purpose of the treaty provision or other rule giving rise to the primary obligation'.³⁵

Some guidance regarding the normative content of primary rules can, however, be gleaned from the secondary rules on State responsibility. For example, it is quite clear from the Draft Articles on State Responsibility that responsibility can arise on the basis of a State's failure to act, as well as from affirmative State action. Draft Article 2 includes within the definition of an 'internationally wrongful act' of a State 'conduct consisting of an action or omission', and the ILC Commentary notes that '[c]ases in which the international responsibility of a State has been invoked on the basis of an omission are at least as numerous as those based on positive acts, and no difference in principle exists between the two'.³⁶ Therefore, where primary rules require a due diligence standard of State conduct, the general principles of State responsibility appear to contemplate, in addition to affirmative acts of State organs or officials, omissions relating to the acts of private legal persons. In the specific context of international environmental or water resources law, such omissions would often involve the unreasonable failure of a watercourse State to regulate or prevent pollution of an international watercourse or aquifer by a non-State actor, or degradation of a related ecosystem due to such an actor's over-abstraction of the shared international water resources.

Despite such direction, however, States have generally remained reluctant to rely upon the mechanism of State responsibility to resolve transboundary water disputes and ensure compliance with the requirements of international water law. In recent decades, they have resorted to a range of alternative means of dispute resolution, though not always with great success.³⁷ For example, riparian States have voluntarily negotiated various *ad hoc* river restoration arrangements,³⁸ have established international civil liability regimes for water-related environmental damage,³⁹ or have resorted to compliance mechanisms established under international water agreements⁴⁰ or multilateral environmental agreements.⁴¹ It seems likely

³⁴ On the interrelationship between both rules, see, for example, A Nollkaemper, 'The Contribution of the International Law Commission to the International Water Law: Does It Reverse the Flight from Substance?' (1996) 27 *Netherlands Yearbook of International Law* 39, 54; S McCaffrey, *The Law of Non-Navigational Watercourses: Non-Navigational Uses* (Oxford University Press 2001) 325; O McIntyre, *Environmental Protection of International Watercourses under International Law* (Ashgate 2007) 104–116.

³⁵ Draft Articles on State Responsibility (n 3) 34.

³⁶ *ibid* 35.

³⁷ McIntyre (n 10) 358–367.

³⁸ Protocol Additional to the Convention for the Protection of the Rhine from Pollution by Chlorides (adopted 25 September 1991, entered into force 1 November 1994) 1840 UNTS 423. See JG Lammers, 'The Rhine: Legal Aspects of the Management of a Transboundary River' in WD Verwey (ed), *Nature Management and Sustainable Development* (IOS Press 1989) 440, 444.

³⁹ Protocol on Civil Liability and Compensation for Damage caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters (adopted 21 May 2003, not yet in force) <https://www.unece.org/fileadmin/DAM/env/civil-liability/documents/protocol_e.pdf>. See P Daskalopoulou-Livada, 'The Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters' (2003) 4 *Environmental Liability* 131.

⁴⁰ UNECE Water Convention Implementation Committee <https://www.unece.org/env/water/implementation_committee.html>.

⁴¹ Basel Convention Implementation and Compliance Committee <<http://www.basel.int/TheConvention/ImplementationComplianceCommittee/Overview/tabid/2868/Default.aspx>>. See A Shibata, 'The Basel Compliance Mechanism' (2003) 12 *Review of European Community and International Environmental Law* 183.

that such reluctance is at least partly due to the contextual relevance and resulting normative uncertainty of due diligence standards imposed under international water law.⁴²

4 INDETERMINATE RULES OF INTERNATIONAL WATER LAW

The key primary rules of international water law can be reduced to two substantive rules, namely the principle of equitable and reasonable utilization and the duty to prevent significant transboundary harm,⁴³ and the general duty to cooperate, which can be understood as a *portmanteau* obligation, mainly consisting of a collection of procedural requirements.⁴⁴ These fundamental rules are closely interconnected and together form an integrated suite of substantive and procedural obligations applying to all riparian States, either under specific conventional provisions or customary international law. Each of these primary rules is included in practically all global or regional instruments purporting to identify or elaborate rules of international water law,⁴⁵ and in basin-level water utilization and protection regimes created thereunder. Individual river basin agreements may also contain more detailed rules which inform the specific application of the substantive rules of international water. For example, the 1944 Colorado River Treaty provides detailed rules on the equitable allocation of quantum share of the international waters concerned.⁴⁶ However, despite such convergence around key principles, significant normative uncertainty has persisted.

4.1 Equitable and reasonable utilization

While it is commonly regarded as the cardinal rule of international water law, equitable and reasonable utilization remains a consciously vague and flexible principle under which the utilization rights of riparian States are to be determined in conformity with the concepts of equity and reasonableness, taking all relevant circumstances into consideration.⁴⁷ The principle enjoys ‘overwhelming support ... as a general rule of law for the determination of the rights and obligations of States in this field’,⁴⁸ despite its inevitable legal indeterminacy.⁴⁹ In

⁴² Brunnée (n 2) 354.

⁴³ See further SC McCaffrey, *The Law of International Watercourses* (2nd edn, Oxford University Press 2007) 384–445; McIntyre (n 34) 53–120.

⁴⁴ See McCaffrey (n 43) 464–480; McIntyre (n 43) 221–229 and 317–357. See generally C Leb, *Cooperation in the Law of Transboundary Water Resources* (Cambridge University Press 2013).

