Michigan Journal of International Law

Volume 25 | Issue 2

2004

Lessons from the Protracted Mox Plant Dispute: A Proposed Protocal on Marine Environmental Impact Assessment to the United Nations Convention on the Law of the Sea

Maki Tanaka
American University Washington College of Law

LESSONS FROM THE PROTRACTED MOX PLANT DISPUTE: A PROPOSED PROTOCOL ON MARINE ENVIRONMENTAL IMPACT ASSESSMENT TO THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

*Maki Tanaka**

---

* J.D., *summa cum laude*, American University Washington College of Law; M.A., Political Science, University of Mississippi; B.A., Russian Studies, Tokyo University of Foreign Studies. I would like to thank Marcos A. Orellana, Adjunct Professor at the American University Washington College of Law and Senior Attorney at the Center for International Environmental Law, Washington, D.C. for his helpful suggestions in the preparation of this article. I also extend my gratitude to my friend, Mary Halley Burford, for her assistance in editing and proofreading an earlier draft. Special gratitude is owed to Dr. Komei Hosokawa of the Kyoto Seika University Department of Environmental & Social Research, who helped me understand controversies surrounding the use of nuclear energy through his weekly workshops held at the Tokyo University of Foreign Studies. All remaining errors are mine and the opinions expressed herein are based on my own research.

I. INTRODUCTION

On September 17, 2002, the *Pacific Pintail* sailed 18,000 miles back from Japan to England with multiple oxide (MOX) fuel containing 225 kilograms (562 pounds) of plutonium.[1] British Nuclear Fuels plc (BNFL)

1. *Protest Flotilla Ready as Shipload of Nuclear Fuel Noses Closer to Britain*, AGENCE FRANCE-PRESSE, Sept. 16, 2002, *available at* 2002 WL 23601926 [hereinafter *Protest Flotilla Ready*]. Greenpeace believes that this amount of plutonium is sufficient to produce

manufactured the MOX fuel at its MOX Demonstration Facility and delivered it to a Japanese utility company in 1999.[2] However, the Japanese customer rejected the nuclear fuel because BNFL falsified quality records.[3] This incident further strained relations between Ireland and the United Kingdom not only because the Pacific Pintail traversed the Irish Sea with a considerable amount of plutonium,[4] but also because BNFL will eventually recycle the unwanted nuclear fuel at the Sellafield MOX Plant, newly built on the Sellafield nuclear industrial site.[5]

The Sellafield site is located in northwest England on the coast of the Irish Sea. At Sellafield, BNFL reclaims fissile plutonium and uranium from spent nuclear fuel consigned by foreign utility companies, and manufactures MOX fuel assemblies for the foreign customers from

---

50 nuclear bombs. Greenpeace, Countdown to a Deadly Shipment 2, *at* http://archive.greenpeace.org/nuclear/bnfl/docs/general_pu_briefing.pdf (last visited Oct. 19, 2003). *But see* Kozo Mizoguchi, *Japan Defends Nuclear Fuel Decision*, AP ONLINE, July 5, 2002, *available at* 2002 WL 23166113 (reporting that Japanese officials and an independent expert argue that it is theoretically possible but practically difficult to make nuclear weapons from reactor-grade plutonium).

2. Edward Power, *BNFL Head Admits 'Stupidity' of MOX Episode*, IRISH TIMES, Sept. 18, 2002, at 6, *available at* 2002 WL 25947530; Robert MacPherson, *Nuclear Fuel Sails Back to Britain from Japan with Protesters in Tow*, AGENCE FRANCE-PRESSE, Sept. 17, 2002, *available at* 2002 WL 23602411; SELLAFIELD: REPROCESSING PLANT IN GREAT BRITAIN 20 (Bellona Foundation, Working Paper No. 5, 2001), *at* http://www.bellona.no/pdfs/wp5_2001_Sellafield_English.pdf (last visited Feb. 2, 2004).

3. Mizoguchi, *supra* note 1; Power, *supra* note 2, at 6; *see also* MacPherson, *supra* note 2 (stating that BNFL agreed to take the fuel back as well as pay compensation and return transport costs exceeding £100 million ($155 million)).

