

# The Role of the Precautionary Principle in the Convention on the Protection and Use of Transboundary Watercourses and International Lakes

*Nicolas de Sadelere\* and Mehdy Abbas Khayli\**

## 1 Introduction

This chapter deals with the role played by the precautionary principle (hereinafter ‘the PP’ or ‘the principle’) in the 1992 United Nations Economic Commission for Europe (UNECE) Convention on the Protection and Use of Transboundary Watercourses and International Lakes<sup>1</sup> (hereinafter ‘the Water Convention’ or ‘the Convention’).

To begin with, it is worth citing the relevant parts of Article 2 of the Convention:

1. The Parties shall take all appropriate measures to prevent, control and reduce any transboundary impact. [...]
5. In taking the measures referred to in [...] this article, the Parties shall be guided by the following principles:
  - (a) The *precautionary principle*, by virtue of which action to avoid the potential transboundary impact of the release of hazardous substances shall not be postponed on the ground that scientific research has not fully proved a causal link between those substances, on the one hand, and the potential transboundary impact, on the other hand; [...]<sup>2</sup>

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\* Nicolas de Sadeleer is Jean Monnet Chair, Professor at Saint-Louis University, Visiting Professor at the Catholic University of Louvain, Guest Professor at Canberra University; Mehdy Abbas Khayli is Associate at Clifford Chance LLP (Brussels).

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

2 Emphasis added.

This provision should be read in conjunction with Article 1(2) which defines, in a rather broad way, the concept of transboundary impact as:

Any significant adverse effect on the environment resulting from a change in the conditions of transboundary waters caused by a human activity, the physical origin of which is situated wholly or in part within an area under the jurisdiction of a Party, within an area under the jurisdiction of another Party. Such effects on the environment include effects on human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interaction among these factors; they also include effects on the cultural heritage or socio-economic conditions resulting from alterations to those factors.

Even though the Convention provides its own definition of the PP, it seems appropriate to recall succinctly its core elements and to distinguish it from a preventive approach. According to the latter, the intervention of the decision-maker is conditional upon tangible threats for the environment. On the other hand, the PP requires that authorities address risks which are uncertain in so far as there is no definitive proof of a causal link between the suspected activity and the environmental harm or the likelihood of any materialisation of this risk. In other words, the absence of scientific certainty or, conversely, the scientific uncertainty as to the existence or the extent of a risk should not delay the adoption of preventive measures intended to protect the environment. The principle thus expresses a philosophy of anticipated action, not requiring that the entire *corpus* of scientific proof be collated in order for an authority to act preventively.

As far as water bodies are concerned, the decisions adopted by States within the context of the North Sea Ministerial Conferences mark the first use of the PP in international law. Explicit reference is subsequently made thereto in the 1984 Bremen Ministerial Declaration of the International Conference on the Protection of the North Sea,<sup>3</sup> the 1987 London Ministerial Declaration of the Second International Conference on the Protection of the North Sea,<sup>4</sup> the 1990 The Hague Declaration of the Third Conference on the Protection of

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3 Ministerial Declaration of the International Conference on the Protection of the North Sea (Bremen, 1 November 1984).

4 Ministerial Declaration of the Second International Conference on the Protection of the North Sea (London, 25 November 1987).

the North Sea,<sup>5</sup> and the 1995 Esbjerg Declaration of the Fourth Conference on the Protection of the North Sea.<sup>6</sup> Given that the North Sea is polluted by *inter alia* transboundary rivers, the States which took part to the North Sea conferences realised the necessity of improving and adapting regional transboundary watercourses agreements. Against this background, several European States adopted in the 1990s regional conventions enshrining the PP: the 1994 Charleville-Mezieres Agreements concerning the Protection of the Scheldt and Meuse Rivers;<sup>7</sup> the 1994 Sofia Convention on Cooperation for the Protection and Sustainable Use of the Danube;<sup>8</sup> and the 1999 Bern Convention on the Protection of the Rhine.<sup>9</sup> Accordingly, the meaning of the PP as stated in the Water Convention must be studied in the light of these various soft law instruments and multilateral environmental agreements (hereinafter 'MEAs').