⁴⁵ Notable examples include the UN Watercourses Convention (n 32) and UNECE Water Convention (n 33), and the Revised Protocol on Shared Watercourses in the Southern African Development Community (adopted 7 August 2000, entered into force 22 September 2003) 40 ILM 321.

⁴⁶ 1944 Treaty between Mexico and the United States relating to the Utilization of the Waters of the Colorado and Tijuana Rivers and of the Rio Grande (adopted 3 February 1944, entered into force 8 November 1945) 3 UNTS 25.

⁴⁷ See generally McIntyre (n 34) 53ff; O McIntyre, ‘The UNECE Water Convention and the Principle of Equitable and Reasonable Utilisation’ in A Tanzi et al (eds), *The UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes: Its Contribution to International Water Cooperation* (Brill Nijhoff 2015) 146; O McIntyre, ‘Substantive Rules of International Water Law’ in Rieu-Clarke et al (n 9) 234.

⁴⁸ Draft Articles on the Law of the Non-Navigational Uses of International Watercourses, in ILC ‘Yearbook of the International Law Commission 1994, Volume II’ UN Doc A/CN.4/SER.A/1994/Add.1 (Part 2) para 222 Draft Articles on the Law of the Non-Navigational Uses of International Watercourses) Commentary to Draft Article 5, 98, para 10. See further Separate Opinion of Judge *ad hoc* Skubiszewski in *Gabčíkovo-Nagymaros* (n 20) 235, para 8, where he refers to the ‘canon of an equitable and reasonable utilization’.

⁴⁹ S Barrett, *Environment and Statecraft: The Strategy of Environmental Treaty-Making* (Oxford University Press 2003) 126.

successive codifications of the rules of international water law,⁵⁰ articulation of the principle of equitable and reasonable utilization has been accompanied by a wide-ranging, yet non-exhaustive list of relevant factors, strongly suggesting that the principle is more procedural than substantive in nature. Article 5 of the UN Watercourses Convention, the most authoritative articulation of equitable and reasonable utilization as a principle of general international law, even expressly includes the supplemental principle of ‘equitable participation’.⁵¹ Therefore, the principle is closely linked to the general obligation to cooperate in relation to the use, development and protection of international watercourses, as contained in Article 8 of the Convention, implying that cooperative institutions and related procedural arrangements play a very significant role in the principle’s practical implementation. Reliance on such institutions and arrangements has long been endorsed by the international community through codifications and declaratory instruments.⁵²

This emphasis on the need for cooperative action among watercourse States suggests that the principle of equitable and reasonable utilization lacks an easily discernible normative core binding States to act or refrain from acting in any specific way, except to the extent that they must meaningfully take account of the legitimate and reasonable interests of other riparian States. By stressing, alongside procedural requirements, the role of cooperative institutional mechanisms in implementing the substantive requirements of international water law, the Court in *Pulp Mills* characterizes equitable and reasonable utilization as an inter-State process, rather than a clear normative rule that dictates a particular outcome.⁵³ The understanding that, taken together, the rules of international water law require an equitable and reasonable balancing of watercourse States’ interests and, further, that the principle of equitable and reasonable utilization merely comprises a process for balancing such interests rather than a normative rule *per se*, provides a dramatic illustration of the indeterminacy of substantive rules of international law relating to natural resources.

4.2 Duty to prevent significant transboundary harm

As a second primary substantive rule, the duty to prevent significant transboundary harm appears at first glance to be quite imperative and clear in its normative implications. This duty is firmly established in general customary international law, and its breach intrinsically linked to State responsibility.⁵⁴ It has been expressly included in Article 7(1) of the UN Watercourses Convention, which provides that ‘[w]atercourse 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’.⁵⁵ The so-called ‘no-harm’ rule is central to international environmental law more generally and in the *Pulp Mills* case the Court appeared

⁵⁰ Helsinki Rules on the Uses of Waters of International Rivers, in International Law Association (ILA), ‘Report of the Fifty-Second Conference of the International Law Association’ (ILA 1966) (Helsinki Rules) Article V; 1973 Propositions of the Standing Sub-Committee on International Rivers, in Asian-African Legal Consultative Committee, ‘Report of the Fourteenth Session (10–18 January 1973, New Delhi) 7–14, Proposition III; Draft Articles on the Law of the Non-Navigational Uses of International Watercourses (n 48) art 6; Berlin Rules on Water Resources Law, in ILA, ‘Report of the Seventy-First Conference of the International Law Association’ (ILA 2004) (Berlin Rules) art 13.

⁵¹ Commentary to the Draft Articles on the Law of the Non-Navigational Uses of International Watercourses (n 48) para 5, on which the Convention text was based.

⁵² See, for example, 1972 Stockholm Action Plan for the Human Environment in Report of the United Nations Conference on the Human Environment’ (n 20) Recommendation 51.

⁵³ *Pulp Mills* (n 20) paras 75–76. See generally O. McIntyre, ‘The Proceduralization and Growing Maturity of International Water Law’ (2010) 22 *Journal of Environmental Law* 475, 488–491.

⁵⁴ See n 20.