4. *See* Mizoguchi, *supra* note 1 (quoting the Irish Environment Minister Martin Cullen that the MOX shipments through the Irish Sea are an unacceptable risk to the environment of Ireland and the health and economic well-being of its population). Although Ireland recognizes that in principle British vessels carrying nuclear fuel may navigate across the Irish Sea exercising the right of innocent passage, it does not want the United Kingdom to turn the Irish Sea into a "nuclear fuel highway." Lorna Siggins, *Greenpeace Unhappy with Stance on N-Ship*, IRISH TIMES, Aug. 30, 2002, at 4, *available at* 2002 WL 25944754 (quoting Mr. Ahern, the Irish Minister for Communications, Marine and Natural Resources).

5. BNFL plans to recover fissile materials from the returned fuel at a Sellafield reprocessing plant. *See Protest Flotilla Ready*, *supra* note 1. Eventually, BNFL will manufacture new MOX fuel from the recovered plutonium and redeliver it to Japan, although the Japanese are unwilling to take it back until BNFL implements safety measures recommended by the British authority. *See* Memorial of Ir., MOX Plant (Ir. v. U.K.), at 88, 90, ¶¶ 4.86, 4.97 (Perm. Ct. Arb. 2002), *at* http://www.pca-cpa.org/PDF/Ireland%20Memorial%20Part%20I.pdf, http://www.pca-cpa.org/PDF/Ireland%20Memorial%20Part%20II.pdf, http://www.pca-cpa.org/PDF/Ireland%20Memorial%20Part%20III.pdf, http://www.pca-cpa.org/PDF/Ireland%20Memorial%20Part%20IV.pdf, http://www.pca-cpa.org/PDF/Ireland%20Memorial%20Part%20V.pdf (last visited Apr. 9, 2004) [hereinafter Annex VII Ir.'s Memorial]; Power, *supra* note 2, at 6; *Fuel Will Eventually Be Returned to Japan*, IRISH TIMES, Sept. 18, 2002, at 6, *available at* 2002 WL 25947620. Ireland strongly criticizes the MOX return shipments as inconsistent with the United Kingdom's assurance given at the International Tribunal for the Law of the Sea (ITLOS). *See* Annex VII Ir.'s Memorial, *supra*, at 85–91, ¶¶ 4.74–.102.

the reclaimed fissile materials.[6] The Irish people are concerned about routine radioactive discharges from BNFL's MOX related activities at Sellafield and frequent transports of nuclear materials over the Irish Sea.[7]

The conflict between the opposite sides of the Irish Sea materialized in 1992, when BNFL decided to construct the Sellafield MOX Plant, which is fifty times larger than the MOX Demonstration Facility in terms of MOX production capacity.[8] Alarmed by the likely intensification of MOX related activities, Ireland urged the United Kingdom to prepare an environmental impact assessment of the proposed nuclear fuel plant and sought to obtain environmental and safety information on MOX production at Sellafield and associated nuclear transports.[9] After years of unsuccessful diplomatic efforts to obtain relevant information, Ireland resorted to arbitration under the United Nations Convention on the Law of the Sea (UNCLOS)[10] and Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention),[11] alleging that the United Kingdom violated relevant treaty obligations to protect the marine environment of the Irish Sea. Pending the constitution of the tribunal under Annex VII of UNCLOS (Annex VII tribunal), Ireland further requested the International Tribunal for the Law of the Sea (ITLOS) to grant provisional measures that would prevent the plutonium commissioning of the Sellafield MOX Plant.[12]

---

6. *See infra* notes 102–116 and accompanying text. MOX fuel consists of a mixture of plutonium and uranium and is used in nuclear power reactors as an alternative to conventional low-enriched uranium fuel. Nuclear Control Inst. (NCI), Frequently Asked Questions (FAQ) About MOX Fuel Shipments by Sea ¶ 1, *at* http://www.nci.org/k-m/mox-qa.htm (updated July 13, 1999). From an economic perspective, MOX might not be an ideal option because uranium is abundant, and fresh low-enriched uranium fuel is much cheaper than MOX fuel. *See* William Underhill, *Waiting for Nukes: After Five Years in Limbo, a Fuel-Treatment Plant at Sellafield's Nuclear Complex Is at Last Going Online*, NEWSWEEK INT'L, Feb. 11, 2002, at 44; *see also infra* notes 110–15 and accompanying text.

