The Current State of Development of the No Significant Harm Principle – How Far Have We Come?

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Abstract

The duty to prevent significant transboundary harm remains a cornerstone principle of international law, and especially of international environmental and water resources law. However, this rule focuses on the conduct of a State where harm originates, rather than on the fact that harm has resulted from such conduct, and requires that States exercise due diligence in anticipating and in preventing or mitigating such harm. At a practical level, the due diligence standard of conduct expected of States can be uncertain and difficult to determine, as it must be deduced from the applicable primary rules of international environmental or water resources law and, in addition, it might be influenced by a range of variable factors which are relevant in the particular circumstances. Such uncertainty is compounded in the field of international water law by the fact that the no-harm rule tends to be subordinated to the cardinal principle of equitable and reasonable utilization. However, recent developments in international water law and related practice regarding the requirement to protect riverine ecosystems and maintain related ecosystem services are lending a measure of clarity as regards the preventive measures expected of watercourse States under international law.

Introduction

Few principles are more firmly established in international law generally, and in international environmental and water resources law more particularly, than that of the duty of States to prevent significant transboundary harm. The duty of prevention, or 'no-harm' rule, as applied in an environmental context, has received the consistent support of judicial and arbitral tribunals since the celebrated *Trail Smelter Arbitration* and has become an omnipresent feature of multilateral environmental agreements (MEAs) and declarative instruments, as well as global, regional and basin-level water resources conventions. A number of factors have facilitated such universal acceptance of this rule. For one thing, it has its roots in each of the major legal traditions of the world and reflects the most basic aspects of the law of obligations and responsibility found in every major system of national law McIntyre, 2007). For another, it exemplifies the sovereign equality of States, as recognized in Article 2 of the United Nations Charter, and the associated right of States to non-interference with their sovereign territorial interests (Maljean-Dubois, 2011).

Despite universal support in judicial deliberation and in the treaty and declarative practice of States, however, the no-harm rule tends to be formulated in a rather general manner, so that its legal and practical implications for States in seeking to comply with the requirements of international environmental and natural resources law have remained somewhat unclear. In the specific context of international watercourses, articulations of the principle tend to be vague regarding its precise normative requirements for watercourse States in the utilisation and environmental protection of shared waters and associated aquatic ecosystems (Handl, 1975). In particular, international treaty instruments provide little guidance as to the nature or extent of the due diligence obligations that they impose upon basin States, or as to the precise categories of harm covered by the no-harm rule.

It is telling that formal findings of State responsibility are something of a rarity in cases of harm to the sovereign interests of watercourse States, or to transboundary watercourse systems, despite the fact that such harm tends to produce immediate and obvious effects and to allow relatively easy identification of the State that is the source of such harm. In fact, it appears that uncertainty regarding the precise normative implications of the key substantive rules and principles of international water law, including the 'no harm' rule, has led disputing States to seek to rely upon alternative legal means for the resolution of water-related disputes (McIntyre, 2018). These have included the negotiation of *ad hoc* inter-State settlement arrangements, reliance upon compliance mechanisms established under international water resources agreements or multilateral environmental agreements, or the establishment of specialised treaty-based civil liability regimes for certain classes of hazardous activity. Nevertheless, such initiatives have had very limited success in addressing what is likely in the near future to become an increasingly common source of inter-State disagreement.

In recent years, however, the parameters of the no-harm rule have received welcome judicial elaboration, at least as it applies in the context of environmental harm in international watercourses, which may encourage watercourse States to rely more upon it, both as a substantive rule guiding inter-State cooperation over shared water resources and, ultimately, as a ground of action in international water disputes. Notably, the deliberations of the International Court of Justice (ICJ) in the 2010 *Pulp Mills* case and the 2015 *San Juan River* cases provide some, though not entirely consistent, guidance as to the substantive and procedural aspects of the due diligence measures demanded of State actors under the principle, and of the functional interaction between each of these categories of measures. In addition, the Permanent Court of Arbitration (PCA) Tribunal established in the 2013 *Kishenganga Arbitration* has highlighted a watercourse State's failure to maintain minimum environmental flows in an international watercourse as an actionable breach of the general requirements of international water law. Of greatest significance, perhaps, the 2015 and 2018 judgments of the ICJ in the joined *San Juan River* cases, in which the Court recognised the loss of ecosystem services associated with a watercourse State's riparian rights as amounting to compensable material damage, and in which the Court was prepared to quantify the monetary value of such ecological damage for the purpose of assessing and awarding compensation, may herald a new era for the no-harm principle in the field of international water law, and beyond, in terms of its normative clarity and of the ultimate justiciability of its substantive values.