⁵⁵ See also UNECE Water Convention (n 33) art 2(a); Helsinki Rules (n 50) art X; and Berlin Rules (n 50) arts 8, 12 and 16.

to recognize it as the wellspring of all other rules of customary international environmental law, such as that requiring environmental impact assessment of the transboundary impacts of a proposed industrial facility or activity.⁵⁶ Indeed, many such rules appear to function to discharge the due diligence obligations inherent to the duty of prevention, so that '[w]e could almost consider that the other customary rules simply derive from it'.⁵⁷ The no-harm rule is well established in general international water law and treaty practice at the river basin level includes related substantive provisions dealing with, *inter alia*, minimum flow requirements,⁵⁸ the prevention of harmful effects,⁵⁹ the protection of water quality⁶⁰ and the application of clean technologies.⁶¹ While the *Pulp Mills* judgment concerns application of the no-harm rule as set out in a specific river basin agreement, it also suggests how the corresponding customary rule might be interpreted and applied in the context of international water resources.⁶² 'Harm' in this particular context might take many forms and can result from a wide variety of activities, not all directly related to the utilization of shared water resources.⁶³ It is also well established that a State's duty to prevent significant transboundary harm extends to cover the activities of non-State actors operating within its territory.⁶⁴ In such cases, the requirements of due diligence flowing from the no-harm rule will include the State's duty to regulate effectively the activities of non-State actors where these may contribute to harm to the watercourse or other watercourse States.⁶⁵

Pulp Mills helps to clarify the obligations involved in the duty of prevention of transboundary harm, particularly regarding the nature and implications of the procedural and substantive due diligence requirements imposed upon a watercourse State.⁶⁶ In the context of large-scale projects, procedural due diligence requires notification and consultation with potentially impacted States and, where necessary, negotiation to address differences arising. Such procedural engagement must be conducted in good faith by the States concerned,⁶⁷ and can only meaningfully be performed in conjunction with an environmental assessment of the

⁵⁶ See O McIntyre, 'The Contribution of Procedural Rules to the Environmental Protection of Transboundary Rivers in Light of Recent ICJ Case Law' in L Boisson de Chazournes, C Leb and M Tignino (eds), *International Law and Freshwater: The Multiple Challenges* (Edward Elgar 2013) 239, 260.

⁵⁷ S Maljean-Dubois 'The Making of International Law Challenging Environmental Protection', in Y Kerbrat and S Maljean-Dubois (eds), *The Transformation of International Environmental Law* (Pedone/Hart 2011) 25, 42.

⁵⁸ Agreement on Co-operation for the Sustainable Development of the Mekong River Basin (adopted and entered into force, 5 April 1995) 34 ILM 864 art 6; Treaty of Peace between Israel and Jordan (adopted 26 October 1994) 34 ILM 43 art 1, Annex II.

⁵⁹ Agreement on Co-operation for the Sustainable Development of the Mekong River Basin (n 58) art 7.

⁶⁰ Treaty of Peace between Israel and Jordan (n 58) art 3, Annex II.

⁶¹ Agreement on the Protection of the River Meuse (adopted 26 April 1994) 34 ILM 851 art 3(2)(b).

⁶² *Pulp Mills* (n 20) para 193, where, before turning to its analysis of Article 41 of the applicable 1975 Statute on the Uruguay River, on the obligation to prevent pollution and preserve the aquatic environment, the Court recalled its earlier finding in *Legality of the Threat or Use of Nuclear Weapons* (n 20) para 29, 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.'

⁶³ McCaffrey (n 34) 348–349. Similarly, the commentary to Article X of the 1966 ILA Helsinki Rules that 'an injury in the territory of a State need not be connected with that State's use of the waters'; Helsinki Rules (n 50) 500.

⁶⁴ In the *Lac Lanoux Arbitration (Spain v France)* Arbitral Tribunal (1957) 12 RIAA 281, the Tribunal elaborated the relevant rules of international law to which '[a]ll still and running water, whether in the public or the private domain, shall be subject' (ibid para 1063).

⁶⁵ In *Pulp Mills* (n 20) paras 195–197, the ICJ stressed the obligation of each State to adopt and ensure effective compliance with domestic rules and measures that correspond with applicable international agreements or customary rules.

⁶⁶ *ibid*; see generally McIntyre (n 53) and McIntyre (n **Error! Bookmark not defined.**).

⁶⁷ *Pulp Mills* (n 20) paras 145–149.

transboundary impacts.⁶⁸ Substantive due diligence requirements include adoption and effective enforcement of appropriate domestic legal controls for protection of the shared watercourse and its related ecosystems. Despite such welcome judicial elaboration, however, the no-harm rule has continued to suffer from limited normative clarity, potentially impeding determination of State responsibility. Traditionally, many water-related treaties only included very general provisions concerning the prevention of water pollution⁶⁹ and, in the field of international environmental law more generally, ‘it is difficult to say what the “no-harm” principle actually requires States to do’.⁷⁰ For example, uncertainty persists regarding the threshold at which any transboundary harm becomes sufficiently ‘significant’ to constitute a breach of the no-harm rule likely to lead to the international legal responsibility of the State concerned.⁷¹ Even more problematically, Article 7(2) of the UN Watercourses Convention suggests that the obligation to prevent harm is subordinated to the overarching principle of equitable and reasonable utilization as set out in Articles 5 and 6 of the Convention, so that it merely ‘requires avoidance of harm in a way and to an extent that is reasonable under the circumstances’ and would ideally serve to ‘trigger discussions between states concerned’ regarding the prevention of harm, rather than as a basis for establishing State responsibility.⁷² The rule’s application in general international water law is therefore conditioned by the same uncertainty that besets the legally indeterminate principle of equitable and reasonable utilization and, like the latter principle, ‘the no-harm principle is poorly suited to resolving disputes after the fact’.⁷³

4.3 Duty to cooperate

The general obligation of States to cooperate in the resolution of international problems is widely accepted and receives support from as authoritative a legal source as Article 1(3) of the UN Charter,⁷⁴ and has long been supported in global declarative practice.⁷⁵ In the field of international water resources, it is given practical effect by means of various associated rules of procedural conduct that are rapidly emerging as international custom, including the duties to notify of planned measures, consult, negotiate and warn, as well as duties relating to the ongoing exchange of relevant data and information. Whatever the precise legal status of the general duty to cooperate,⁷⁶ it appears more firmly established and highly developed in its application to the environmental protection and utilization of shared natural resources,⁷⁷ and in particular water resources, where the ‘requirement of prior consultation based on adequate information’ is ‘a natural counterpart to the concept of equitable utilization of a shared

⁶⁸ *ibid* para 204.