Utility companies in Japan and several other countries use European reprocessing companies to reclaim uranium and plutonium remaining in spent fuel and recycle them into MOX fuel. *See* Scott R. Helton, *The Legal Problems of Spent Nuclear Fuel Disposal*, 23 ENERGY L.J. 179, 180–81 (2002); Underhill, *supra*, at 44. Through concern about nuclear proliferation, the United States declined to accept BNFL's offer to reprocess spent fuel. *See* Helton, *supra*, at 181. Nevertheless, the United States, as well as Russia, is interested in MOX use to consume plutonium recovered from dismantled warheads. *See* Underhill, *supra*, at 44.

7. *See infra* text accompanying notes 120–28.

8. British Nuclear Fuels plc (BNFL), Environmental Statement for the Proposed Sellafield MOX Plant 6, ¶¶ 2.7, 2.9 (Oct. 1993) (on file with the author, courtesy of BNFL).

9. *See infra* notes 170–73, 190 and accompanying text.

10. United Nations Convention on the Law of the Sea, Dec. 10, 1982, U.N. Doc. A/Conf.62/122, 21 I.L.M. 1261 (1983) [hereinafter UNCLOS].

11. Convention for the Protection of the Marine Environment of the North-East Atlantic, Sept. 22, 1992, 32 I.L.M. 1069 [hereinafter OSPAR Convention].

12. *See* Order of Dec. 3, MOX Plant (Ir. v. U.K.), 41 I.L.M. 405 (Int'l Trib. for the Law of the Sea 2001), *available at* http://www.itlos.org/case_documents/2001/document_en_197.pdf (last visited Feb. 8, 2004) [hereinafter ITLOS Provisional Measures]. ITLOS may not

On December 3, 2001, ITLOS issued the order that rejected the provisional measures requested by Ireland. Instead, the Tribunal required that the United Kingdom and Ireland cooperate in information exchange, monitoring, and pollution prevention from the MOX plant.[13] Shortly thereafter, BNFL commenced plutonium commissioning at the disputed plant,[14] while the OSPAR tribunal took more than a year and a half to reach a decision on July 2, 2003.[15] The Annex VII arbitral proceedings are still pending at The Hague, with further provisional measures issued on June 24, 2003.[16]

Although the ITLOS order attempted to facilitate dialogue between the parties, the Tribunal was incapable of addressing the root cause of the MOX plant controversy, namely the lack of an adequate mechanism for transboundary environmental impact assessment at the onset of the conflict under UNCLOS. Similarly, the OSPAR and Annex VII tribunals have failed to bring about the efficient resolution of this procedural environmental dispute. This Article addresses the prevention of similar incidents by proposing the creation of a marine environmental impact assessment protocol to UNCLOS to make assessment procedures operational from the initial stage of controversial projects. Part II offers background information, including the relationship between international

---

extend jurisdiction over the merits of the MOX Plant Case because pursuant to Article 287(5) of UNCLOS, the dispute has been submitted to an *ad hoc* arbitral tribunal established under Annex VII of UNCLOS. *See* ITLOS Provisional Measures, *supra*, at 2. Pending the constitution of an Annex VII arbitral tribunal, however, ITLOS may prescribe provisional measures upon request of either party, provided that ITLOS considers that the Annex VII tribunal to be constituted would have *prima facie* jurisdiction and that the urgency of the situation requires such measures. UNCLOS, *supra* note 10, art. 290(5), 21 I.L.M. at 1323.

