



# The role of international regimes and courts in clarifying prevention of harm in freshwater and marine environmental protection

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## Abstract

The international legal architecture to manage freshwater and ocean ecosystems does not adequately provide for the interconnected nature of these ecosystems or the transboundary harm flowing between them. Pollution from land-based sources exemplifies this issue where plastic, agricultural run-off, discharge of nutrients and pesticides and untreated sewage accounts for approximately 80% of all marine pollution globally and is not adequately addressed by international law. This paper examines the following question: What role have international freshwater and marine regimes and courts played in clarifying the normative content of the due diligence rule to avoid significant transboundary environmental harm, including harm from land-based sources of pollution? The discussion demonstrates that although international regimes have made a substantial contribution to clarifying the no-harm rule, significant gaps remain. For example, the need for further guidance regarding the obligation to take ‘all appropriate measures’ to avoid transboundary harm or the previous absence of due diligence standards to prevent marine pollution from land-based sources. This paper demonstrates how courts have contributed to a coherent interpretation of the no-harm rule across international freshwater and oceans law. It pinpoints instances where courts have taken a progressive approach, taking account of the latest developments in technology, assessing an acceptable level of risk, considering the interconnected ecosystem impacts of developments and quantifying compensation for environmental harm and also identifies examples where courts have not gone far enough. Finally, this paper discusses how regional seas regimes and recent global soft law developments have taken progressive steps towards addressing harm from land-based sources of pollution.

**Keywords** Transboundary environmental harm · Land-based sources of marine pollution · International courts · International water law · Law of the sea · Regional seas regimes

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## 1 Strengthening international law on interconnected freshwater and marine ecosystems

Billions of people worldwide rely on healthy freshwater and ocean ecosystems to provide livelihoods, jobs and food. Yet we continue to pollute, accelerate extinction and alter the natural world at an unprecedented pace. Biodiversity in both marine and freshwater ecosystems is declining (FAO 2018; Janse et al. 2015). The recent Intergovernmental Panel on Climate Change (IPCC) special report on oceans concluded that human activities are making the oceans increasingly inhospitable to marine life (IPCC 2019) and freshwater fish species are also declining (IUCN 2019). Today, more than 15% of watersheds that experience groundwater extraction have already slipped past a critical ecological threshold—and by 2050, environmental flow limits could be reached for up to 79% of the world's basins in which there is groundwater pumping (de Graaf et al. 2019). These findings create an urgent call to action for improving existing law and policy to protect freshwater and marine ecosystems, which are inextricably interlinked. These interlinkages are demonstrated through the issue of marine pollution from land-based sources and activities which cause widespread pollution of our oceans (Kirk and Popattanachai 2018). Another example of this interconnection is the alteration of waterways for irrigation, hydropower and flood protection which affects biodiversity via disruption of the natural flow regime and blocks species migration routes from river to sea (Moynihan 2021). With increasing pressure and competition to utilize scarce transboundary water and marine resources, incidents of transboundary environmental harm through ill-conceived infrastructure development or other activities continue to create conflict between and within states and damage fragile overlapping freshwater and marine ecosystems (Moynihan 2021).

The international legal architecture to manage the freshwater and ocean environment does not adequately provide for the interconnected nature of these ecosystems. The two global legal frameworks at the heart of this discussion include the 1997 UN Watercourses Convention which provides a regime for addressing environmental protection and the avoidance of harm to international watercourses and the 1982 UN Law of the Sea Convention which addresses harm to and protection of the marine environment. Implementation of the underlying rules, including the general obligation(s) to protect the environment and the related duty to avoid or mitigate transboundary environmental harm of these two overarching framework conventions is disjointed. Both regimes have weak provisions to address pollution or ecosystem damage which connects or flows between freshwater and marine ecosystems and scarce legal research exists to address this issue. The topic of pollution from land-based sources exemplifies this problem (including plastic, agricultural run-off, discharge of nutrients and pesticides and untreated sewage) and accounts for approximately 80% of all marine pollution, globally (Jambeck et al. 2015; UNGA 2004). This pollution occurs in the river basin catchment and enters international rivers through dumping or discharges into groundwater or surface water tributaries and is not adequately addressed by either regime. Hence this paper examines the following question: What role have international regimes and courts played in clarifying the normative content of the due diligence rule to avoid significant transboundary environmental harm, including harm from land-based sources of pollution? The first objective of this paper is to examine how international freshwater and ocean regimes and international courts, have contributed to normative development of the no-harm rule, pinpointing opportunities for normative cross-fertilization between these two regimes and identifying gaps in understanding. This paper then identifies

instances where courts have filled some of the gaps through clarifying the content of the due diligence rule, taking account of the latest developments in technology, assessing an acceptable level of risk and considering the interconnected ecosystem impacts of developments or quantifying compensation for environmental harm. The paper also identifies examples where the courts have not gone far enough in clarifying the normative content of transboundary harm. The second objective of this paper is to examine the (lack of) interaction between freshwater and marine law through the topic of pollution from land-based sources to understand how this type of environmental harm is addressed as it travels from source to sea? In doing so, the paper outlines the previous absence of coherent due diligence standards to prevent marine pollution from land-based sources. Finally, this paper discusses how regional seas regimes and recent global soft law developments have taken progressive steps towards addressing land-based sources of pollution, but still do not go far enough to solve this burgeoning problem.