Origins of the 'No-Harm' Rule

Though scholars can trace the foundations of the duty of States to prevent significant transboundary harm to the work of Grotius in the 17th century (Hessbruegge, 2003/4), it truly emerged in State, judicial and arbitral practice in the late 19th and early 20th centuries with recognition of the duty of States to take reasonable measures to protect aliens within their territory (Dunn, 1932). This reciprocal duty evolved in step with ever greater movement of citizens across territorial borders as a way of compelling host States to ensure the physical protection of foreigners and of foreign property interests, particularly within emerging nation jurisdictions (ILA Study Group, 2014). Building upon earlier international jurisprudence (*Alabama Claims Arbitration*, 1872), this duty extended from the beginning to cover harm caused by private actors within a host State's territory, and comprised both a duty to protect foreign citizens from private criminal acts and a duty to prosecute and punish those who caused injury to aliens and their property. This was apparent in the seminal *Lac Lanoux* case,

where the Arbitral Tribunal elaborated the relevant rules of international law to which '[a]ll still and running water, whether in the public or private domain, shall be subject' (*Lac Lanoux Arbitration,* 1957, para. 1063). It was also clear from the beginning, however, that the no-harm rule was a "due diligence" obligation, imposing requirements upon States in terms of their conduct, rather than in terms of the result to be achieved. Thus, in the *Wipperman* Case the US-Venezuela Mixed Claims Commission stated that no State is responsible for acts of individuals 'as longs as reasonable diligence is used in attempting to prevent the occurrence or recurrence of such wrongs' (ILA Study Group, 2014).

The application of the no-harm rule to cases of transboundary environmental damage can be traced back to the *Trail Smelter* case (*Trail Smelter Arbitration,* 1941), where a private Canadian operator located close to the US border caused significant pollution within the territory of the latter leading to the establishment by the two States of an arbitral tribunal to resolve the resulting inter-State dispute (French, 2018). The Tribunal famously found that

> 'under the principles of international law … no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.'

Though the Tribunal had little need in this case to deliberate upon the nature of the preventive measures required to satisfy the due diligence expected of the State of origin, as the two States had already settled the question of Canadian legal responsibility for the effects of the transboundary pollution, it did accept that any due diligence standard should have regard to the capacity of Canada, through the deployment of emissions control technologies, to limit transboundary damage. (Stephens, 2009; ILA Study Group, 2014).

The generally applicable customary duty of prevention as applied to environmental harm has been consistently endorsed in international declarative practice, notably in Principle 21 of the 1972 Stockholm Declaration and Article 10 of the 1987 Principles and Recommendations adopted by the Bruntland Commission's Expert Group on Environmental Law, and is now codified in Principle 2 of the 1992 Rio Declaration, which links it to each State's right to exploit its natural resources, including, presumably, freshwater resources. Principle 2 provides that

> 'State have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.'

The legal nature of the duty of prevention is further developed by the International Law Commission's (ILC) 2001 Draft Articles on Prevention, which apply quite generally to 'activities not prohibited by international law which involve a risk of causing significant transboundary harm through their physical consequences' (Draft Article 1), and are 'primarily concerned with the management of risk and emphasise the duty of cooperation and consultation among all States concerned'.

Numerous eminent commentators have confidently concluded that the duty of prevention has achieved the status of customary international law (*e.g.* Wolfrum, 1990; Brown Weiss *et al*, 1998). Dupuy provides an articulation of the normative core of the no-harm rule 'on the basis of a broad comparison of treaty law, international resolutions, and regional practice', which requires that States

> ‘shall take in good faith and with all due diligence, appropriate measures to prevent transfrontier pollution by elaborating, in particular, rules and procedures adapted to the requirements of the protection of the environment, and see to it that these are effectively applied’ (Dupuy, 1991).

While a detailed survey State and treaty practice in the field of international environmental law is entirely beyond the scope of this article, it is beyond question that the no-harm rule has long been firmly established in the area, so much so that ‘[w]e could almost consider that the other customary rules [of international environmental law] simply derive from it’ (Maljean-Dubois, 2011). In *Pulp Mills*, the ICJ appeared to regard prevention as the wellspring of a range of other customary environmental rules, such as that requiring environmental impact assessment, all of which function to discharge the due diligence obligations inherent to the duty of prevention (McIntyre, 2013). At any rate, it is perfectly clear that any comprehensive survey of State treaty practice specifically related to international watercourses (Fuentes, 1998) will demonstrate that

> ‘watercourse States have for some considerable time included, as a matter of course, in instruments relating to the management and utilisation of international watercourses, express provisions requiring that States refrain from causing or permitting injury or damage to other watercourse States by virtue of environmental pollution’ (McIntyre, 2007).