It should also be noted that ITLOS and Annex VII tribunals do not have jurisdiction over a dispute concerning interpretation or application of the OSPAR Convention because the regional sea convention includes no provision authorizing dispute settlements before ITLOS or *ad hoc* tribunals established pursuant to UNCLOS. *See* UNCLOS, *supra* note 10, art. 288(2), 21 I.L.M at 1323; *see also* OSPAR Convention, *supra*, note 11, art. 32, 32 I.L.M. at 1087. Upon request by a Contracting Party, a dispute involving interpretation or application of the OSPAR Convention may be submitted to an *ad hoc* arbitral tribunal upon request of a Contracting Party pursuant to Article 32 of the OSPAR Convention. This is why two separate *ad hoc* arbitral tribunals under UNCLOS and the OSPAR Convention have dealt with the MOX Plant dispute between Ireland and the United Kingdom.

13. ITLOS Provisional Measures, *supra* note 12, at 416, ¶ 89.1(a)–(c).

14. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 81–82, ¶¶ 4.54–.57; Judith Perera, *Plutonium Commissioning Begins at MOX Fuel Plant*, NUCLEAR WASTE NEWS, Jan. 3, 2002, at 7, *available at* 2002 WL 10036350.

15. Dispute Concerning Access to Information Under Article 9 of the OSPAR Convention (Ir. v. U.K.) (Perm. Ct. Arb. 2003), *at* http://www.pca-cpa.org/PDF/OSPAR%20Award.pdf (last visited Nov. 12, 2003) [hereinafter OSPAR Final Award].

16. Order No. 3: Suspension of Proceedings on Jurisdiction and Merits, and Request for Further Provisional Measures, MOX Plant (Ir. v. U.K.) (Perm. Ct. Arb. 2003), *at* http://www.pca-cpa.org/PDF/MOX%20Order%20no3.pdf (last visited Nov. 11, 2003) [hereinafter Annex VII Further Provisional Measures].

environmental law and the law of the sea, underlying competing interests of states concerned, and marine environmental protection measures under UNCLOS.[17] Part III analyzes factual and legal issues in the MOX plant operation and associated nuclear shipments, with a particular focus on procedural inadequacies in the environmental impact assessment process. This Section also deals with the proliferation of tribunals in the MOX plant dispute and identifies remaining problems under the vague provisions of UNCLOS. Part IV conducts a comparative analysis of major regional and international environmental assessment mechanisms, and proposes a protocol for marine environmental impact assessment to UNCLOS with an effective dispute settlement mechanism. The article concludes by calling for the development of such an environmental impact assessment protocol to UNCLOS.

I. BACKGROUND

A. *International Environmental Law and the Law of the Sea*

The oceans are vital to the preservation of the global environment. For example, the oceans provide important ecological services, including sequestration of carbon, assimilation of wastes, and control of climate.[18] Marine environments also exhibit a considerable degree of biodiversity.[19] Nevertheless, environmental issues were generally marginalized in the law of the sea until the end of World War II. This was primarily because marine resources and assimilative capacities were regarded as inexhaustible, and pollution problems were thought to be mostly confined and localized.[20]

---

17. To focus on the tension between maritime states' rights of the freedom of navigation and coastal states' rights and duties to protect the marine environment, this Article will not address in detail environmental issues associated with the use of the continental shelf and deep seabed. For more information, see R.R. CHURCHILL & A.V. LOWE, THE LAW OF THE SEA 330 (3d ed. 1999).

18. DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 676 (1998); *see also* A. Charlotte de Fontaubert et al., *Biodiversity in the Seas: Implementing the Convention on Biological Diversity in Marine and Coastal Habitats*, 10 GEO. INT'L ENVTL. L. REV. 753, 761–62 (1998).

19. HUNTER ET AL., *supra* note 18, at 937 (stating that "much of the world's biodiversity is found either in marine or freshwater ecosystems," although terrestrial biodiversity can be easily studied and appreciated). Oceans and coasts represent impressive ecosystem diversity and varying habitats, such as coral leafs with dense species concentrations and complex interspecies interactions and deep ocean bottoms with unique species adapted to high pressure and darkness. *See* de Fontaubert et al., *supra* note 18, at 760–61.