⁶⁹ G Handl, ‘Balancing of Interests and International Liability for the Pollution of International Watercourses: Customary Principles of Law Revisited’ (1975) *Canadian Yearbook of International Law* 156, 171.

⁷⁰ Barrett (n 49) 122–123.

⁷¹ See McIntyre (n 34) 93–97; McCaffrey (n 34) 354–355.

⁷² McCaffrey (n 34) 407–408. See further TG Bode, ‘A Modern Treaty for the Columbia River’ (2017) 47 *Environmental Law* 81, 106.

⁷³ Bode (n 72). Regarding States’ reluctance to agree principles of State-to-State environmental liability for *ex post* resolution of disputes, see E Brown Weiss, *International Law for a Water-Scarce World* (Martinus Nijhoff 2013) 35–36.

⁷⁴ Charter of the United Nations (adopted 26 June 1954, entered into force 24 October 1945) 1 UNTS 16.

⁷⁵ UNGA ‘Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations’ UN Doc A/RES/2625 (XXV) (24 October 1970).

⁷⁶ See generally Leb (n 44).

⁷⁷ PM Dupuy, ‘Overview of the Existing Customary Legal Regime Regarding International Pollution’ in DB Magraw (ed), *International Law and Pollution* (University of Pennsylvania Press 1991) 61, 70.

resource'.⁷⁸ This is supported by numerous declarations and recommendations referring to the duty and elaborating some means for its implementation,⁷⁹ as well as the many international watercourse agreements expressly alluding to the obligation to cooperate.⁸⁰

The Tribunal in the 1957 *Lac Lanoux* arbitration emphatically recognized the duty of States to cooperate in the use of the waters of an international watercourse, identifying good faith cooperation in the conclusion of international agreements as the key means of ensuring the prevention of transboundary harm.⁸¹ More recently, the International Court of Justice (ICJ) judgment in *Gabčíkovo-Nagymaros* reflected the procedural obligation to cooperate,⁸² which has received similar support from international tribunals in a range of environmental disputes.⁸³ While Article 8 of the UN Watercourses Convention specifically addresses the 'general obligation to cooperate', Part III, comprising Articles 11–19, contains detailed procedural rules requiring watercourse States to notify, consult and negotiate in relation to planned measures which may have adverse effects on other watercourse States. The International Law Association's (ILA) 2004 Berlin Rules contain a Chapter XI on 'International Cooperation and Administration' setting out detailed rules on, *inter alia*, exchange of information, notification of programmes, plans, projects or activities, and consultation, while the commentary thereto asserts that '[t]he duty of cooperation is the most basic principle underlying international water law'.⁸⁴ It is clear that permanent river basin organizations play a key role in facilitating the intense procedural engagement required under the duty to cooperate, and the UN Watercourses Convention expressly encourages watercourse States to enter into institutional arrangements to facilitate inter-State cooperation.⁸⁵ While States cannot generally be compelled to establish or join common management institutions, a State's *bona fide* participation in such arrangements may help to demonstrate satisfaction of the procedural obligations inherent to cooperation.⁸⁶

The duty to cooperate can therefore be understood as a composite obligation, consisting of a range of procedural requirements, any one or more of which might be applicable in a given situation. Due to their nature, such procedural rules are usually understood to embody normatively clear and unambiguous State obligations. However, while any violation of the duty to cooperate, or of any of its related procedural obligations, will amount to an internationally wrongful act *per se*, any redress is unlikely to be significant where this is not accompanied by material harm to the State complaining of the breach.⁸⁷ Where material harm has actually been caused to another watercourse State, breach of any applicable procedural requirement is likely to amount to a failure to meet the standards of procedural due diligence necessary to discharge

⁷⁸ P Birnie and A Boyle, *International Law and the Environment* (2nd edn, Oxford University Press 2002) 126. See also G Handl, 'The Principle of "Equitable Use" as Applied to Internationally Shared Natural Resources: Its Role in Resolving Potential International Disputes over Transfrontier Pollution' (1979) 14 *Revue Belge de Droit International* 40, 55–63; AE Utton, 'International Environmental Law and Consultation Mechanisms' (1973) 12 *Columbia Journal of Transnational Law* 56; FL Kirgis, *Prior Consultation in International Law* (University Press of Virginia 1983).

⁷⁹ Including Stockholm Declaration (n 20) Principle 24; Rio Declaration (n 20) Principle 19.

⁸⁰ Early examples include the Berne Convention on the International Commission for the Protection of the Rhine (adopted 29 April 1963, entered into force 1 May 1965) 994 UNTS 3; Great Lakes Water Quality Agreement between Canada and the United States (adopted and entered into force 22 November 1978) 30 UST 1383 arts 7–10.

⁸¹ *Lac Lanoux Arbitration* (n 64).

⁸² *Gabčíkovo-Nagymaros* (n 20) para 17. See further commentary to Article 11 of the Berlin Rules (n 50) 20.