There can be no doubting judicial recognition of the status of the duty of prevention, and of its relevance in the field of international water law. Recognising that ‘the principle of prevention, as a customary rule, has its origins in the due diligence that is required of a State in its territory’ (ICJ, *Pulp Mills* Case, 2010, para. 101), the International Court of Justice restated its own earlier formulation of the rule as ‘every State’s obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States’ (ICJ, *Corfu Channel Case*, 1949, p. 22). The Court in *Pulp Mills* also emphatically restated its own earlier finding that the no-harm rule ‘is now part of the corpus of international law relating to the environment’ (ICJ, *Legality of the Threat or Use of Nuclear Weapons*, 1996, para. 29), which the Court clearly understands as including the sub-field of international water law. The Court reproduced this earlier endorsement of ‘[t]he existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States and of areas beyond national control’ (ICJ, *Legality of the Threat or Use of Nuclear Weapons*, 1996, para. 29) as evidence of ‘the great significance that it attaches to respect for the environment, not only for States but also for the whole of mankind’ (ICJ, *Gabčíkovo-Nagymaros Project*, 1997, para. 53).

State responsibility for significant harm

Though the ‘no-harm’ rule, and its direct applicability in the context of environmental harm to shared water resources, is universally accepted by States and, therefore, very firmly established in international law, we can point to very few water-related inter-State disputes which have led to a finding of responsibility on the part of one or more of the parties for breach of this obligation. Despite decades of arduous work and deliberation by the International Law Commission (ILC, 2001 Draft Articles on State Responsibility; ILC, 2001 Draft Articles on Prevention of Harm; ILC, 2006 Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities) primarily aimed at clarifying the relevant secondary rules of international law on State responsibility, the position remains somewhat confused and inconclusive (McIntyre, 2018). Scholars continue to debate the main principles and forms of State responsibility arising, including fault-based

responsibility, strict responsibility for unlawful acts and/or absolute responsibility for harm caused by extremely dangerous activities, as well as the types of harm and the categories of acts or omissions of States to which each might apply (Barnidge, 2006; Pisillo Mazzeschi, 1991).

However, The ILC's 2001 Draft Articles on State Responsibility, which are generally taken to provide the most authoritative statement on the position in customary international law, take an 'essentially neutral position' on such issues (Crawford, 2007), with Article 2 defining an "internationally wrongful act of a State" as 'conduct consisting of an action or omission [that]: (a) is attributable to the State under international law: and (b) constitutes a breach of an international obligation of the State'. As a key architect of the ILC's 2001 Draft Articles, Crawford explains that '[i]f the primary rules require fault (of a particular character) or damage (of a particular kind) then they do; if not, then not' (Crawford, 1999). It is increasingly apparent, therefore, 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' Barnidge, 2006). Such "primary rules" may be described as 'those customary or treaty rules laying down substantive obligations for States', and such "secondary rules" as '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' (Cassese, 2005). According to Crawford and Olleson, such "secondary rules" can be understood as the 'framework for the application of these [primary] obligations, whatever they may be' (Crawford and Olleson, 2005). The commentary to the 2001 Draft Articles on State Responsibility confirms this position, 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'.

It is quite clear that general international law relating to the use and protection of international watercourses creates a regime of State responsibility for breach of due diligence obligations owed by the State, where due diligence may be considered 'as an objective and international standard of behaviour' (Pisillo Mazzeschi, 1991), yet a standard that can only be identified having due regard to the particular circumstances of each case. As Barnidge explains:

> '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' (Barnidge, 2006).

He might easily have had in mind the 'no-harm' rule as applied in international water law, and as codified in Article 7 of the 1997 UN Watercourses Convention and Article 2(1) of the 1992 UNECE Water Convention, where the rule appears to be subordinated to, or at least informed in its application by, the principle of equitable and reasonable utilisation, 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 distributive nature of the equity which characterizes the apex principle of equitable and reasonable utilization, and international water law more generally, simply reflects the unique dependence of people upon water as a natural resource, while the principle's flexibility and resulting normative indeterminacy reflects the fact no two river basins are remotely similar – ecologically, hydrologically, demographically, economically, socially, politically or culturally. These realities have tended to obscure the parameters of the due diligence standard of conduct expected of watercourse States and, as a consequence, the practical application of the no-harm rule in international water law.