20. HUNTER ET AL., *supra* note 18, at 678; W.M. von Zharen, *Environmental Governance of the Seas, the Coastal Zone, and Their Resources*, 9 NAT. RESOURCES & ENV'T 3, 3 (1995); *see also* de Fontaubert et al., *supra* note 18, at 753–54 (stating that the ocean's vast-

The law of the sea was initially developed to govern navigation, which is, along with fishing, the oldest human use of the sea and still vital to the conduct of international relations and international commercial transactions.[21] In the early seventeenth century, Hugo Grotius, commonly regarded as the founder of modern international law[22] and also known to have taken part in the expansion of the Dutch East Indian Company,[23] elaborated on the principle of freedom of navigation as follows: "Every nation is free to travel to every other nation, and to trade with it."[24] Since then, this principle has been widely accepted by states as a fundamental principle of customary international law.[25] The high seas acquired the status of a global commons, upon which flagged vessels of every state could enjoy unimpeded basic rights of navigation and fishing.[26]

Nevertheless, the freedom of navigation is by no means absolute. Coastal states enjoy sovereignty over their respective territorial seas, which were initially confined to a three-mile limit along the coast, but were extended to twelve miles through commonly observed state practices that emerged by the mid-twentieth century.[27] The modern law of the sea also recognizes coastal states' exclusive control over natural resources within their respective 200-mile exclusive economic zones (EEZs).[28] As a result, the law of the sea intricately balances maritime states' interest in navigation with coastal states' interest in territorial control, as well as the artificial allocation of natural resources between the two sides along maritime jurisdictional borders.

In addition, during the twentieth century, the principle of state responsibility has evolved into customary international law. In the context of the law of the sea, in 1949 the International Court of Justice held in the *Corfu Channel* case[29] that each state bears an obligation not to

---

ness and relative inaccessibility to human investigation prevent people from appreciating its inherent vulnerability and limits in marine resources).

21. CHURCHILL & LOWE, *supra* note 17, at 255.

22. *Id.* at 4; von Zharen, *supra* note 20, at 3.

23. *See* HUNTER ET AL., *supra* note 18, at 678 (explaining that Grotius advocated for "the Netherlands' right to sail in the Indian Ocean and Eastern Seas in order to trade with India and the East Indies" to protect Dutch interests against the political and commercial dominion by Spanish and Portugal and to compete effectively with other mercantile nations).

24. von Zharen, *supra* note 20, at 3 (quoting H. GROTIUS, THE FREEDOM OF THE SEAS 7 (Magoffin trans. 1916)).

25. *See* Lawrence Marin, Note, *Oceanic Transportation of Radioactive Materials: The Conflict Between the Law of the Seas' Right of Innocent Passage and Duty to the Marine Environment*, 13 FLA. J. INT'L L. 361, 364 (2001); von Zharen, *supra* note 20, at 3.

26. *See* HUNTER ET AL., *supra* note 18, at 678.

27. CHURCHILL & LOWE, *supra* note 17, at 77–79.

28. *See id.* at 166–68.

29. Corfu Channel (U.K. v. Alb.), 1949 I.C.J. 4 (Judgment of Apr. 9) (finding that Albania responsible for the explosion of mines within its territorial waters where British vessels,

knowingly permit its territory to be utilized for acts adverse to the rights of other states. Similarly, Article 2 of the 1958 Convention on the High Seas requires states to pay "reasonable regard to the interests of other States in their exercise of freedom of the high seas."[30] In the context of environmental protection, in 1921 the arbitration tribunal in the *Trail Smelter* case[31] found Canada liable for U.S. citizens' injuries from transboundary air pollution caused by sulfur dioxide exhaustion from a privately owned smelter within Canadian territory. This is because "no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another."[32] The principle was further crystallized into Principle 21 of the 1972 *Stockholm Declaration on the Human Environment*, which requires states to "ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction."[33] These two threads of state responsibility

---

during innocent passage through the North Corfu Strait, struck the mines and suffered severe damages); *see also* von Zharen, *supra* note 20, at 4.

30. Convention on the High Seas, Apr. 29, 1958, 13 U.S.T. 2312, 450 U.N.T.S. 11, 84 [hereinafter Geneva Convention of 1958]; *see also* CHURCHILL & LOWE, *supra* note 17, at 332.