## **2 Transboundary environmental harm in global freshwater and marine treaties**

### **2.1 Due diligence harm obligations in international environmental law**

It is an accepted rule of customary international law that states have an obligation to take all appropriate measures to prevent or mitigate significant transboundary environmental harm. States have a corresponding obligation to cooperate in mitigating transboundary environmental risks and emergencies (Birnie et al. 2009). The obligation to prevent and mitigate transboundary harm has been applied and discussed in numerous international cases to a variety of types of transboundary harm. This paper is concerned with the application of the principle in the more recent cases concerning transboundary harm to freshwater and marine ecosystems.

The ‘no-harm’ rule—as an expression in itself—is misleading, as the question is not whether harm has been caused, the test is a due diligence one, whether in fact all appropriate measures have been taken to prevent that harm from occurring. While international courts and international treaties are unified on the existence of an obligation to prevent significant environmental harm, interpretation of what constitutes ‘significant harm’ and ‘appropriate measures’ to prevent or mitigate such harm continues to raise discussion. ‘Harm’ must be significant which means it must be more than detectable but it does not have to be serious or substantial (ILC 2001). The harm must lead to a real detrimental effect on matters such as, human health, industry, property, environment or agriculture in other states (ILC 2001). The ‘significance’ of harm is measured on a case by case basis and varies over time (Birnie et al. 2009).

### **2.2 International water law obligations on harm in the freshwater and marine environment including pollution from land-based sources**

In international water law, Article 7 of the UN Watercourses Convention (UNWC) codifies customary international law on transboundary harm in the context of international watercourses and provides that:

1. Watercourse states shall, in utilizing an international watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to other watercourse states.
2. Where significant harm nevertheless is caused to another watercourse state, the state who causes such harm shall, in the absence of agreement to such use, take all appropriate measures, having due regard for the provisions of Articles 5 and 6, in consultation with the affected state, to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation.

As to the types of harm—in international water law—the type of harm referred to is broader than pollution (Article 21 (2) (UNWC)) and also includes other environmental damage such as harm caused by the introduction of alien species which then alters the ecosystem of the watercourse, as specified by Article 22 of the UNWC. In the *2001 Pulp Mills on the River Uruguay Case (Argentina v. Uruguay)*, the court held that significant harm ‘may result from impairment of navigation, the regime of the river or the quality of its waters’ (para 103).

The UN Watercourses Convention provides limited obligations regarding the avoidance of harm to the marine environment. Article 23 requires states to ‘individually or jointly, take all measures with respect to an international watercourse that are necessary to protect and preserve the marine environment, including estuaries’. The ILC clarifies that this provision ‘does not contain a commitment to protect the marine environment but a duty to manage the watercourse in a manner that does not harm that environment’ (ILC 1994). Although the Watercourses Convention does not explicitly address pollution from land-based sources, the ILC commentary explains that Article 23 addresses harm caused by pollution that is transported into the marine environment by an international watercourse (ILC 1994). It then refers to the law of the sea as the body of law which directly addresses the impact of pollution to the marine environment from land-based sources (ILC 1994). Unfortunately, the law of the sea regime does not provide an adequate framework to deal with this kind of pollution and nor should it be the only regime to do so. International water law needs to evolve to more directly to address this cross-regime problem.

### 2.3 Law of the sea obligations regarding harm to the marine and freshwater environment including pollution from land-based sources

The law of the sea addresses a range of harm, including pollution from land-based sources, pollution from ships, pollution from dumping, pollution from seabed activities, and pollution from or through air.<sup>1</sup> Under the law of the sea, globally the UN Convention on the Law of the Sea (UNCLOS) is the only legally binding regime which imposes general obligations on states to prevent environmental harm. Interestingly, the provision that ‘[s]tates have the obligation to protect and preserve the marine environment’ (Art 192), is not limited to instances which may have the potential to cause transboundary harm. In addition, Article 194(1) stipulates that:

<sup>1</sup> More recently, the Tribunal in the South China Sea Arbitration (12 July 2016) extended the interpretation of ‘harm’ and recognized application of states’ due diligence obligation to protect and preserve the marine environment (Art 192 UNCLOS) to the protection of rare or fragile ecosystems and the habitat of endangered species (Tanaka 2018). Remarkably, the Tribunal appointed experts to have an independent opinion with regard to environmental damages arising from China’s activities.

States shall take, individually or jointly as appropriate, all measures consistent with this Convention that are necessary to prevent, reduce and control pollution of the marine environment *from any source*, using for this purpose the best practicable means at their disposal and in accordance with their capabilities, and they shall endeavour to harmonize their policies in this connection. [emphasis added]

This wording suggests that UNCLOS provides a comprehensive obligation to protect and preserve the marine environment—one which also covers land-based sources of pollution. According to Article 194(2),

states shall take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment, and that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights in accordance with this Convention.

Notably, states are required to take into account ‘internationally agreed rules, standards and recommended practices and procedures’ when adopting laws and regulations to prevent, reduce and control pollution of the marine environment from land-based sources including pollution from rivers and estuaries (Art 207(1)). This means that the due diligence rule to avoid harm to the marine environment from land-based sources explicitly includes harm emanating from rivers and estuaries. UNCLOS does not provide any further clarification on how to address pollution from water bodies. In addition, national laws and regulations regarding seabed activities, dumping and pollution from vessels shall be no less effective than international rules, standards and recommended practices and procedures (see Arts 208–211). This means that states addressing land-based marine pollution may adopt measures which are either more or less stringent than those under international law—a clear indication that prescriptive jurisdiction in this case is favouring national over international law (Tanaka 2016). States are required to enforce their laws and regulations adopted in accordance with Article 207. They shall adopt laws and regulations and take other measures as may be necessary to implement applicable international rules and standards established through competent international organizations or diplomatic conference to prevent, reduce and control pollution of the marine environment from land-based sources (Art 213). Given that the activities which fall within the scope of this due diligence provision vary for each state in accordance with its economic development, this certainly leads to different standards being applied to different states—depending on the economic resources and technological knowhow available. Hence, we can find varying degrees of prevention, reduction or control which may all be in accordance with UNCLOS (Harrison 2017). This means that unless states have individually consented to be bound by specific regional or bilateral agreements, they have a lot of discretion under UNCLOS as to how they tackle pollution from land-based activities including from rivers.