It is quite clear from the 2001 ILC Draft Articles on State Responsibility, however, 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'. 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 might include a State's failure to regulate or prevent pollution of an international watercourse or aquifer or over-abstraction of its waters by a non-State actor.

Due Diligence

It is quite clear that due diligence-based standards of conduct on the part of the State are absolutely central to any determination of the normative content of the no-harm rule and, in turn, to the question of State responsibility for its breach. However, these same standards can be understood as being abstract, elusive and in flux (Duvic-Paoli, 2018). "Due diligence" is generally employed in international law to denote a notionally similar standard of care required in a range of diverse contexts. According to one comprehensive study, the concept

> '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' (ILA Study Group, 2016).

Aside from its inherent flexibility, the due diligence standard allows States a degree of autonomy, which coheres with ideas of sovereign discretion and might generally be expected to encourage wider participation in treaty and customary regimes (ILA Study Group, 2016). Of course, an open-ended nature of standards of due diligence also offers convenience, obviating the need to agree precise international rules, which might prove very difficult in practice, and may even prove premature where State practice and practicable standards are still evolving. 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' (Koskenniemi, 1989; ILA Study Group, 2016). More generally in this regard, 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' (Koskenniemi, 1989). This search for 'equitableness' might be regarded as the defining characteristic of international water law.

<u>Generally Applicable Standards</u>

In its 2001 Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities, the ILC identifies a general duty of prevention, comprising a due diligence obligation on the State of origin to take all reasonable preventive and/or mitigating measures. Draft Article 3 provides that '[t]he State of origin shall take all appropriate measures to prevent significant transboundary harm or at any event to minimize the risk thereof' and

reflects general State practice, particularly practice in the field of international environmental law (ILA Study Group, 2014). Referring expressly to Draft Article 7 of the Commission's 1994 Draft Articles on the Law of the Non-Navigational Uses of International Watercourses, the Commentary to Draft Article 3 provides a very clear account of the normative nature of this firmly established customary obligation:

> 'The obligation of the State of origin to take preventive or minimization measures is one of due diligence. It is the conduct of the State of origin that will determine whether the State has complied with its obligation under the present articles. The duty of due diligence involved, however, is not intended to guarantee that significant harm be totally prevented, if it is not possible to do so. In that eventuality, the State … [must] exert its best possible efforts to minimize the risk. In this sense, it does not guarantee that the harm would not occur' (ILC 2001 Draft Articles on Prevention).

This understanding of the nature of the duty to prevent is entirely consistent with the position put forward in the UN Watercourses Convention, and generally considered to be reflective of customary international water law, whereby prevention is secondary to, and subordinated to, the overarching cardinal principle of international water law, that of equitable and reasonable utilisation. Therefore, where a particular use of shared water resources represents the most equitable and reasonable allocation of the benefits deriving therefrom having regard to all relevant circumstances, any resulting harm to another watercourse State may have to be tolerated, though every effort should be made to minimize such harm and appropriate compensation might be due to the injured State (UN Watercourses Convention, Article 7(2)).

According to the ILA Study Group on Due Diligence, '"[r]easonableness" is a golden thread in determining which measures States should take to act in a duly diligent manner' (ILA Study Group, 2016), and one commentator describes due diligence as 'a flexible reasonableness standard adaptable to particular facts and circumstances' (Barnidge, 2006). Bearing in mind that Article 5(1) of the UN Watercourses Convention, which can safely be assumed to embody the cardinal rule all informing normative requirements of customary international water law, requires watercourse States to 'utilize and international watercourse in an equitable and reasonable manner', it is instructive that the User's Guide to the Convention advises that,

> 'In determining what constitutes a reasonable use, the "reasonable man" test can be applied to create an objective standard against which conduct can be measured … Reasonableness … encompasses the contemporary conception of rationality and takes factors like the stage of development of a state into consideration' (Rieu-Clarke, Moynihan and Magsig, 2012).

The User's Guide proceeds to shed some light on the functional interrelationship between the opaque requirements of reasonableness and equity, at least in the context of international water law, by explaining that 'even if a use of an international watercourse has been identified as reasonable, it might still be challenged when compared with other uses through the lens of equity'.

Closely linked to the general standard of reasonableness, is 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' (ILA Study Group, 2016). 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 is in a position to exercise over its territory and over non-State actors operating therein.