The following developments are divided into four parts: first, the status of the PP within the Convention is analysed; second, the material, personal and temporal scope of application of the relevant provisions is examined; the third and fourth parts finally investigate the substantive and procedural obligations which might be incumbent upon the State Parties as a result of the PP being enshrined in the text.

## 2 The Status of the PP in the Water Convention

Three elements suggest that particular attention should be paid to the PP within the context of the implementation of the Convention. First, unlike other international instruments,<sup>10</sup> the Water Convention labels precaution not

5 Declaration of the Third Conference on the Protection of the North Sea (The Hague, 8 March 1990).

6 Declaration of the Fourth Conference on the Protection of the North Sea (Esbjerg, 9 June 1995).

7 Agreements on the Protection of the Rivers Meuse and Scheldt (adopted 26 April 1994) 34 ILM 851.

8 Convention on Cooperation for the Protection and Sustainable Use of the Danube (adopted 29 June 1994).

9 Convention on the Protection of the Rhine (adopted 12 April 1999).

10 For example, Declaration on environment and development adopted by the UN Conference on environment and development (3 to 14 June 1992), UN Doc. A/CONF.151/26 .Rev.1, *Report of the UNCED*, vol.1 [Rio Declaration], principle 15: 'In 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

as an approach but as a principle. It might be contended that this difference is not significant apart from the fact that EU law refers to the 'principle' whilst global agreements tend to use the words 'approach' or 'measures'.<sup>11</sup> Nevertheless, it is the opinion of the authors of this chapter that, from a legal perspective, a principle is more stringent and allows for less flexibility than an approach. Second, the PP has been placed amongst the operative provisions of the Convention, whilst if it were confined to its preamble, it would have merely had an interpretative function. Third, the PP coexists and interacts with the principles of prevention,<sup>12</sup> reduction of pollution at source<sup>13</sup> and with the polluter pays principle<sup>14</sup> (hereinafter 'the PPP'): there is indeed cross-fertilization between these various principles in that the anticipatory, preventive and curative approaches underpinning these principles go hand-in-hand and support each other.<sup>15</sup> As a result, public policies cannot rely exclusively upon one of these principles.

On the other hand, the Convention provides that the Parties 'shall be guided' by the PP when taking the prescribed measures.<sup>16</sup> At first sight, these terms seem softer than the formula 'the PP shall apply' encountered in, for example, the Convention for the protection of the marine environment of the North-East Atlantic.<sup>17</sup> However, by reckoning with the concept of guidance, the drafters of the Convention have in this instance emphasised the interpretative function of the PP.

Bearing in mind that the current legal status of the PP in international law is far from clear and that it is rarely enshrined in MEAs, Article 2(5)(a) of the Water Convention undoubtedly contributes to this ongoing dynamic of tending to recognise it as a customary international rule.<sup>18</sup> In this respect, the

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prevent environmental degradation' (Emphasis added). Also, UNGA, 'Agreement for the implementation of the provisions of the United Nations Convention on the law of the sea of 10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks', UN Session Conference on straddling fish stocks and highly migratory fish stocks, sixth session Doc A/CONF.164/37 (1995), Article 5(c).

11 P. Birnie *e.a.*, *International Law & the Environment* (3rd edn OUP, Oxford, 2009) 155.

12 Water Convention, Article 2(2)(a).

13 Ibid, Article 2(3).

14 Ibid, Article 2(5)(b).

15 N. de Sadeleer, *Environmental Principles* (OUP, Oxford, 2015).

16 The French version of Article 2(5) reads: '*Les Parties sont guidées par les principes suivants [...]*'.

17 Convention for the protection of the marine environment of the North-East Atlantic (adopted 22 September 1992, entered into force 25 March 1998) 32 ILM 1072, Article 2(2).