### 3 The role of courts in contributing to coherent interpretation of transboundary harm

#### 3.1 Dilemmas in defining the content of due diligence

The crux of the dilemma in defining the normative content of the due diligence no-harm rule in international law (including water and marine law) resolves around the debate of

what the content of the obligation to take ‘all appropriate measures’ should require. The 1994 ILC Draft Articles provide only broad guidance that the diligence due is ‘proportioned to the magnitude of the subject’ (ILC 1994). The ILC elaborated further on the due diligence content in its 2001 Draft Articles on Prevention of Transboundary Harm from Hazardous Activities providing that the standard of due diligence must be appropriate and proportional to the degree of risk of transboundary harm and issues such as the size of the operation, its location, special climate conditions, materials used in the activity, are among the factors to be considered in determining the due diligence (ILC 2001). In addition, due diligence in ensuring safety requires a state to keep abreast of technological changes and scientific developments (ILC 2001). Linking the overarching obligation to prevent and mitigate transboundary harm to the specific obligation to prevent harm from pollution, the ILC Draft Watercourse Articles state that the obligation to prevent pollution that may cause significant harm includes the duty to exercise due diligence to prevent the threat of such harm (ILC 1994). The above instruments make clear that legal obligations exist prior to any harm occurring.

Courts have played a key role in clarifying and developing the due diligence obligation to avoid harm. The Court in *Pulp Mills* provided clarification on the relationship between these obligations of prevention and due diligence. This case arose out of a contentious dispute between Argentina and Uruguay over the construction and operation of two pulp mills on the bank of River Uruguay which borders the two countries. On the matter of prevention of transboundary harm, the Court confirmed that this is a due diligence obligation of conduct. It gave some indication as to content of this due diligence obligation through interpretation of Article 41 of the 1975 River Uruguay Statute where the

obligation to preserve the aquatic environment, and in particular to prevent pollution by prescribing appropriate rules and measures is an obligation to act with due diligence which entails not only the adoption of appropriate rules and measures, but also a certain level of vigilance in their enforcement and the exercise of administrative control applicable to public and private operators, such as the monitoring of activities undertaken by such operators (para 197).

The Court further elaborated that appropriate measures should correspond with applicable international agreements and technical requirements and must be appropriate to ensure compliance with the rules found in the 1975 Statute. The Court also ruled that environmental impact assessment (EIA) is an essential requirement of discharging this due diligence obligation. The above arguments demonstrate that whilst the UN Watercourses Convention itself provides only an overarching frame for the content of due diligence applied to international water law, the Court has still been able to elucidate a detailed understanding of what should be considered ‘appropriate measures’ to avoid harm based on the facts and legal instruments available in individual cases (Moynihan 2021). A vastly more detailed regime clarifying due diligence obligations in the context of transboundary waters is the pan-regional turned global UNECE water regime which is extensively examined elsewhere (Moynihan 2021). This regional regime has recently been opened up to all UN Members, and if membership does indeed become more global, this will be extremely positive for clarifying no harm in international water law.

Moving to the law of the sea, UNCLOS includes the same kind of overarching broad framework guidance on ‘all appropriate measures’ as the UN Watercourses Convention. Also, like international water law, more detailed clarification has been elucidated in case law and at the regional level. As we have seen, Article 194(2) UNCLOS lays down that ‘states shall take all measures necessary to ensure that activities under their jurisdiction or

control are so conducted as not to cause damage by pollution to other States and their environment [...]. It is important to note that Article 194(1) UNCLOS stipulates that states must use ‘the best practicable means at their disposal and in accordance with their capabilities’, from which follows that states will not always bear the same level of responsibility in preventing marine environmental harm (Harrison 2017). On this matter, the Tribunal in the *Chagos* Arbitration recognized that Article 194(1) ‘is prospective and requires only the United Kingdom’s best efforts’ (para 539). According to Article 194(3)(a) UNCLOS, measures taken pursuant to Part XII of UNCLOS shall include, inter alia, those designed to minimize to the fullest possible extent ‘the release of toxic, harmful or noxious substances, especially those which are persistent, from land-based sources, from or through the atmosphere or by dumping’.

While the Convention has created a comprehensive framework for the protection of the marine environment, it remains rather general, as it fails to specify the content of the due diligence. This is because the main focus of UNCLOS was not based on obligations of state responsibility for damage caused, but on more general and comprehensive rules to protect the marine environment (Tanaka 2016). Arguably, this flexibility has meant that UNCLOS has been able to evolve to address new challenges, and thus the Convention has been able to retain its prominent role for the protection of the marine environment (Harrison 2017), while treaties at the regional level have to flesh out these due diligence obligations.

### 3.2 How have courts linked the substantive rule of no harm to procedural duties?

Courts have made a significant contribution linking the substantive rule to prevent significant transboundary harm to the procedural duties which allow the rule to be implemented. The Court in *Pulp Mills* linked the procedural duty to notify and consult over new projects to the achievement of the due diligence obligation. The Court also stressed the importance of early notification and connected the duty to notify with an obligation to conduct an Environmental Impact Assessment (EIA), confirming for the first time that the obligation to conduct an EIA in circumstances of significant transboundary risk is a requirement of customary international law. *Pulp Mills* was followed in subsequent international ‘water’ cases including the 2013 *Kishenganga* case and the 2015 *San Juan River and Border Activities* case. Although *Pulp Mills* marked progress in clarifying the due diligence harm prevention obligation, for some the Court did not go far enough to clarify the content of due diligence.