31. Trail Smelter (U.S. v. Can.), 3 R.I.A.A. 1905 (1941).

32. *Id.* at 1965; *see also* CHURCHILL & LOWE, *supra* note 17, at 332.

33. United Nations Conference on the Human Environment, *Stockholm Declaration*, June 16, 1972, princ. 21, U.N. Doc. A/CONF.48/14 & Corr. 1 (1972) [hereinafter *Stockholm Declaration*]; *see also Rio Declaration on Environment and Development*, U.N. GAOR, 47th Sess., Annex 1, Agenda Item 21, at 8, princ. 2, U.N. Doc. A/CONF.151/26 (Vol. I) (1992) [hereinafter *Rio Declaration*] (reaffirming an identical principle); Legality of the Threat or Use of Nuclear Weapons, 1996 I.C.J. 15, 15, ¶ 29 (July 8) ("The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now a part of the corpus of international law relating to the environment."); HUNTER ET AL., *supra* note 18, at 348 ("Most commentators assumed that Principle 21 reflected customary international law as supported by *Trail Smelter* and *Corfu Channel*."); Alan E. Boyle, *Nuclear Energy and International Law: An Environmental Perspective*, 1989 BRIT. Y.B. INT'L L. 257, 271–72 & n.103 [hereinafter *Nuclear Energy*] (stating that at the Stockholm Conference, many states recognized that environmental state responsibility codified in Principle 21 embodied existing international law). *But see* Daniel Bodansky, *Customary (and Not So Customary) International Law*, 3 IND. J. GLOBAL LEGAL STUD. 105, 114–16 (1995) (asserting that core international environmental norms including environmental state responsibility, which many commentators regard as "customary," are rather "declaratory" without corresponding state practice); *Developments in the Law—International Environmental Law*, 104 HARV. L REV. 1484, 1515 n.7 (1991) [hereinafter *Developments in the Law*] (arguing that environmental state responsibility is not grounded in common interests among states); John Knox, *The Myth and Reality of Transboundary Environmental Impact Assessment*, 96 AM. J. INT'L L. 291, 319 (2002) (contending that contrary to the dominant view, the state responsibility not to cause transboundary harm does not constitute customary international law but instead belongs to a "myth system" of international environmental law consisting of "collective ideal"). The dissenting view is based primarily on the fact that international environmental law and underlying state practice apparently tolerate insignificant transboundary environmental damages. *See* Bodansky, *supra*, at 115; *Developments in the Law*, *supra*, at 1515; Knox, *supra*, at 298. The majority view recognizes that the

principles have merged into "a general rule of customary international law that States must not permit their nationals to discharge into the sea matter that could cause harm to the nationals of other States."[34]

However, this customary rule of state responsibility has limitations, as it does not provide the means to impose *collective* responsibilities on states to protect the marine environment.[35] Although individual states are responsible for controlling environmental pollution within their respective territorial seas, the vast oceans remain as collective goods. By the end of 1973, nearly two thirds of the oceans were still insulated from coastal states' national jurisdiction.[36] Moreover, since the end of World War II, industrialization and population growth have caused growing amounts of marine pollutants to be discharged from a variety of sources, including land-based activities and vessels. This has overwhelmed the assimilative capacity of marine ecosystems, in particular in closed and semi-closed seas.[37] In an attempt to avoid a "tragedy of commons,"[38] states have cooperated in establishing international and regional institutions that supply detailed safety and environmental standards.[39]

---

duty to prevent transboundary environmental harm is not absolute and regard that environmental state responsibility entails due diligence to take all practicable steps to prevent transboundary environmental harm. *See, e.g.*, *Report of the International Law Commission on the Work of Its Fifty-Third Session*, U.N. GAOR, 56th Sess., Supp. No. 10, at 391–96, U.N. Doc. A/56/10 (2001) [hereinafter *ILC Commentaries*]; HUNTER ET AL., *supra* note 18, at 349; Phoebe N. Okowa, *Procedural Obligations in International Environmental Agreements*, 1996 BRIT. Y.B. INT'L L. 275, 280; *see also* Alan E. Boyle, *State Responsibility and International Liability for Injurious Consequences of Acts Not Prohibited by International Law: A Necessary Distinction?*, 39 INT'L & COMP. L.Q. 1, 15 (1990) [hereinafter *State Responsibility*] (supporting the view that due diligence reflects actual state practice).