18 See C.E. Foster, *Science and the Precautionary Principle in International Courts and Tribunals. Expert Evidence, Burden of Proof and Finality* (CUP, Cambridge, 2011) 21; *Request*

International Court of Justice (hereinafter ‘the ICJ’) has addressed the link between treaty law and customary international law by setting forth some criteria to be fulfilled for a customary rule to emerge as a result of a treaty:

It would be in the first place necessary that the provision concerned should, at all events potentially, be of a fundamental norm-creating character such as could be regarded as forming the basis of a general rule [...]. With respect to the other element usually regarded as necessary before a conventional rule can be considered to have become a general rule of international law, it might be that, even without the passage of any considerable period of time, a very widespread and representative participation in the convention might suffice of itself, provided it included that of states whose interests were specially affected [...]. An indispensable requirement would be that within the period in question, short though it might be, state practice, including that of states whose interests are specially affected, should have been both extensive and virtually uniform in the sense of the provision invoked; and should moreover have occurred in such a way as to show a general recognition that a rule of law or legal obligation is involved.<sup>19</sup>

As far as the practice of Western European States is concerned, we are taking the view that the PP fulfils these criteria.<sup>20</sup> Indeed, the number of international and domestic law instruments encapsulating or fleshing out the PP, the number of States which have signed these international instruments, the number of sectors in which the principle applies, and the number of cases before, amongst others, the ICJ and the International Tribunal for the Law of the Sea (hereinafter ‘the ITLOS’), where the PP has been invoked by States as a rule of general international law, bear witness to the customary nature of the principle.<sup>21</sup> Moreover, despite its interpretative vagueness, the PP entails numerous substantive norms likely to affect and guide decision-makers.<sup>22</sup>

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*for an examination of the situation in accordance with the Court's judgment in the Nuclear test case (New Zealand v France) [1995] ICJ Rep 288, dissenting opinion of Judge Palmer, [1995] ICJ Rep 142.*

19 *North Sea continental shelf case* [1969] ICJ Rep 3, paragraphs 41–43.

20 See O. McIntyre & T. Mosedale, ‘The Precautionary Principle as a Norm of Customary International Law’, 9 *Journal of Environmental Law* 221 (1997).

21 See A. Sirinskiene, ‘The Status of Precautionary Principle: Moving towards a Rule of Customary Law’ 4 *Jurisprudence* 354–360 (2009).

22 See Cartagena Protocol as it encapsulates procedural norms to be applied in case of uncertainty. See also Stockholm Convention, Article 8(7)(a) and following provisions.

Regarding the Water Convention, 39 States – predominantly European – participate therein<sup>23</sup> and many of them have a substantial interest in achieving the sustainable management of transboundary watercourses and international lakes.

### 3 Scope of Application of the PP in the Water Convention

#### 3.1 *Material Scope*

##### I Cause

##### a *Covered Issues*

The main target of the PP in the Convention is to prevent the ‘release of hazardous substances’ into transboundary watercourses and international lakes. A few words of explanation are therefore required in order to determine the scope of these concepts.

First of all, only *hazardous* substances are covered. To qualify as hazardous, a substance must be caught by at least one of five characteristics; that is, toxicity, carcinogenicity, mutagenicity, teratogenicity and bio-accumulativeness, knowing that the persistence of the substance reinforces its hazardous nature.<sup>24</sup> The absence of definition of these features contrasts with MEAs and

23 See [http://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=XXVII-5&chapter=27&lang=en#1](http://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-5&chapter=27&lang=en#1).

24 Water Convention, Article 1(6). To provide definitions of these characteristics, ‘acute toxicity means those adverse effects occurring following oral or dermal administration of a single dose of a substance or a mixture, or multiple doses given within 24 hours, or an inhalation exposure of 4 hours’ (Parliament and Council Regulation (EC) 1272/2008 of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) 1907/2006 OJ L353/103 [Regulation (EC) 1272/2008], Annex 1, paragraph 3.1.1.1); ‘carcinogen means a substance or a mixture of substances which induce cancer or increase its incidence. Substances which have induced benign and malignant tumours in well performed experimental studies on animals are considered also to be presumed or suspected human carcinogens unless there is strong evidence that the mechanism of tumour formation is not relevant for humans’ (Regulation (EC) 1272/2008, Annex 1, paragraph 3.6.1.1.); ‘a mutation means a permanent change in the amount or structure of the genetic material in a cell. The term “mutation” applies both to heritable genetic changes that may be manifested at the phenotypic level and to the underlying DNA modifications when known (including specific base pair changes and chromosomal translocations). The term ‘mutagenic’ and ‘mutagen’ will be used for agents giving rise to an increased occurrence of mutations in populations of cells and/or organisms’ (Regulation (EC) No 1272/2008, Annex 1, paragraph 3.5.1.1); teratogenic substances cause

legislation on pollution caused by certain dangerous substances discharged into the aquatic environment of the EU, which, moreover, frequently refer to a much broader range of characteristics. The question thus arises which law must be relied upon to ascertain which substances are hazardous.