⁸³ See, for example, *MOX Plant Case (Ireland v United Kingdom)*, Provisional Measures (Order) [2001] ITLOS Rep 10 para. 89.

⁸⁴ Commentary to Article 11 in Berlin Rules (n 50) 20.

⁸⁵ Most notably in UN Watercourses Convention (n 32) art 8(2).

⁸⁶ See further McIntyre (n 34) 317ff.

⁸⁷ See *Pulp Mills* (n 20) paras 79, 121–122 and 275–276; *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v Nicaragua)* and *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v Costa Rica)* (Judgment) [2015] ICJ Rep 665 (*Costa Rica v Nicaragua*) paras 224–226.

the duty to prevent significant transboundary harm and, in such a case, more meaningful redress may be available.⁸⁸

5 SHINING A LIGHT ON DUE DILIGENCE IN INTERNATIONAL WATER LAW

Clearly, due diligence-based standards of conduct are central to any determination of the normative content of the primary rules of international water law and, in turn, to any finding of State responsibility for their breach. However, these same standards have too often been understood as being abstract, elusive and in flux.⁸⁹ ‘Due diligence’ denotes a notionally similar standard of care required in a range of diverse contexts and

*is 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.*⁹⁰

Consistent with sovereign freedom and discretion, the flexibility inherent to due diligence allows States a degree of autonomy that might generally be expected to encourage wider participation in treaty and customary regimes, whilst the open-ended nature of due diligence standards also offers convenience, obviating the need to agree precise international rules.⁹¹ Koskenniemi views due diligence as ‘a technique of proceduralisation, deferring controversial inquiries as to the content of substantive rules regulating wrongdoing to less controversial questions relating to informed decision-making and process’.⁹²

Of particular relevance to the field of international water law, Koskenniemi notes the prevalence of ‘contextual determinants ... in respect of rules of State responsibility and especially the customary standard of due diligence’, the recent use of which he associates with ‘the search for equitableness [which] has affected the law on, for example, natural resources’.⁹³ This search for ‘equitableness’ might be regarded as the defining characteristic of international water law when one considers the distributive nature of the equity which characterizes the apex principle of equitable and reasonable utilization, and international water law more generally, reflecting peoples’ unique dependence upon water. The resulting flexibility and normative indeterminacy reflect the fact that no two river basins are remotely similar – ecologically, hydrologically, demographically, economically, socially, politically or culturally – and thus that the nature and extent of human dependence upon shared waters varies enormously in different basins. These realities have tended to obscure the parameters of due diligence standards of conduct expected of watercourse States and, as a consequence, the practical application of primary rules of international water law.

Despite such flexibility, however, it is possible to identify certain generally applicable standards which inform the due diligence requirements of international water law. The quality of ‘reasonableness’ is regarded as ‘a golden thread in determining which measures States should take to act in a duly diligent manner’,⁹⁴ with one commentator describing due diligence

⁸⁸ See *Costa Rica v Nicaragua* (n 87) paras 139 and 142, though responsibility in this case was established on the basis of Nicaragua’s unlawful violation of Costa Rica’s territorial sovereignty (ibid para 99).

⁸⁹ Duvic-Paoli (n 25) 10.

⁹⁰ T Stephens and D French, ‘ILA Study Group on Due Diligence in International Law: Second Report’ (ILA 2016) (ILA Second Report) 2.

⁹¹ ibid 2–3.

⁹² M Koskenniemi, *From Apology to Utopia: The Structure of International Legal Argument* (Cambridge University Press 1989) 391. See ILA Second Report (n 90) 3.

⁹³ Koskenniemi (n 92) 391.

⁹⁴ See ILA Second Report (n 90) 8.

as ‘a flexible reasonableness standard adaptable to particular facts and circumstances’.⁹⁵ This resonates with the overarching water law principle of equitable and reasonable utilization, where ‘[r]easonableness ... encompasses the contemporary conception of rationality and takes factors like the stage of development of a state into consideration’.⁹⁶ Another, closely linked, general standard is that of the expectation of ‘good government’, which suggests that the due diligence standard expected would involve ‘the reasonable measures of prevention which a well-administered government could be expected to exercise under similar circumstances’.⁹⁷ Of course, the reasonableness of any such expectation would be qualified to some degree by consideration of the State of origin’s level of development. In turn, the linked notions of good government and level of development are connected to the degree of effective control which a State of origin enjoys over its territory and over non-State actors operating therein. The commentary to the ILC’s Draft Articles on Prevention of Transboundary Harm advises that due diligence in preventing environmental harm will often require policies which ‘are expressed in legislation and administrative regulations and implemented through various enforcement mechanisms’, though such regulations must incorporate ‘accepted international standards’.⁹⁸ Such legislative arrangements would normally include a system for the prior authorization of relevant activities.⁹⁹ Due diligence measures taken should be ‘appropriate and proportional to the degree of risk of transboundary harm’, should take account of ‘the economic level of States’, and should be precautionary where appropriate.¹⁰⁰ In a manner once again reminiscent of equitable and reasonable utilization, and of international water law more generally, the ILC Draft Articles on Prevention stress inter-State consultation on due diligence measures in order to achieve equitable balancing of the interests of the States concerned.¹⁰¹

In addition to such general qualities, certain context-specific standards inform sectoral application of due diligence in particular sub-branches of international law, such as international environmental or water law.¹⁰² Most obviously, the comprehensive montage of international water and environmental agreements provide detailed standards from which ‘[a]n obligation of due diligence as the standard basis for the protection of the environment from harm can be deduced’, and any one of which might in the particular circumstances ‘constitute a necessary reference point to determine whether measures adopted are suitable’.¹⁰³ Of course the relevance of such conventional standards is further highlighted and supported by the principle of ‘systemic integration’¹⁰⁴ recently employed by a Permanent Court of Arbitration tribunal in inferring an obligation to safeguard minimum environmental flows into the

⁹⁵ Barnidge (n 21) 118.