A noteworthy case which discussed the extension of the no harm rule to include an obligation to protect environmental flows was the 2013 *Indus Waters Kishenganga Arbitration* – requested in by Pakistan against India under the 1960 Indus Waters Treaty after the parties had failed to resolve a dispute concerning the Kishenganga Hydro-Electric Project. The unclear way in which the Court elucidated an obligation to protect environmental flows from the no harm rule, is discussed elsewhere in this special issue.

The 2015 *San Juan River and Border Activities* case has contributed to linking the due diligence no harm rule to procedural obligations in international environmental and water law (Moynihan 2021). The Court issued guidance on how to approach the assessment of risk which triggers the obligation to conduct an EIA to assess the potential of significant transboundary harm and prevent or mitigate such harm. The Court suggested that a first step would be to conduct a preliminary assessment of the risk posed by an activity to ascertain whether a full EIA would be required. Although the Court did not outline what to include in a preliminary risk assessment, it noted that it would be required where there was a risk of significant harm (from the activities) based on

an objective evaluation of all the relevant circumstances. The Court also stated it will have regard to the nature and magnitude of the project and the context in which it was to be carried out (para 155). Although these are again relatively general statements, the Court did engage in detail with the scientific and technical detail of the case in order to work out how the construction of a road, removal of forest and other excavation activities posed a risk to environmental harm of the receiving area. The Court noted that ‘the presence of internationally protected wetlands heightens the risk of significant damage because it denotes that the receiving environment is particularly sensitive’ (para 155). The Court referred to *Pulp Mills* reiterating that ‘the content of an EIA is reliant on domestic legislation’ (para 104). This was criticized by Judge ad hoc Dugard who argued that the Court should have referred to international standards for example from Article 7 of the ILC’s Draft Articles on the Prevention of Transboundary Harm (Dugard 2015).

Moving to the law of the sea where, since an EIA seeks to detect the environmental impacts and risks of a planned project before it is authorized, it also plays a role in putting procedural flesh on the substantive bones of protecting the marine environment and interconnected freshwater environment from harm. In its 2011 Advisory Opinion, the Seabed Disputes Chamber of ITLOS argued that ‘the obligation to conduct an environmental impact assessment is a direct obligation under the Convention and a general obligation under customary international law’ (para 145). With regards to marine environmental protection, Article 206 of UNCLOS stipulates:

When States have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes to the marine environment, they shall, as far as practicable, assess the potential effects of such activities on the marine environment and shall communicate reports of the results of such assessments in the manner provided in article 205.

Given the transboundary nature of marine pollution, implementing the obligation to conduct an EIA effectively requires international cooperation. Regional seas treaties provide additional guidance in this regard. For example, the 1992 Convention on the Protection of the Marine Environment of the Baltic Sea (1992 Helsinki Convention) lays down a dual obligation: the obligation to undertake an EIA (Art 7(1)) and the obligation to cooperate on this matter (Art 7(3)) by demanding that.

where two or more Contracting Parties share transboundary waters within the catchment area of the Baltic Sea, these Parties shall cooperate to ensure that potential impacts on the marine environment of the Baltic Sea Area are fully investigated within the environmental impact assessment referred to in paragraph 1 of this article.

Under the OSPAR Convention, states are obliged to ‘undertake and publish at regular intervals joint assessments of the quality status of the marine environment and of its development, for the maritime area or for regions or sub-regions thereof’ (Art 6(a)). These assessments include both an evaluation of the effectiveness of the measures taken and planned for the protection of the marine environment as well as the identification of priorities for action under Art 6(b). Further, the OSPAR Commission is required to cooperate with competent regional and international organizations in carrying out quality status assessments (Art 3(d) of Annex IV). Evidently, such collective assessments will improve the quality of EIAs conducted by the parties (OSPAR 2014). The need for continuous monitoring of the marine environment was also highlighted by ITLOS in the 2001 MOX Plant case (para 89(1)(b)).



Indeed, the close linkage between continuous monitoring and EIA has been recognized at the international level in the law of sea. In this context, Article 204(1) of UNCLOS codifies an obligation to '[...] observe, measure, evaluate and analyse, by recognized scientific methods, the risks or effects of pollution of the marine environment,' which has also found its way into some regional treaties governing land-based marine pollution.<sup>2</sup> At the more general level, Article 204(2) of UNCLOS obliges states to 'keep under surveillance the effects of any activities that they permit or in which they engage in order to determine whether these activities are likely to pollute the marine environment.' Ultimately, this requires states to continuously monitor the marine environment and identify any particular substance or activity which may cause significant harm (Harrison 2017). While, naturally, an EIA in itself does not prohibit all land-based activities which may adversely affect the marine environment, under the agreements which contain monitoring and EIA provisions, states causing significant transboundary harm are in no position to negate their responsibility on grounds of non-foreseeability if they have failed to conduct such assessments (Tanaka 2016). In this respect, the requirement to conduct an EIA expands on the standard of due diligence at the procedural level. Paired with continuous monitoring exercises, EIAs are vital in pointing to and assessing potential future environmental risks of transboundary harm and trigger the application of the precautionary approach.