The covered substances must be *released* and the release of the substance must be 'caused by a human activity' regardless of its nature, knowing that pollution of the aquatic environment can be indirect. That is, some chemicals can affect water through intermediary environmental elements such as soils or air – toxic clouds can indeed seriously affect marine ecosystems after condensation and transformation into precipitation. In regulating the release of hazardous substances, the PP addresses the discharge of a number of chemicals, pesticides and biocides into the aquatic environment but excludes *inter alia* genetically modified organisms, non-hazardous waste and the diffusion of nitrates.

It should be noted that the Convention is oriented towards qualitative management of water and does not set out a *de minimis* approach since no quantitative threshold is provided for. This implies that the applicability of the PP does not vary according to quantity at all *i.e.* whether one or ten tonnes of hazardous chemicals have been released.<sup>25</sup>

Lastly, one of the most intriguing and unanswered questions is how the issue of bio-accumulative substances should be addressed knowing that when they are discharged into the rivers, they penetrate and accumulate in living organisms such as oysters or mussels, and can thus be dangerous for humans beings or animals once consumed.

#### b *Excluded Causes*

It is worthy of note that biodiversity management measures are excluded from the scope of Article 2(5)(a) of the Water Convention, unless the habitats and

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the development of abnormal cell masses during the fetal growth, the result being physical defects in the fetus; a substance fulfils the bioaccumulation criterion when the bio-concentration factor in aquatic species is higher than some threshold set by the relevant legal provisions (See for example Parliament and Council Regulation (EC) 1907/2006 of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) 793/93 and Commission Regulation (EC) 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, OJ L396/1, [Regulation (EC) 1907/2006] Annex XIII, paragraph 1.1.2).

25 D. Freestone & S.M.A. Salman, 'Ocean and Freshwater Resources', in D. Bodanski *e.a.* (eds), *The Oxford Handbook of International Environmental Law* (OUP, Oxford, 2007) 357.

species are impaired by the targeted chemicals, for instance, through endocrinal changes of marine or freshwater species. Likewise, as a matter of principle, the PP does not apply to infrastructures – such as seawalls or dams – even though they might affect materially the quality of water.

Although the key obligation laid down by the Convention is to achieve a sustainable management of transboundary watercourses and international lakes, the latter suffer from various other nuisances, pollutions and biological phenomena which, albeit crucial, are not covered. It is the case of *inter alia* fisheries, installation and management of infrastructures, sedimentation, eutrophication of water – nitrate and phosphate are indeed not caught by the definition of a hazardous substance –, medicines – unless they contain a hazardous substance – and overexploitation of biological resources. The Convention thus focuses on one specific aspect of the issue, knowing that the interactions between the covered and non-covered sources of pollution make this issue even more complex and uncertain.

## II Impact

The protection of human health is amongst the main concerns of the PP in the Water Convention. Health in this context can be affected by *inter alia* carcinogens, the consumption of freshwater and aquatic fauna and flora contaminated by hazardous substances. In this respect, it must be noted that the PP belongs to the group of principles supposed to guide prevention, control and reduction of water-related diseases.<sup>26</sup>

The PP also aims at protecting the main components of freshwater ecosystems, *i.e.* aquatic fauna, flora, soil, and water quality which are likely to be affected by 'hazardous substances'. This comprehensive approach is appropriate given the interactions between these various environmental components.<sup>27</sup>

The purpose of avoiding pollution of transboundary watercourses and international lakes is consistent with one of the cornerstones of the PP. Therefore, what should be protected is not the environment of a specific State within its territorial borders, but rather the aquatic environment as a whole, irrespective of where the harm might occur.<sup>28</sup> The acuteness of this question is

26 Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (adopted 17 June 1999, entered into force 4 August 2005) [1999] 29 EPL 200, Article 5(a).