⁹⁶ A Rieu-Clarke, R Moynihan and BO Magsig, *UN Watercourses Convention: User’s Guide* (IHP-HELP Centre for Water Law, Policy and Science 2012) 108.

⁹⁷ ILC Second Report (n 90) 10.

⁹⁸ Article 3 of Draft Articles on the Prevention of Harm (n 24) Commentary to Article 3, 154.

⁹⁹ See *ibid* arts 6 and 7.

¹⁰⁰ *ibid* 154–155. See *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) [2011] ITLOS Rep 10 para 131; L Chen, ‘Realizing the Precautionary Principle in Due Diligence’ (2016) 25 *Dalhousie Journal of Legal Studies* 1, 23.

¹⁰¹ Draft Articles on the Prevention of Harm (n 24) arts 9 and 10. Article 10 even provides an open-ended list of factors relevant to such equitable balancing of interests.

¹⁰² See T Stephens and D French, ‘ILA Study Group on Due Diligence in International Law: First Report’ (ILA 2014) (ILA First Report) 4–6.

¹⁰³ Draft Articles on the Prevention of Harm (n 24) Commentary to Article 3, 154.

¹⁰⁴ A principle of treaty interpretation under Article 31(3)(c) of the Vienna Convention on the Law of Treaties (adopted 23 May 1969, entered into force 27 January 1980) 1155 UNTS 331, requiring that account be taken of ‘any relevant rules of international law applicable in the relations between the parties’. See, for example, C McLachlan, ‘The Principle of Systemic Integration and Article 31(3)(c) of the Vienna Convention’ (2005) 54 *International and Comparative Law Quarterly* 279; P Merkouris, *Article 31(3)(c) VCLT and the Principle of Systemic Integration* (Brill Nijhoff 2015); J Lee, *Preservation of Ecosystems of International Watercourses and the Integration of Relevant Rules* (Brill Nijhoff 2014).

normative commitments of an older watercourse treaty.¹⁰⁵ The commentary to the Draft Articles on Prevention expressly lists,¹⁰⁶ as an exemplar of such conventions, the 1992 UNECE Water Convention, Articles 2 and 3 of which provide considerable detail regarding the environmental and ecosystems protection measures expected of the State parties.¹⁰⁷ Thus, the ever-increasing significance and clarity of ecosystems protection obligations in international water law, and in international environmental law more generally, inevitably informs and clarifies due diligence under the former corpus of primary rules.

6 AN ECOLOGICAL ERA FOR STATE RESPONSIBILITY IN INTERNATIONAL WATER LAW?

It is important to note that the key primary obligations comprising international water law are constantly evolving, and this dynamism may help to clarify the nature of the due diligence required of States regarding avoidance or minimization of transboundary harm for the purposes of establishing State responsibility. In recent years, ecosystems protection obligations have risen to considerable prominence within the overall edifice of international environmental and water law,¹⁰⁸ so much so that the so-called ‘ecosystem approach’ has emerged to provide a management framework for holistic, adaptive and integrative stewardship of the entire complex of ecological and socio-ecological elements and relationships required to maintain the integrity of watercourse-related ecosystems, and thus to preserve the services provided thereby. In his excellent study of the origins and evolution of the ‘ecosystem approach’, De Lucia examines its many articulations employed across a range of environmental sectors and notes, having particular regard to the ecosystems protection obligations contained in Article 20 of the UN Watercourses Convention, that

*[w]ithin the context of freshwater law, the ‘ecosystem approach’ is rather more centrally linked to the substantive elaboration of primary obligations of protection and preservation of watercourse ecosystems, in this respect significantly expanding the obligations of States vis-à-vis the traditional transboundary harm rule.*¹⁰⁹

Similarly, in respect of the other key substantive obligation of international water law, a 2008 report published by the Secretariat of the Convention on Biological Diversity (CBD) notes the close linkages between an ‘equitable and sustainable allocation and management of’ water resources and the maintenance of the ‘ecological function of freshwater ecosystems’.¹¹⁰ It is clear, therefore, that the continuing detailed elaboration of ecosystems obligations offers, in situations involving environmental damage, a measure of the normative clarity required to base a finding of State responsibility on breach of the primary rules of international water law.

¹⁰⁵ *Indus Waters Kishenganga Arbitration (Pakistan v India)* (Partial Award) (18 February 2013) PCA Case No 2011-01 para 454 (applying the 1960 Indus Waters Treaty).

¹⁰⁶ Draft Articles on the Prevention of Harm (n 24) Commentary to Article 3, 154.

¹⁰⁷ See O McIntyre, ‘The Current State of Development of the No Significant Harm Principle: How Far Have We Come?’ (2020 fc) 20 *International Environmental Agreements: Politics, Law and Economics*.

¹⁰⁸ For a recent detailed account of the emergence and development of ecosystems obligations in international water law, see O McIntyre, ‘Protection and Preservation of Freshwater Ecosystems (Articles 20-23)’ in Boisson de Chazournes et al (n 9) 193.

¹⁰⁹ V De Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics* (Routledge 2019) 68.