Reflecting on the different levels of normative clarification and coherence between international water and marine law regarding obligations for continuous monitoring and exchange demonstrates that the law of the sea provides clearer normative guidance compared to international water law. The 1997 Watercourses Convention contains no continuous obligation to monitor and exchange data (including regarding potential transboundary harm) and international courts have not yet identified such an obligation in customary international law (Moynihan 2021).

International courts and tribunals have also contributed to the application of the precautionary approach to the no harm rule in the marine environment which essentially raises the level of care required to avoid harm. Principle 15 of the 1992 Rio Declaration provides that '[i]n order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.' This means that unlike the traditional obligation to prevent serious transboundary harm—which is triggered once it is evident that such harm will occur—the precautionary approach demands action even in instances where scientific uncertainty about the degree of risk of harm remains (Tanaka 2019).

In its Advisory Opinion of 2011, the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea (ITLOS) was of the opinion that the Rio Declaration 'has initiated a trend towards making the precautionary approach part of customary international law,' but stopped short of recognizing the precautionary approach as a well-established rule of customary international law (ITLOS 2011, para 135). Still, while the precautionary approach seems to become a prominent feature of contemporary international environmental law, the normativity of the concept remains less clear. This is mainly since the application of the precautionary approach has to be determined on the basis of potential risks. This determination is often very difficult to make, as current scientific knowledge and/

<sup>2</sup> E.g. the 1983 Quito Protocol (Art VIII); the 1990 Kuwait Protocol (Art 7); the 2005 Jeddah Protocol (Art12).

or practice may be insufficient for the analysis and the level of risk which society deems acceptable may also change over time. Furthermore, the precautionary approach does not contain specific normative guidance about how to prevent, reduce or control the risks to the environment – it can be applied very differently depending on the context. A certain level of differentiation in the application is also required due to the different economic and technological capacities of states (González-Laxe 2005). The inherent weighing and balancing of the various factors is essentially a matter of policy which is very difficult to be addressed by jurists or scientists alone (Birnie et al. 2009). As this decision-making process essentially occurs at the national level involving local and/or national policy, international courts and tribunals apply the precautionary approach only reluctantly—if at all. One example in the marine environment is the 1999 *Southern Bluefin Tuna* case. While, again, ITLOS refrained from explicitly mentioning the ‘precautionary principle’, it remarked that ‘[i]n the view of the Tribunal, the parties should in the circumstances act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stocks of southern bluefin tuna’ (ITLOS 1999, para 77) ITLOS further pronounced that ‘although the Tribunal cannot conclusively assess the scientific evidence presented by the parties, it finds that measures should be taken as a matter of urgency to preserve the rights of the parties and to avert further deterioration of the southern bluefin tuna stock’ (ITLOS 1999, para 77). Hence, ITLOS seems to take the precautionary approach into account when interpreting the requirement of urgency under Article 290 where it can prescribe any provisional measures which it considers appropriate under the circumstances to prevent serious harm to the marine environment.

The precautionary approach does not feature in the same way in international water law although it is relevant to interpretation of the harm prevention rule and an EIA. The UN Watercourses Convention does not directly refer to precautionary principle as it was the ILC’s view that it is implicit in Articles 20–23 of the UNWC on protection and preservation of the environment. The UNECE water regime engages more directly with the precautionary principle as it relates to transboundary harm than the UN Watercourses Convention which is extensively explored elsewhere (Moynihan 2021). The ICJ in *Pulp Mills* and the 2015 *San Juan River and Border Activities Case* has engaged with the application of precaution to the no harm rule but has not gone as far as the ITLOS in its 2011 AO. The regional law of the sea treaties provide perhaps the clearest normative guidance on how precaution relates to due diligence obligations to prevent environmental harm, as discussed below.

### 3.3 The courts’ contribution to compensation for environmental harm

The most recent 2018 judgment in the *San Juan River and Border Activities Case* provides a milestone for compensation for environmental harm in international law. Following on from the Court’s 2015 ruling in favour of Costa Rica’s sovereignty over the disputed border area where Nicaragua’s excavation of several channels for navigation had created environmental damage to the protected wetlands and forest area, parties were unable to agree on compensation. In the 2018 proceedings Costa Rica claimed compensation for two categories of damage. First, for quantifiable environmental damage caused by Nicaragua’s excavation of two channels including loss of environmental goods and services. Second, for costs and expenses incurred as the result of Nicaragua’s unlawful activities, including expenses incurred to monitor or remedy the environmental damage caused. The Court’s methodology for arriving at a compensatory figure is not clear but was guided by international

legal principles. The Court confirmed 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. Such compensation may include indemnification for the impairment or loss of environmental goods and services in the period prior to recovery and payment for the restoration of the damaged environment’ (para 42). The Court stated that the obligation to make full reparation for the damage caused by a wrongful act has been recognized by the Court in *Gabčíkovo-Nagymaros* (para 30). The Court referred to *Pulp Mills* and held that ‘compensation may be an appropriate form of reparation, particularly in those cases where restitution is materially impossible or unduly burdensome. Compensation should not, however, have a punitive or exemplary character’ (para 31).