27 *Pulp mills on the River Uruguay case (provisional measures) (Argentina v Uruguay)* [2006] ICJ Rep 113 [*Pulp mills on the River Uruguay*], paragraph 188.

28 A. Trouwborst, *Precautionary Rights and Duties of States* (Martinus Nijhof, Utrecht, 2006) 126 & 127.

confirmed by the fact that the State duty to ensure that activities carried out within their jurisdiction and control respect for the environment of other States is part of the *corpus* of international environmental law.<sup>29</sup>

The drafters of the Convention established a limit on the scope of the PP: the impact of the release of chemicals need not only be transboundary but also significant. Article 2(5)(a) seems to implement the customary duty of States to ensure that activities carried out in their jurisdiction or control do not harm the environment of other States or of areas beyond their jurisdiction.<sup>30</sup> This obligation would not apply to ‘risks of minor or insignificant transboundary harm’.<sup>31</sup> According to the International Law Commission (hereinafter ‘the ILC’), the harm must indeed be ‘appreciable’ and ‘tangible’, which excludes ‘trivial’ harms,<sup>32</sup> and its effect must be able to be demonstrated by objectively secured evidence:

It is to be understood that “*significant*” is something more than “*detectable*” but need not be at the level of “*serious*” or “*substantial*.” The harm must lead to a real detrimental effect on matters such as, for example, human health, industry, property, environment or agriculture in other States. Such detrimental effects must be susceptible of being measured by factual and objective standards.<sup>33</sup>

Note has to be taken that, first, the Convention does not require that the damage be irreversible – this would have considerably restricted its scope of application. Second, although ‘scientific research has not fully proved’ the link between the cause and the consequence, the level of knowledge from which the application of the PP can be triggered remains undefined.

The *Gabcikovo-Nagymaros*<sup>34</sup> case illustrates how complex these issues around the PP are. In this matter heard before the ICJ, Hungary indeed invoked

29 *Legality of the threat or use of nuclear weapons*, Advisory opinion, [1995] ICJ Rep 226, paragraph 29.

30 Rio Declaration principle 2; Declaration of the United Nations Conference on the Human Environment (16 June 1972), principle 21.

31 Trouwborst (n 28), 44.

32 ILC, ‘Draft articles on the law of the non-navigational uses of international watercourses and commentaries thereto and resolution on transboundary confined groundwater’ (1994) Yearbook of the ILC, 1994, vol. II (part 2), commentary to Article 3, paragraph 14.

33 ILC, ‘Draft articles on prevention of transboundary harm from hazardous activities with commentaries’ (2001) UN Doc A/56/10, commentary of Article 2, paragraph 4 (Emphasis in original).

34 *Gabcikovo-Nagymaros (Hungary v. Slovakia)*, [1997] ICJ Rep 7 [*Gabcikovo-Nagymaros*].

the PP to justify unilateral suspension of works on its section of a dam on the Danube on the ground that the project was likely to cause significant or irreversible damage to its environment, which entailed suspension of the treaty obligations it had engaged with then Czechoslovakia. Hungary thereby had to demonstrate a state of necessity occasioned by an essential State interest threatened by a 'grave and imminent peril',<sup>35</sup> which the ICJ eventually did not recognise due to the uncertain nature of the dangers. On this particular matter, the ICJ held that:

[S]erious though these uncertainties might have been they could not, alone, establish the objective existence of a "peril" in the sense of a component element of a state of necessity. The word "peril" certainly evokes the idea of "risk"; that is precisely what distinguishes "peril" from material damage. But a state of necessity could not exist without a "peril" duly established at the relevant point in time; the mere apprehension of a possible "peril" could not suffice in that respect. It could moreover hardly be otherwise, when the "peril" constituting the state of necessity has at the same time to be "grave" and "imminent." "Imminence" is synonymous with "immediacy" or "proximity" and goes far beyond the concept of "possibility." [...] The "extremely grave and imminent" peril must "have been a threat to the interest at the actual time" [...]. That does not exclude, in the view of the Court, that a "peril" appearing in the long term might be held to be "imminent" as soon as it is established, at the relevant point in time, that the realization of that peril, however far off it might be, is not thereby any less certain and inevitable. [...] The peril claimed by Hungary was to be considered in the long term, and, more importantly, remained uncertain. As Hungary itself acknowledges, the damage that it apprehended had primarily to be the result of some relatively slow natural processes, the effects of which could not easily be assessed. [...] However "grave" it might have been, it would accordingly have been difficult, in the light of what is said above, to see the alleged peril as sufficiently certain and therefore "imminent" [...].<sup>36</sup>