The Commentary to ILC Draft Article 3 on Prevention provides some broad guidance on the normative parameters of '[a]n obligation of due diligence as the standard basis for the protection of the environment from harm', advising, for example, that it requires policies which 'are expressed in legislation and administrative regulations and implemented through various enforcement mechanisms' (ILC 2001 Draft Articles on Prevention). Consistent with the *Alabama* Case (*Alabama Claims Arbitration*, 1872), however, it makes it quite clear that the required standard of due diligence has its basis in international law, rather than in national legislation, advising that 'it imposes an obligation on the State of origin to adopt and implement national legislation incorporating accepted international standards'. The State of origin is expected to put in place appropriate 'administrative, financial and monitoring mechanisms', requiring that it should have in place a system for the prior authorization of relevant activities and that it should play an active role in their regulation (ILC Draft Articles 6 and 7 on Prevention). Another aspect of due diligence requires that natural or juridical persons at 'risk of significant transboundary harm' should enjoy access to justice in the State of origin, unless the States concerned have agreed on alternative means of redress (ILC Draft Article 15 on Prevention).

The Commentary also links Draft Article 3 to Draft Articles 9 and 10, which require inter-State consultation on the preventive measures to be adopted, having regard to the need to achieve an equitable balancing of the interests of the States concerned. In a manner strongly reminiscent of the international water law principle of equitable and reasonable utilization (UN Watercourses Convention, Article 6(1)), Draft Article 10 provides an open-ended list of factors relevant to such equitable balancing of States' interests. These include: the degree of risk of significant harm (including harm to the environment) and the availability of means for its prevention or minimization; the economic and social importance of the harmful activity in question; the extent to which either State might contribute to the costs of prevention; the economic viability of the activity in question having regard to the costs of prevention (and the availability of alternatives); and the standards of prevention otherwise applied by the affected State. Highlighting the obvious parallels with the principle of equitable and reasonable utilization as articulated in the UN Watercourses Convention, the Commentary to Draft Article 10 explains that this provision 'draws its inspiration from article 6 of the Convention on the Law of the Non-navigational Uses of International Watercourses'. It further illustrates the factors set out in Draft Article 10 by referring to corresponding international water law cases (*Donauversinkung* Case, 1927) and conventions (1976 Convention on the Protection of the Rhine against Pollution from Chlorides and 1994 Additional Protocol; 1973 Agreement on the Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River).

The Commentary to Draft Article 3 further suggests that the duty to prevent only applies to harm that is reasonably foreseeable, stating that '[i]n general, in the context of prevention, a State of origin does not bear the risk of unforeseeable consequences to States likely to be affected by activities within the scope of these articles'. However, the Commission also advises that the obligation to 'take all appropriate measures … extends to taking appropriate measures to identify activities which involve such a risk'. More generally as regards a State of origin's duty to ensure that it is adequately informed, the Commentary provides that 'due diligence is manifested in reasonable efforts by a State to inform itself of factual and legal components that relate foreseeably to a contemplated procedure and to take appropriate measures, in timely fashion, to address them'. In addition, the Commentary invokes the precautionary principle as articulated in Principle 15 of the Rio Declaration, explaining that

preventive measures taken under Article 3 'could involve, *inter alia*, taking such measures as are appropriate by way of abundant caution, even if full scientific certainty does not exist, to avoid or prevent serious or irreversible damage'. In discussing the risk of harm to the environment as a factor involved in the equitable balancing of interests when identifying appropriate preventive measures, the Commentary to Draft Article 10 also emphasizes the relevance of the precautionary approach. The ILA Study Group on Due Diligence explains, as regards the due diligence conduct of a State of origin under the no-harm rule, that an injured State must demonstrate 'that the State has not put in place the legislative and regulatory framework which would have enabled it to become aware of the risk, to measure its probability and gravity, and to take measures aimed at preventing the harm' (ILA Study Group, 2014). Clearly, measures requiring EIA of potentially harmful projects and activities and facilitating effective ongoing inter-State exchange of relevant water-related data and information have a central role to play discharging a watercourse State's due diligence obligations under international water law.

In each environmental context in which the concept of due diligence is employed in international law, a number of variable factors may dictate to some extent the standard of care expected of a State of origin. The key factor is that of the degree of risk and hazard involved, to which the degree of care to be exercised should be proportional. According to the ILC Commentary to Draft Article 3 on Prevention, 'activities which may be considered ultrahazardous require a much higher standard of care in designing policies and a much higher degree of vigour on the part of the State to enforce them'. The operation of this factor is elaborated upon somewhat in Draft Article 10(a) and (c), which requires, in the identification of appropriate preventive measures, a balancing of the degree of risk of significant transboundary (environmental) harm against the availability of means of preventing or minimizing such risk and the possibility of repairing the harm or restoring the environment. The ILA Study Group also stresses the relative importance of the hazard involved, concluding:

> 'In international environmental law, a higher standard of care is required when inherently hazardous activities are undertaken; here, the degree of diligence varies in light of the level of risk. Advances in scientific understanding and technological capabilities can also increase the degree of care required over time' (ILA Study Group, 2016).