¹¹⁰ S Breils, D Coates and F Loures, *Transboundary Water Resources Management: The Role of International Watercourse Agreements in Implementation of the CBD* (CBD Secretariat 2008) 5. See De Lucia (n 109) 62.

The ILA Study Group on Due Diligence points out that ‘[t]he content of the obligation [of due diligence] may also change in line with scientific and technological advances’,¹¹¹ which brings to mind the growing emphasis evident in the practice of international water law on the preservation of international watercourse ecosystems,¹¹² along with the emergence of sophisticated new methodologies informing the normative implications of such obligations.¹¹³ Notable among such advances, improved understanding of the technical parameters for assessing minimum environmental flows in a shared watercourse¹¹⁴ has permitted judicial recognition of a corresponding legal obligation to maintain a minimum environmental flow regime.¹¹⁵ For example, the Ramsar and CBD Secretariats have jointly published technical guidance on calculating the environmental flows required for the maintenance of healthy estuarine ecosystems.¹¹⁶ More comprehensively, a recent study of the legal means for implementing environmental flow requirements details various means for, *inter alia*, analysing environmental flows in the context of transboundary basins, integrating environmental flows into the procedural rules and environmental protection requirements of international water law, and integrating environmental flows into monitoring and adaptation frameworks.¹¹⁷ Similarly, the rapidly evolving and increasingly important ecosystems services concept,¹¹⁸ and related assessment methodologies,¹¹⁹ which focus on natural services furnished by functioning riverine ecosystems ‘on which the well-being of people and their livelihoods depend’,¹²⁰ provide nascent means for the economic and social valuation of natural ecosystems.¹²¹ For example, the World Resources Institute has produced an influential report on methodologies for consideration of ecosystem services in the context of impact assessment processes,¹²² while the Ramsar Convention Secretariat and the Institute for European Environmental Policy have described structured means by which policymakers can take account of the economic value of aquatic ecosystems.¹²³

¹¹¹ ILA First Report (n 102) 29, citing the ITLOS *Advisory Opinion* (n 100) para 117.

¹¹² See V De Lucia, ‘A Critical Interrogation of the Relation between the Ecosystem Approach and Ecosystem Services’ (2018) 27 *Review of European, Comparative and International Environmental Law* 104.

¹¹³ See further McIntyre (n 13); McIntyre (n 108).

¹¹⁴ See, for example, M Pchalek and I Grzegorzólk, ‘Legal Aspects of the Application of the Method of Estimating Environmental Flows in the Protection of Riparian Ecosystems Dependent on Waters’ (2017) 5 *Environmental Liability* 208; N LeRoy Poff, RE Tharma and AH Arthington, ‘Evolution of Environmental Flows Assessment Science, Principles and Methodologies’ in AC Horne et al (eds), *Water for the Environment: From Policy and Science to Implementation and Management* (Academic Press 2017) 203; A Beaton and A Bradford, ‘Demonstration of a Methodology for setting Ecological Flow and Water Level Targets’ (2013) 38 *Canadian Water Resources Journal* 296; M Dyson, G Bergkamp and J Scanlon, *Flow: The Essentials of Environmental Flows* (IUCN 2003); J Scanlon and A Iza, ‘International Legal Foundations for Environmental Flows’, (2003) 14 *Yearbook of International Environmental Law* 81.

¹¹⁵ *Kishenganga Arbitration* (n 105).

¹¹⁶ J Adams, *Determination and Implementation of Environmental Water Requirements for Estuaries* (Ramsar Convention Secretariat 2012).

¹¹⁷ J. Gooch, *Protecting Ecological Integrity in Transboundary Watercourses: An Integrational Approach towards Implementing Environmental Flows* (Lund University 2016).

¹¹⁸ See Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Synthesis* (Island Press 2005).

¹¹⁹ See, for example, M Drechsler, *Ecological-Economic Modelling for Biodiversity Conservation* (Cambridge University Press 2020); D Russi et al, *The Economics of Ecosystems and Biodiversity (TEEB) for Water and Wetlands* (Institute for European Environmental Policy and Ramsar Convention Secretariat 2013).

¹²⁰ Ramsar COP, ‘Resolution IX.3, Engagement of the Ramsar Convention on Wetlands in Ongoing Multilateral Processes Dealing with Water’ (2005) 1, para 3.

¹²¹ A Rieu-Clarke and C Spray, ‘Ecosystem Services and International Water Law: Towards a More Effective Determination and Implementation of Equity’ (2013) 16 *Potchefstroom Electronic Law Journal* 12.

¹²² F Landsberg et al, ‘Ecosystem Services Review for Impact Assessment: Introduction and Guide to Scoping’ (World Resources Institute 2011).

¹²³ Russi et al (n 119).