35 *Ibid*, paragraph 52. See for example A A-Khavari & D. Rothwell, 'The ICJ and the Danube Dam Case: A missed Opportunity for International Environmental Law?' [1993] MULR 507; R. Higgins, 'Natural Resources in the Case Law of the International Court' in A. Boyle and D. Freestone (eds), *International Law and Sustainable Development: Past Achievements and Future Challenges* (OUP, Oxford, 1999) 103–111.

36 *Gabcikovo-Nagymaros*, paragraphs 54 & 56.

Consequently, a state of necessity can be invoked only if there is a sufficient degree of certainty and inevitability that a danger will materialise. This is a rather high burden: where the existence or the extent of the risk is still uncertain, it is far from easy to demonstrate a state of necessity, which is somewhat problematic given that interim relief measures are an essential component of international litigation. It must however be noted that the Water Convention was not specifically applicable in the case at hand and that in that case the PP was not expressly recognised.

### III Causal Link

The causal link between the release of chemicals by a specific activity and a harm suffered by freshwater or saltwater ecosystems might be quite complex to demonstrate, in particular where several polluting activities discharge a wide variety of substances likely to have an accumulative effect. Unless a serious catastrophe occurs,<sup>37</sup> an accurate identification of the cause is a quite challenging task. In addition, the upstream polluters are not only industries but also small and medium sized undertakings, farmers as well as households.

### 3.2 *Personal Scope*

Article 2(5)(a) initially applies to State Parties. Given that point sources of hazardous substances pollution must be regulated pursuant to Article 3(1)(b) and (d),<sup>38</sup> private operators are likely to be subject to precautionary measures as well. Operators of undertakings discharging hazardous substances are admittedly covered by the Protocol on civil liability and compensation for damage caused by the transboundary effects of industrial accidents on transboundary waters,<sup>39</sup> but the latter exclusively applies to harms caused by ‘the

37 See for example Parliament and Council Directive (EU) of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC [2012] OJ L197/L, Article 3(13).

38 ‘Transboundary waters are protected against pollution from point sources through the prior licensing of waste-water discharges by the competent national authorities, and that the authorized discharges are monitored and controlled’; ‘Stricter requirements, even leading to prohibition in individual cases, are imposed when the quality of the receiving water or the ecosystem so requires’.

39 UNECE Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes and to the 1992 Convention on the Transboundary Effects of Industrial Accidents (adopted 21 May 2003) [Protocol on civil liability].

transboundary effects of an industrial accident on transboundary waters'<sup>40</sup> 'when it has occurred'.<sup>41</sup> This curative perspective is quite different from the anticipatory approach flowing from the PP.

### 3.3 Temporal Scope

The Convention does not provide for any temporal limit and could accordingly apply to damages which occurred generations after the release, as is the case of mutagenic and carcinogenic effects of dioxins or polychlorinated biphenyls.<sup>42</sup>

## 4 Substantive Obligations

Where it is applicable, the PP calls for preventive and control measures which are not predetermined. As demonstrated by Article 3 of the Convention, these can take the form of *inter alia* authorisations, restrictions, bans, notifications, surveillance, requirements of best available technologies. Some types of measures listed in the Water and Health Protocol seem to flesh out the PP: for example, its Article 4.2(e) provides that State Parties should establish 'effective systems for monitoring situations likely to result in outbreaks or incidents of water-related disease [...]'. Likewise, paragraph 6 of the same Article provides in substance that domestic authorities must take potential impacts on public health into account when deciding upon whether an action which has a significant impact on the environment should be approved.

The Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)<sup>43</sup> or the biocide and pesticide regulations are excellent illustrations of how the PP can be implemented effectively: these legal acts emphasise the need to substitute hazardous substances by less hazardous ones. For example, REACH is intended precisely to remedy the legal vacuum stemming from scientific ignorance about the dangerous effects of some

40 Protocol on civil liability, Article 3(1).

41 *Ibid*, Article 3(2) (Emphasis added).