The other key factor to be taken into account in determining whether a State has exercised adequate due diligence is that of the State's degree of economic development and its related governance and technical capacity (*Trail Smelter Arbitration,* 1941). The Commentary to Draft Article 3 explains that

> 'It is, however, understood that the degree of care expected of a State with a well-developed economy and human and material resources and with highly evolved systems and structures of governance is different from States which are not so well placed.'

While this approach reflects the principle of common but differentiated responsibilities set out in Principle 3 of the Rio Declaration, it remains clear that an economically underdeveloped State lacking such capacity is not exempt from its obligations under the no-harm rule. In every case 'vigilance, employment of infrastructure and monitoring of hazardous activities in the territory of the State, which is a natural attribute of any Government, are expected' (ILC 2001 Draft Articles on Prevention). The capacity of the State of origin might be particularly relevant in taking appropriate preventive measures on the basis of the precautionary principle (ILC 2001 Draft Articles on Prevention). The Seabed

Disputes Chamber of the International Tribunal of the Law of the Sea, has confirmed that precautionary measures envisaged under Rio Principle 15 must be applied by States 'according to their capabilities', though it also found that '[t]he reference to different capabilities in the Rio Declaration does not, however, apply to the obligation to follow "best environmental practices"' where these are set out in an applicable measure (ITLOS, *Seabed Mining Advisory Opinion*, 2011, para. 131).

Context-Specific Standards

In its 2011 Advisory Opinion, the ITLOS Seabed Disputes Chamber succinctly outlines the 'variable' character of due diligence obligations, such as the no-ham rule:

> 'The content of "due diligence" obligations may not easily be described in precise terms. Among the factors that make such a description difficult is the fact that "due diligence" is a variable concept. It 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' (ITLOS, *Seabed Mining Advisory Opinion*, 2011, para. 117).

Therefore, while the ILC has developed authoritative secondary rules on the scope of a State's international legal obligation to prevent transboundary harm, and of that State's responsibility for breach thereof (ILC, 2001 Draft Articles on Prevention; ILC, 2001 Draft Articles on Responsibility), 'it is to primary rules of conduct, rather than secondary rules of responsibility, that we must look to determine the applicable standard of behaviour' (ILA Study Group, 2014). Despite understandable concerns regarding normative fragmentation over divergences in the sectoral application of due diligence standards (ILA Study Group, 2014), there is no inherent contradiction between the very general standard of due diligence articulated in the *Corfu Channel* Case and the more specific manifestations required in particular sub-branches of international law, such as international environmental or water resources law (ILA Study Group, 2014).

In this regard, the ILC Commentary to the Draft Articles on Prevention expressly refers to provisions of a number of multilateral environmental agreements (MEAs), 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'. Creating a clear link to the practice of international water law, MEA provisions expressly listed include Article 2(1) of the 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes. Indirectly relevant provisions listed include Article 2(1) of the 1991 Convention on Environmental Impact Assessment in a Transboundary Context.

As a particularly environmentally progressive example of the primary rules applying to shared water resources, the 1992 UNECE Water Convention provides some detail regarding appropriate measures 'to prevent, control and reduce transboundary impact'. Article 2 expressly stipulates measures for the control of pollution, for ecologically sound and rational water management, for conservation of water resources, and for conservation and restoration of ecosystems. It further provides that such measures shall be taken at source, where possible, and 'shall not result in a transfer of pollution to other parts of the environment'. In addition, Article 2 directs that, in taking such measures, the Parties shall be guided by the precautionary principle, the polluter pays principle and the principle of inter-generational

equity. It requires that the Parties cooperate in this regard 'in order to develop harmonized policies, programmes and strategies covering the relevant catchment areas'. Article 3 goes further still, requiring that 'the Parties shall develop, adopt, implement … relevant legal, administrative, economic, financial and technical measures' for, *inter alia*, control of pollution emissions through low- and non-waste technology, licensing and monitoring of point-source waste water discharges, discharge limits based on best available technology, special requirements related to the protection of ecosystems, treatment of municipal waste water, application of best available technology to control nutrient inputs from point and non-point sources, application of environmental impact assessment, protection of groundwaters, and contingency planning for accidental pollution. More generally, it requires the setting of comprehensive emissions limits for discharges and of water-quality objectives and criteria and also that, in so doing, Parties have regard to those industries or hazardous substances controlled under existing applicable conventions or regulations. Though not quite as detailed, Article 21 of the UN Watercourses Convention requires States, in preventing, reducing and controlling pollution of an international watercourse, to take steps to harmonise their policies and to agree joint measures, such as:

(a) Setting joint water quality objectives and criteria;
(b) Establishing techniques and practices to address pollution from point and non-point sources;
(c) Establishing lists of substances the introduction of which into the waters of an international watercourse is to be prohibited, limited, investigated or monitored.

Significantly, Article 20 of the Convention requires that '[w]atercourse States shall, individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses'.

While these two globally applicable framework water conventions provide a rich and helpful source of primary rules to inform the due diligence required of watercourses States under the duty of prevention in international water law, it is important to remember that the duty remains one relating to conduct rather than to result, and that certain variable factors might impact upon the standard of conduct expected in the circumstances. Characterising the general obligation of prevention as it appears in most environmental conventions, one commentator observes that

> 'It is clear that such agreements do not establish the strict obligation not to pollute (obligation of result), but only the obligation to "endeavour" under the due diligence rule to prevent, control and reduce pollution. For this reason the breach of such obligation involves responsibility for fault (*rectius:* for lack of due diligence)' (Pisillo-Mazzeschi, 1991).

Substantive and Procedural Due Diligence

In Pulp Mills, the Court elaborated upon both the procedural and substantive aspects of the duty of prevention, as well as upon the intricate interrelationship between these aspects. Substantive requirements would include the adoption and effective enforcement of appropriate domestic legal controls on water abstraction or pollution or on the protection of the shared watercourse and its related ecosystems. Procedural due diligence includes the requirements for early notification and consultation and, where necessary, negotiation in respect of potentially harmful planned projects or uses of international water resources. It highlighted that each of these requirements could only meaningfully be performed in conjunction with an EIA of the likely transboundary effects. The Court regarded procedural

cooperation and substantive rules as 'intrinsically linked' functionally (*Pulp Mills* case, 2010, para. 68), explaining that

> 'it is by cooperating that the States concerned can jointly manage the risks of damage to the environment that might be created by the plans initiated by one or other of them, so as to prevent the damage in question, through the performance of both procedural and substantive obligations … whereas the substantive obligations are frequently worded in broad terms, the procedural obligations are narrower and more specific, so as to facilitate the implementation …[of substantive rules] … through a process of continuous consultation between the parties concerned' (*Pulp Mills* case, 2010, para. 77).

The Court has confirmed the functional interdependence of the substantive and procedural requirements of international water law in the joined *San Juan River* cases. It stated:

> 'If 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 prevent or mitigate that risk (*San Juan River* cases, 2015, paras. 104 and 168).

Ecological Due Diligence

The ILA Study Group points out that '[t]he content of the obligation may also change in line with scientific and technological advances' (ILA Study Group, 2014). At the same time, once can clearly observe in the field of international water law

> 'recent growth in ecological awareness and developments in scientific understanding, a corresponding emphasis in State and treaty practice on the legal obligations of States regarding the protection and preservation of international watercourse ecosystems, and the emergence of sophisticated methodologies that inform the normative implications of such obligations' (McIntyre, 2018; McIntyre, 2014).

Such methodologies include the increasingly detailed parameters for assessing minimum environmental flows in a shared watercourse (Gooch, 2016), which have already facilitated judicial recognition of a corresponding legal obligation to maintain a minimum environmental flow regime (*Kishenganga Arbitration*, 2013, para. 454), and the rapidly evolving ecosystem services concept (Millenium Ecosystem Assessment, 2005; Rieu-Clarke and Spray, 2013), which focuses on the essential natural services furnished by functioning riverine ecosystems and provides a methodology for the economic and social valuation of natural ecosystems. The ICJ has recently 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' and proceeded to assign a monetary value in compensation for four specific classes of ecosystem services (*Certain Activities*, 2018, paras. 42 (emphasis added) and 75-87).

Ecosystems obligations are not new in international water law. For example, the 1992 UNECE Water Convention expressly requires Parties to apply 'the ecosystems approach' (Article 3(1)(i)) and defines the "transboundary impact", that the Parties are to 'take all appropriate measures to prevent, control and reduce' (Article 2(1)), to include 'effects on human health and safety, flora, fauna, soil, air, water, climate, landscape … or the interaction among these factors' (Article 1(2)). However, new scientific and methodological advances will inevitably inform the practical implications of the relevant due diligence requirements.