In terms of a methodology to establish the amount of compensation the Court undertook to make ‘an overall assessment of the impairment or loss of environmental goods and services prior to recovery, rather than attributing values to specific categories of environmental goods and services and estimating recovery periods for each of them’ (para 78). This assessment was to be guided by principles of equity where ‘[i]n respect of the valuation of damage, the Court recalls that the absence of adequate evidence as to the extent of material damage will not, in all situations, preclude an award of compensation to that damage’ (para 35). For enthusiasts of the merit in developing and clarifying the contours of an ecosystem approach and ecosystem services in international law, this judgment provides at least an engagement of the Court with these concepts. However, the Court’s own methodology for relying upon and partly utilizing elements of the ecosystem approach and ecosystem services as a method for valuation of environmental harm and damages is not at all clear in the judgment itself (Moynihan 2021). The Court did purport to take elements of the underlying tenets of ecosystem approach towards assessment of environmental damages by taking an ‘overall assessment’ in order to arrive at a financial figure for compensation stating that ‘where there are various environmental goods and services that are closely interlinked ... such an overall valuation will allow the Court to take into account the capacity of the damaged area for natural regeneration’ (paras 80–81). However, nowhere in the judgment does the Court explicitly set down how it made its calculations for valuing the interconnected ecosystem service losses. It is a missed opportunity that the Court chose to keep its deliberations on this point out of the final judgement, as discussed extensively elsewhere (Moynihan 2021).

Although this case does not directly address pollution from land-based sources to the marine environment, this case is significant for compensation for transboundary environmental harm in international law of which the obligations concerning pollution from land-based sources are part. For the first time the ICJ has granted compensation for environmental harm and the fact that the Court was willing to engage with complex ecosystem approach methodology to understand and quantify the harm strengthens international law in this area.

#### **4 Emerging global framework to address harm to the freshwater and marine environment from land-based sources of pollution**

Moving from the recent developments in international law concerning transboundary environmental harm more generally and returning to the specific case of harm caused by pollution from land-based sources. Several attempts have been made to strengthen the global framework for the avoidance of environmental harm and protection of the marine

environment from land-based sources of pollution through the development of soft law. This soft law also begins to draw interlinkages between international freshwater and marine law. The 1985 Montreal Guidelines attempt to address the lack of attention UNCLOS pays towards the vital connection between transboundary watercourses and the marine environment. Guideline 5(c) states that '[i]f discharges from a watercourse which flows through the territories of two or more States or forms a boundary between them are likely to cause pollution of the marine environment, the States concerned should co-operate in taking necessary measures to prevent, reduce and control such pollution.' The importance of preventing, reducing and controlling pollution from land-based activities to protect the marine environment was further stressed by Agenda 21 (Paras 17.24 ff) which also emphasized the value of adopting a precautionary approach in this regard. Paragraph 17.21 states that.

[a] precautionary and anticipatory rather than a reactive approach is necessary to prevent the degradation of the marine environment. This requires, inter alia, the adoption of precautionary measures, environmental impact assessments, clean production techniques, recycling, waste audits and minimization, construction and/or improvement of sewage treatment facilities, quality management criteria for the proper handling of hazardous substances, and a comprehensive approach to damaging impacts from air, land and water. Any management framework must include the improvement of coastal human settlements and the integrated management and development of coastal areas.

Furthermore, Agenda 21 invited the UNEP Governing Council to convene an intergovernmental meeting on protection of the marine environment from land-based activities (Para 17.26), which led to the adoption of the Washington Declaration and the Global Programme of Action (GPA) in 1995 by 108 governments as well as the European Commission. The GPA re-emphasizes many of the responsibilities already outlined in UNCLOS—e.g. Article 207 on pollution from land-based sources—and operationalizes Chapter 17 of Agenda 21. With Paragraph 24, the GPA further ensures the adoption of the precautionary approach.

Having been created as a voluntary intergovernmental mechanism to address land-based pollution of the marine environment, the implementation of the GPA is the task of participating governments, whereas the GPA is assisting states in their endeavours. To date, its Intergovernmental Review Meeting—a forum where governments and other stakeholders meet to review the status of the implementation of the GPA and decide on the action to be taken to strengthen its implementation—has adopted four declarations: 2001 Montreal Declaration on the Protection of the Marine Environment from Land-based Activities; 2006 Beijing Declaration on Furthering the Implementation of the GPA; 2012 Manila Declaration on Furthering the Implementation of the GPA; 2018 Bali Declaration on the Protection of the Marine Environment from Land-based Activities. The important link between freshwater and marine ecosystems has been emphasized by the 2001 Montreal Declaration, which entails commitments to take.

appropriate action at national and regional levels to strengthen institutional cooperation between, inter alia, river basin authorities, port authorities and coastal zone managers, and to incorporate coastal management considerations into relevant legislation and regulations pertaining to the management of watersheds, particularly transboundary watersheds.

Furthermore, in the 2018 Bali Declaration representatives of 60 governments and the European Union agreed to extend their work on 'continued efforts to combat pollution from

nutrients, wastewater, and marine litter and microplastics from land-based sources in an integrated manner, and the inclusion of the land/sea and freshwater/seawater interfaces in action plans for addressing marine litter, wastewater and nutrients' (Para 1(d)).

However, given states' general reluctance to agree on binding legal regulation impacting their respective economic development, it does not come as a surprise that the global framework governing land-based sources of marine pollution remains driven by instruments of soft law—resulting in a rather weak framework. According to Tanaka, three factors further impede the negotiations of any legally binding obligations regarding land-based sources of marine pollution at the global level—(1) the complexity of sources, substances and actors; (2) the complexity and diversity of geographical and ecological factors in the oceans demanding for a varied approach depending on the marine area at hand; and (3) the economic and technological gap between developed and developing countries (Tanaka 2016). Therefore, there is far more activity regarding the development of legally binding obligations to regulate land-based sources of marine pollution at the regional level. Several of these treaties are discussed below and whilst they have contributed immensely to the clarifying best practice methods to mitigate or avoid significant harm being transmitted through river basin catchments into the marine environment, their diversity poses a considerable challenge to being able to draw a universal picture of the regulation of this type of environmental harm.