42 M. Pyhälä *e.a.*, 'The Precautionary Principle', in M. Fitzmaurice *e.a.* (eds), *Research Handbook on International Environmental Law* (Edward Elgar, Cheltenham, 2010) 212.

43 Regulation (EC) 1907/2006; Parliament and Council Directive (EC) 2006/121 of 18 December 2006 amending Council Directive 67/548/EEC on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances in order to adapt it to Regulation (EC) 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and establishing a European Chemicals Agency [2006] L396/850.

substances. Concretely speaking, manufacturers and importers of chemicals must, when some thresholds are exceeded, submit a registration dossier to the European Chemicals Agency, which then checks whether it complies with the Regulation, assesses testing proposals and ensures that adequate information has been provided. An authorisation system has also been established so as to control properly the risks of substances of high concern and to replace them gradually with alternative substances or technologies where these are viable from an economic and technological point of view. These substances may however be authorised where proper control is not possible<sup>44</sup> provided that no suitable alternative exists and that society would benefit overall from their use. In addition, EU authorities can restrict the manufacture, use or placing on the market of substances which cause an unacceptable risk to the environment or human health.

Within the context of its implementation, the PP is inextricably linked to other environmental principles such as the PPP<sup>45</sup> and the rectification of pollution at source as a priority.<sup>46</sup> Regarding the former principle, financial resources are necessary to control pollution and decipher what uncertainty hides, and the requirement for internalisation of costs underlying the PPP compels polluters to pay for preventive and control measures without any subsidies.<sup>47</sup> So far as the latter is concerned, a common way of implementing it is to require the use of alternative non-polluting technologies, product substitution and also clean production methods,<sup>48</sup> which can be achieved by

44 “To enable proper control measures to be taken, all relevant information on the substance or mixture shall be provided” (Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, Annex II, paragraph 9.1)

45 Water Convention, Article 2(3).

46 Ibid, Article 2(5)(b).

47 E. Woerdman *e.a.*, ‘Emissions Trading and the Polluter-pays Principle: Do Polluters Pay under Grandfathering?’ 2 *Review of Law & Economics* 572 (2008); J.R. Nash, ‘Too Much Market? Conflict between Tradable Pollution Allowances and the “Polluter Pays” Principle’ 2 *Harvard Environmental Law Review* 3 (2000).

48 Trouwborst (n 28), p. 171; IMO, ‘The application of a precautionary approach in environmental protection within the framework of the London Dumping Convention’ (1991) Resolution LDC 44(14).

making the use of best environmental practices or best available technologies (BATs) compulsory.<sup>49</sup>

Lastly, no obligation to carry out a cost-benefit analysis (CBA) or a proportionality test<sup>50</sup> is required, which contrasts with the Rio Declaration.<sup>51</sup>

## 5 Procedural Obligations

Research is of capital importance on the formal side of the implementation of the PP:

[Research] is, in particular, an indispensable tool to (1) detect dangers in an early stage; (2) assess environmental impacts; (3) overcome or reduce uncertainties; (4) develop and examine alternatives to potential hazards; and to (5) monitor the effects of precautionary action taken.<sup>52</sup>

So far as procedural obligations are concerned, two approaches can be adopted. On the one hand, it might be required to submit substances liable to cause significant transboundary harms to a risk assessment (hereinafter 'RA') with a view to identify and manage their risks. On the other hand, States could impose environmental impact assessments (hereinafter 'EIA').<sup>53</sup> These two regimes can indeed help provide information raising concerns about significant harm and can even be precautionary measures by themselves, justified by the need to learn more about the impacts of a substance or an activity before permitting them.<sup>54</sup>

Nonetheless, these duties cannot be envisaged independently of the substantive side of the implementation of the PP: the obligation to integrate the

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49 See OSPAR, 'Commission, Ministerial Declaration of the third International conference on the protection of the North Sea', paragraph 25.

50 CBAs and carrying out proportionality tests indeed entail the mobilisation of important financial and human resources and are likely to postpone concrete actions. See N. de Sadeleer, *Environmental principles. From political Slogans to Legal Rules* (OUP, Oxford, 2002) 199–200.