Highlighting the flexibility and adaptability of the due diligence concept, the recent ILA study notes that, 'as international law develops into new, more complex areas … due diligence is increasingly viewed as an important tool in responding to such challenges' (ILA Study Group, 2016). It also notes that '[t]he extent of risk or advances in scientific knowledge that allow us to perceive more accurately the extent of risk (either higher or lower) will also influence the degree of diligence required'. Clearly such the methodological developments outlined above can do much to clarify the precise nature of the conduct expected of a State of origin under the duty of prevention - in the specific context of international watercourses and beyond.

Transboundary 'harm'

In the field of international water law, global, regional and basin-level conventions have tended to address a range of problems, such as maintenance of minimum flow requirements (1995 Mekong River Agreement, Article 6), prevention of transboundary impacts (1992 UNECE Water Convention, Article 2) and the protection of water quality (1994 Treaty of Peace between Israel and Jordan, Article 3 Annex II), thereby providing an indication of the full extent of the range of species of "harm" that States are required to take appropriate measures to prevent. Such an extensive and diverse range of harm potentially covered by the duty of prevention is acknowledged by a leading authority in the field, who explains that

> '"[h]arm" may take the form of a diminution of quantity of water, due *e.g.* to new upstream works or pumping of groundwater … [or] … could also result from, *e.g.* pollution, obstruction of fish migration, works on one bank of a contiguous watercourse that caused erosion of the opposite bank, increased siltation due to upstream deforestation or unsound grazing practices, interference with the flow regime, channeling of a river resulting in erosion of the riverbed downstream, conduct having negative impacts on the riverine ecosystem, the bursting of a dam, and other actions in one riparian state that have adverse effects in another, where the effects are transmitted by or sustained in relation to the watercourse' (McCaffrey, 2001).

It appears, therefore, that the obligation to prevent harm is not confined to one State's direct use of a watercourse that causes harm to another State's use thereof, as 'activities in one State not directly related to a watercourse (*e.g.* deforestation) may have harmful effects in another State (e.g. flooding)' (McCaffrey, 2001). Similarly, the ILA's commentary to Article X of the Association's seminal Helsinki Rules notes that, for the purposes of the no-harm rule, 'an injury in the territory of a State need not be connected with that States use of the waters' (ILA, 1966). As regards the significance threshold for transboundary harm that is to be prevented under international water law (UN Watercourses Convention, Article 7(1)), the ILC explained in 1988, in an era when international water law was principally concerned with economic uses of and benefits derived from shared water resources, that '[t]here must be a real impairment of use, i.e. a detrimental impact of some consequence upon, for example, public health, industry, property, agriculture or the environment in the affected State' (ILC, 1988).

Today, however, impacts upon the functioning of aquatic ecosystems and/or loss of ecosystem services would certainly be included among the significant detrimental impacts upon the environment envisaged by the Commission (*San Juan River* cases, 2015). It is quite clear that interference with the minimum environmental flow of an international watercourse could now be regarded as having caused significant harm (*Kishenganga Arbitration,* 2013, para. 454; *San Juan River* cases, 2015, para. 105 and 119). Similarly, any material interference with or loss of ecosystem services provided by the riverine ecosystem of a shared

watercourse may amount to actionable significant harm. It is notable in this regard that the ICJ has found in respect of four categories of ecosystem services (out of 22 types of ecosystem services identified in the dispute, and six types for which compensation was claimed) that:

> 'These activities have significantly affected the ability of the two impacted sites to provide the above-mentioned environmental goods and services. It is therefore the view of the Court that impairment or loss of these four categories of environmental goods and services has occurred and is a direct consequence of Nicaragua's activities' (*Certain Activities*, 2018, paras. 75).

Conclusion

While the flexibility and adaptability required of the duty of prevention, and of the due diligence standard of State conduct which it implies, inevitability result in uncertainty, it must be recognized that this is a problem that characterizes the application of substantive rules across the field of international water law. Such normative indeterminacy reflects the fact that no two international river basins are similar. However, the advent of detailed rules and related evaluation and assessment methodologies regarding protection of international watercourse ecosystems and maintenance of the ecosystem services provided thereby lend a welcome a degree of clarity to the relevant primary rules on international water law. This can only shed light on the due diligence conduct expected of watercourse States under international law.

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