## 5 Regional regimes strengthening normative clarification and increasing interaction between water and marine law

Despite their diversity, regional regimes have contributed to clarifying the normative dimensions of transboundary environmental harm generally and specifically regarding harm from land-based sources of pollution. Part of this contribution has been discussed above through exploring the contribution of the Baltic and North-East Atlantic regional seas regimes. Interaction between international regimes concerning pollution from land-based sources is also occurring more successfully at the regional level, driven by regional seas organizations and river basin organizations.

In the Baltic, the 1992 Helsinki Convention, seeks to regulate pollution from land-based sources with a uniform approach and contributes to more general clarification around the no harm rule. Here, Article 2(2) defines land-based pollution as: 'pollution of the sea by point or diffuse inputs from all sources on land reaching the sea waterborne, airborne or directly from the coast [...].' Article 3(1) lays down the fundamental principle that 'the Contracting Parties shall individually or jointly take all appropriate legislative, administrative or other relevant measures to prevent and eliminate pollution in order to promote the ecological restoration of the Baltic Sea Area and the preservation of its ecological balance.' Article 6 obliges states to 'undertake to prevent and eliminate pollution of the Baltic Sea Area from land-based sources by using, inter alia, Best Environmental Practice for all sources and Best Available Technology for point sources.' According to Regulations 2(1) and 3(1) of Annex II to the 1992 Helsinki Convention, 'Best Environmental Practice' (BEP) means 'the application of the most appropriate combination of measures,' while 'Best Available Technology' (BAT) means 'the latest stage of development (state of the art) of process, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges.' Furthermore, the 1992 Helsinki Convention also specifies factors which should be considered when implementing BATs and

BEPs. Of particular interest is that the ‘precautionary principle’ should be considered in determining the contents of BAT and BEP (Regulations 2(2), 3(2) of Annex II to the 1992 Helsinki Convention). Hence, the use of BAT and BEP contribute to the specification of regulatory measures which should be taken by states and illuminate the standard of due diligence required in the protection of the marine environment from land-based sources. In addition, ‘on the request of a Contracting Party or of the Commission, the Contracting Parties shall provide information on discharge permits, emission data or data on environmental quality, as far as available’ (Article 16(2) 1992 Helsinki Convention), which limits the discretion of the contracting parties considerably. Hence, it can be argued that the underlying principle of the legal framework for the protection of the marine environment has changed from the discretion of states to a duty of protection by states—‘a paradigm shift in the law from the principle of freedom of pollution to an obligation to prevent pollution’ (Tanaka 2016). This level of guidance on what is considered due diligence best practice for harm avoidance, goes beyond UNCLOS and the 1997 UN Watercourses Convention.

While the development of the law of the sea regarding land-based marine pollution has not been a uniform exercise, with the negotiations of regional regimes as the main driver, one major trend can be identified nonetheless: the reliance of these regional regimes upon the precautionary approach which raises the level of care required to avoid harm. The precautionary approach has found its way into several regional seas agreements concerning marine pollution from land-based sources. In the North-East Atlantic Article 2(2)(a) of the OSPAR Convention, for example, entails the explicit obligation for Parties to apply.

the precautionary principle, by virtue of which preventive measures are to be taken when there are reasonable grounds for concern that substances or energy introduced, directly or indirectly, into the marine environment may bring about hazards to human health, harm living resources and marine ecosystems, damage amenities or interfere with other legitimate uses of the sea, even when there is no conclusive evidence of a causal relationship between the inputs and the effects.

It is important to note that this wording of OSPAR positively requires states to take preventive measures when there is reasonable concern of a hazard—unlike a negative formulation merely noting that scientific uncertainty should not delay taking preventive measures (de La Fayette 1999). The 1992 Helsinki Convention (Art 3(2)), the 1996 Syracuse Protocol (Preamble), the 2010 Nairobi Protocol (Art 4(2)(a)), and the 2012 Abidjan Protocol (Art 5(2)) also entail the precautionary approach—as do several treaties dealing with the conservation of marine living resources.<sup>3</sup> It is important to note that given the scientific uncertainty relating to the management of marine ecosystems in general, the application of an ecosystem approach is inextricably linked to the precautionary approach. This is why most international legal instruments which apply the ecosystem approach at the same time also implement the precautionary approach (Tanaka 2019).

A further point on the contribution of regional law to the prevention of environmental harm, especially from land-based sources of pollution, is the observation that interaction between freshwater and marine regimes to collectively address this problem is occurring more successfully at the regional level. A strong example of a collective effort by regional seas and river basin organizations to address land-based sources of marine pollution can

<sup>3</sup> E.g. Art 6(1) of the 1995 Fish Stocks Agreement; Art 4(c) of the 2006 Southern Indian Ocean Fisheries Agreement; Art 3(1)(b) of the 2009 Convention on the Conservation and Management of High Seas Fishery Resources in the South Pacific Ocean.

be found in the Black Sea into which the Danube river flows. The 1994 Danube River Protection Convention aims to protect the Black Sea marine environment and to cooperate with Parties to the 1992 Convention on the Protection of the Black Sea Against Pollution (preamble). The operative provisions of the Danube Convention require parties 'to contribute to reducing the pollution loads of the Black Sea from sources in the catchment area' (Article 2 (1)). In addition, the International Commission for the Protection of the Danube River and Black Sea Commission have been cooperating to reduce transboundary pollution since 1997 through various technical groups and this was formalised in a Memorandum of Understanding (ICPBS and ICPDR 2001). Member states of the Black Sea adopted a specific Protocol on the Protection of the Marine Environment of the Black Sea from Land-Based Sources and Activities. Parties must endeavour 'to apply the integrated management of coastal zones and watersheds' and endeavour 'to cooperate, as appropriate with other States sharing watercourses flowing into the Black Sea' (Article 4). Cooperation in the Black Sea provides an example for other regions on how they could improve the linkages between river basin organizations and regional seas organizations (Finska and Howden 2018).