In his study of the ecosystem approach, De Lucia observes that ‘more recently, the articulation of the “ecosystem approach” in freshwater law has become more technical and methodological, thanks to the increasing linkage with the framework of ecosystem services’.¹²⁴ Such methodologies have the potential to provide watercourse States with common understanding of the implications in terms of costs and benefits for each State of measures for the utilization and protection of shared watercourse ecosystems, thereby aiding effective inter-State cooperation. At the same time, they can serve to clarify the precise normative implications of the primary rules of international water law, at least as regards the prevention of ecological harm and the equitable sharing of benefits derived from watercourse-related ecosystems. By so doing, these methodologies can facilitate a finding of breach of such primary rules, and corresponding evaluation of marketable and non-marketable benefits of international watercourses, within any determination of State responsibility for transboundary harm. Commentators have long noted the scope for determining analogous liability under national tort law systems for deprivation of ecosystem services, at least ‘where the result is to cause significant economic damage to others’.¹²⁵ Thus, technical methodologies for identifying and quantifying watercourse ecosystem-related benefits facilitate effective inclusion of ecological damage within the rubric of transboundary harm, as has long been intended in international water law. One needs only to consider, for example, the seminally important 1992 UNECE Water Convention, which defines the key concept of ‘transboundary impact’ to include:

*any significant adverse effect on the environment resulting from a change in the conditions of transboundary waters caused by a human activity, the physical origin of which is situated wholly or in part with an area under the jurisdiction of a Party ... Such effects on the environment include effects on human health and safety, flora, fauna, soil, air, water, climate, landscape ... or the interaction among these factors.*¹²⁶

Quite apart from the problem of uncertain due diligence standards, the emergence of detailed methodological guidance supporting each element of the ecosystem approach can assist a court in identifying and evaluating the highly complex evidence involved in assessing transboundary water-related harm. The scientific and technical complexity of the evidence presented to the Court was a highly controversial issue in the *Pulp Mills* case, prompting two of the ICJ judges to argue in a joint dissenting opinion that

*The adjudication of disputes in which the assessment of scientific questions by experts is indispensable, as is the case here, requires an interweaving of legal process with knowledge and expertise that can only be drawn from experts properly trained to evaluate the increasingly complex nature of the facts put before the Court.*¹²⁷

It stands to reason that greater clarity regarding the most widely accepted means of assessing minimum environmental flows or regarding the nature and significance of particular ecosystem services could only assist tribunals in conducting a state-of-the-art review of the complex evidence involved.

Such developments are already informing the reasoning of international courts and tribunals. In the *Kishenganga Arbitration*, the Permanent Court of Arbitration tribunal found that ‘hydro-electric projects ... must be planned, built and operated with environmental

¹²⁴ De Lucia (n 109) 68.

¹²⁵ JB Ruhl, ‘Toward a Common Law of Ecosystem Services’ (2005) 18 St. Thomas Law Review 1, 1.

¹²⁶ UNECE Water Convention (n 33) art 1(2), (emphasis added).

¹²⁷ *Pulp Mills* (n 20) Joint Dissenting Opinion of Judges Al-Khasawneh and Simma, para 3 (110).

sustainability [and minimum environmental flow in particular] in mind’,¹²⁸ in line with a requirement, arising under both the 1960 Indus Waters Treaty and customary international law, that ‘principles of international environmental law must be taken into account even when ... interpreting treaties concluded before the development of that body of law’.¹²⁹ As regards the source of such an ecologically significant rule requiring States to maintain minimum environmental flows, the tribunal explains that it might arise under ‘the “principle of general international law” that States have “a duty to prevent, or at least mitigate” significant harm to the environment when pursuing large-scale construction activities’.¹³⁰ The tribunal further speculates that flow obligations might additionally apply by virtue of the ‘requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource’,¹³¹ as recognized by the ICJ in *Pulp Mills*.¹³² Increased scientific and technical understanding of ecosystems functioning, and of the utility and value of the services provided thereby, can thus inform the normative nature and implications of the primary rules of international water law, making their breach more likely to provide a sound basis for State responsibility.

Of even greater significance for the purposes of State responsibility in this field, the ICJ has recently given emphatic endorsement to the concept of watercourse ecosystems, whilst also recognizing the beneficial value to States of watercourse-related ecosystem services. The Court determined for the first time that ‘damage to the environment, and *the consequent impairment or loss of the ability of the environment to provide goods and services*, is compensable under international law’.¹³³ It then proceeded to assign a monetary value in compensation for the impairment of four specific classes of ecosystem services, as established on the facts of the case.¹³⁴ More generally, the Court had identified a total of 22 classes of watercourse-related ecosystem services during the course of the dispute. In addition, the Court had earlier made it abundantly clear that interference with the minimum environmental flow of an international watercourse could now be regarded as significant transboundary harm.¹³⁵ This case may well prove to be a harbinger of things to come in the field of inter-State watercourse disputes.

7 CONCLUSION

Clearly, the continuing emergence of ecosystems-related obligations, and the associated detailed elaboration of watercourse ecosystem services assessment and evaluation methodologies, go some way towards providing the requisite measure of normative clarity on which to base a determination of State responsibility. At any rate, these advances shed welcome light on the areas of uncertainty identified by both Brunnée¹³⁶ and Peel,¹³⁷ especially regarding the due diligence expected of watercourse States in respect of the prevention of ecological harm

¹²⁸ *Kishenganga Arbitration* (n 105) para 454.

¹²⁹ *ibid* para 452.

¹³⁰ *ibid* para 451.

¹³¹ *ibid* para 450.

¹³² *Pulp Mills* (n 20) para 204.

¹³³ *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v Nicaragua) Compensation Owed by the Republic of Nicaragua to the Republic of Costa Rica* (2 February 2018) <<https://www.icj-cij.org/files/case-related/150/150-20180202-JUD-01-00-EN.pdf>> para 42 (emphasis added).

¹³⁴ *ibid* (emphasis added) and paras 75–87.

¹³⁵ *Costa Rica v Nicaragua* (n 87) paras 105 and 119.

¹³⁶ Brunnée (n 2) 353–354.

¹³⁷ Peel (n 7).

and, perhaps even more significantly, for the equitable balancing of the interests of watercourse States, and the maintenance of essential water-related ecosystem services.

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