51 Rio Declaration, principle 15.

52 Trouwborst (n 28), 174.

53 See Water Convention, Article 3(1)(h). The obligation to carry out an EIA is deemed to be a customary obligation. See *Pulp Mills on the River Uruguay (Argentina v. Uruguay)* (Merits) [2010] ICJ GL 204.

54 Trouwborst (n 28), 174 & 175.

results of an EIA into a decision is indeed purely formal and its preventive effects are conditional upon the authority's will to take account of them.

EIAs should not be restricted to the known impacts of a project but should also consider those impacts that are less clearly determined and define ways to take precautions against these, or at least attempt to reduce them. Therefore, EIA procedures should not only reduce uncertainty but also explicitly acknowledge sources of remaining uncertainty and seek to monitor or explore them in the future instead of burying them in arbitrary assumptions.

The fact that the PP is used as a guide by the decision-maker is not sufficient. To the extent that risks evolve as a function of scientific and technological knowledge, they might appear after the EIA being carried out and the decision being taken. It will thus always be advisable to repeat the EIA at regular intervals so that public authorities can adapt their decisions to new results. The 1991 Espoo Convention on EIA in a Transboundary Context<sup>55</sup> reflects this understanding in its Article 7, which foresees a 'post-project analysis'. Accordingly, the PP does not call for stasis; on the contrary, risk management must be flexible and measures must continuously be adapted and revised as a risk becomes more thoroughly understood.

Another element peculiar to transboundary pollution regulation is the obligation to cooperate, which seems to be part of general international law.<sup>56</sup> The Water and Health Protocol not only reminds us of this but also encapsulates provisions pertaining to the concrete implementation of this duty.

In *Pulp Mills on the River Uruguay*,<sup>57</sup> coordination was required by one of the applicable texts to avoid any change in the economic balance and to control harmful factors in the river. The ICJ held that the implementation of this provision required that the Parties cooperate through an appropriate institution, and that, as the aim of the provision was to prevent transboundary pollution which would affect the 'ecological balance of the river', the Parties had to take positive steps to avoid this, which could embrace the adoption and enforcement of laws.<sup>58</sup>

In *MOX Plant*,<sup>59</sup> Ireland called for the provisional suspension of the authorisation of a plant pending an arbitral procedure, arguing that its commissioning

55 UNECE Convention on Environmental Impact Assessment in a Transboundary Context (adopted 25 February 1991, entered into force 10 September 1991) UNTS 1989.

56 See Health and Water Protocol, Article 5(c).

57 *Pulp Mills on the River Uruguay (Argentina v. Uruguay)* (Merits) [2010] ICJ GL 135.

58 Paragraphs 184 & 185.

59 *MOX Plant case (Ireland v UK)* (Provisional Measures, Order of 3 December 2001) ITLOS Reports 2001, no 10 [*MOX Plant case*].

by the United Kingdom (UK) was a nearly irreversible step and that, by virtue of the PP, the UK would have to prove that the operation of the plant would cause no harm. Eventually, the ITLOS did not order provisional measures due to the absence of urgency but held that 'prudence and caution' required that Ireland and the UK 'cooperate in exchanging information concerning risks or effects of the operation of the MOX plant'.<sup>60</sup>

## 6 Conclusion

To conclude, it is worth observing that the scope of application of the PP as stated and framed in the Water Convention has not been rendered nugatory by a number of thresholds, such as the irreversibility or the type of damages. This makes the scope of application of the Convention rather broad.

Conversely its scope of application is not irrationally broad on account that the damage caused to the environment has to be significant. It might however be regretted that some rather technical concepts are not further defined.

Last but not least, the way in which the PP is encapsulated, defined and conceived by the Convention is similar to other regional sea and river agreements adopted by European States. Accordingly, the PP as enshrined in the Convention is thus not revolutionary by any means. Exactly as in many other MEAs, the PP is before all an abstract norm to be fleshed out into proper regulatory, administrative and fiscal devices. It hence reckons upon the Parties to implement it with adequate instruments.

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60 *MOX Plant case*, paragraph 84.