Finally, a more general observation about the contribution of regional regimes is that most regional marine treaties specifically addressing land-based sources of marine pollution encourage the development of subsequent measures—leading to regulatory frameworks which are more dynamic and programmes of action which can be strengthened over time. This allows such regimes to implement a contemporary interpretation of due diligence obligations. Of course, the legal status of these measures will depend upon the powers conferred by the agreement, and, unsurprisingly, most regional seas bodies only have the possibility to adopt non-binding recommendations. Still, such non-binding recommendations can support the implementation and further development of an agreement since 'they may be considered as articulating how contracting parties should comply with such legally binding obligations' (Fitzmaurice 2016). Thus, recommendations can not only provide an indication of what may be expected from states regarding their due diligence obligations, compliance with such recommendations can also be seen as evidence of appropriate implementation of the agreement (Harrison 2017).

## 6 Conclusion: environmental harm flowing through the gap between international freshwater and marine regimes

Addressing environmental harm, especially from pollution which travels between river basin ecosystems and marine ecosystems, constitutes the most serious pressure on the marine environment. This paper demonstrated that although international freshwater and marine regimes and courts have made a significant contribution to clarifying the normative content of transboundary environmental harm, the issue of harm from land-based sources of pollution reveals shortcomings in the international legal framework. While the UN Watercourses Convention provides only broad overarching guidance on the content of the due diligence obligation to avoid or mitigate environmental harm, much greater detail is fleshed out in other applicable instruments of international law—both at the global and regional levels. The UN Watercourses Convention also does not contain a commitment to protect the marine environment but only a duty to manage the watercourse in a manner that does not harm that environment. In marine law, UNCLOS contains general obligations regarding the prevention, reduction and control

of environmental harm, including marine pollution from land-based sources, which encompasses rivers and estuaries—and encourages international cooperation on the issue which is aimed at the adoption of ‘global and regional rules, standards and recommended practices and procedures’ (Art 207(4) UNCLOS). However, UNCLOS falls short of mandating compliance therewith. There are some areas where marine law goes beyond international water law where the latter could be strengthened by reference to the former.

The non-binding 1995 Global Programme of Action contributes to filling these gaps with the introduction of contemporary concepts of international environmental law into the global regime for the control of land-based sources of marine pollution as well as defining the actions which should be taken at the national, regional and international level regarding specific types of pollution. In addition, the 1985 Montreal Guidelines attempt to address the lack of attention UNCLOS pays towards the vital connection between transboundary watercourses and the marine environment.

Courts have provided significant clarification regarding the content of the due diligence obligation in international water and marine law. In *Pulp Mills, Kishenganga* and the 2015 *San Juan River and Border Activities* cases, the courts demonstrated that despite the absence of more detailed international agreements, they were able to clarify and further develop the content of this obligation in context of the individual circumstances and legal instruments applying to these particular cases. International courts are also engaging with the clarification of more novel norms such as an ecosystem approach which includes ecosystem services, when assessing compensation for environmental harm. However, the 2018 *San Juan River Case* shows that the Court continues to struggle with the complexity in assessing the value of transboundary environmental damage including to interconnected ecosystem service losses. International courts have also clarified environmental harm in the marine environment, like ITLOS in its 2011 Advisory Opinion which addressed the precautionary approach; or the need for continuous monitoring of the marine environment, identified by ITLOS in the *MOX Plant* case.

An overarching observation on how these two regimes approach harm, including from land-based sources of pollution, is that under the law of the sea, the general obligation to prevent environmental harm is driven by a common interest, more so arguably than in water law. This is evident by the obligation laid down in Article 194(1) UNCLOS, which covers any pollution—transboundary or not—to the marine environment. Even if the legal developments at the global level are mainly driven by soft-law, the protection from land-based sources of pollution including river run-off has to be considered part of the protection of the community interest at sea. In this regard, comparing international water law with marine law, the latter is better at considering the interlinkages between environmental harm from the freshwater environment into the receiving marine environment. Whereas freshwater law at the international level exhibits shortcomings in addressing the impacts of environmental harm on and from the marine ecosystem. This is problematic because contrary to common misperception, environmental harm and ecosystem damage flow both upstream and downstream. Therefore, international freshwater and marine regimes need to better reflect this reality.

Regional seas treaties have played a major role in further developing the legal framework applicable to environmental harm, especially harm transmitted from river basin catchments through to the marine environment, as demonstrated by the North-East Atlantic and Baltic regional seas regimes. The precautionary approach has been implemented by many regional regimes to strengthen harm prevention including from land-based sources of pollution. There are also many examples of successful coordination between river basin



organizations and regional seas organizations to collectively address transboundary harm through legally binding provisions and technical working groups.

Finally, addressing harm which moves between freshwater and marine ecosystems, such as land-based sources of pollution, requires an approach which truly addresses the interconnected nature of these ecosystems. The ecosystem approach does exactly this by going beyond the river basin and managing the freshwater, basin and marine ecosystems as interconnected units, as extensively discussed elsewhere (Moynihan 2021). Putting the ecosystem approach more explicitly at the centre of international and regional freshwater and oceans regimes would enable these regimes to more adequately address transboundary environmental harm, including from land-based sources of pollution.

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