34. CHURCHILL & LOWE, *supra* note 17, at 332; *see* von Zharen, *supra* note 20, at 4; *see also* Alan E. Boyle, *Marine Pollution Under the Law of the Sea Convention*, 79 AM. J. INT'L. L. 347, 349 (1985) (stating that under customary international law, only the principle of state responsibility provides affected coastal states with some general protection from transboundary pollution and the rights of redress against the originating state without wide recognition of coastal states' prescriptive jurisdiction beyond the territorial sea); Jon M. Van Dyke, *Sea Shipment of Japanese Plutonium*, 24 OCEAN DEV. & INT'L L. 399, 400 (1993) (referencing the duty to avoid causing injury to others and the duty to prevent transboundary environmental pollution as basic norms of international law from which the general duty to protect the marine environment derives).

35. HUNTER ET AL., *supra* note 18, at 679.

36. *Id.* at 680.

37. *See* CHURCHILL & LOWE, *supra* note 17, at 331; *see also* de Fontaubert, *supra* note 18, at 763 (stating that land-based sources are the primary cause of marine pollution, although airborne and vessel sources also have significant impacts on the marine ecosystems).

38. "The tragedy of the commons" involves public goods, including clean water and air, to which everyone has free access without private mechanisms to control use, such as ownership through property rights and allocation of costs through markets. HUNTER ET AL., *supra* note 18, at 105–06.

39. *See* CHURCHILL & LOWE, *supra* note 17, at 333 (stating that all the treaties dealing with pollution from ships were adopted under the auspices of the International Maritime Organization (IMO)); Kristina Martin, Note, *Conflicts in Marine Environmental Protection: The*

In addition, precautionary and anticipatory approaches have become necessary to ensure that states carry out their responsibility not to cause transboundary environmental harm. In particular, marine environmental protection requires precaution and prevention, as solutions to marine environmental degradation are often complex due to the direct and cumulative impacts of different substances discharged from multiple mobile and stationed sources.[40] Thus, it is necessary to incorporate contemporary international environmental norms, such as the precautionary principle and states' duty to conduct environmental impact assessment, into regional and international regimes of marine environmental protection.[41]

In 1982, UNCLOS introduced an international framework for marine environmental protection to facilitate these legal developments.[42] The UNCLOS framework builds on the principle of state responsibility,[43] and

---

Turkish Straits as a Case Study, 9 TRANSNAT'L L. & CONTEMP. PROBS. 681 (1999) (detailing the history of the IMO and its initiatives in marine safety and environmental protection). For a comprehensive list of the relevant IMO conventions, see IMO, *Marine Environment Conventions*, *at* http://www.imo.org/Conventions (last visited Aug. 1, 2003).

At the regional level, all the sources of marine pollution are addressed within a single framework convention accompanied by protocols detailing parties' obligations concerning specific sources of pollution. *See* CHURCHILL & LOWE, *supra* note 17, at 333–34. The United Nations Environmental Programme ("UNEP") has supported regional efforts to curve marine pollution through its Regional Seas Programme. *See id.* at 334. For a comprehensive list of regional agreements, see UNEP, Regional Seas Conventions and Protocols, *at* http://www.unep.ch/seas/main/hconlist.html (last visited Nov. 11, 2003).

40. *Agenda 21*, U.N. GAOR, 47th Sess., Annex 2, ¶¶ 17.18–.21, U.N. Doc. A/CONF.151/4 (1992).

41. *Id.* ¶ 17.21; *see also ILC Commentaries*, *supra* note 33, at 404 (stating that the duty to assess potential environmental impact corresponds to the principle of state responsibility); CHURCHILL & LOWE, *supra* note 17, at 336 (explaining the incorporation of the precautionary principle, as well as the concept of sustainable development and biodiversity, in regional seas agreements in the 1990s); Jon M. Van Dyke, *Applying the Precautionary Principle to Ocean Shipments of Radioactive Materials*, 27 OCEAN DEV. & INT'L L. 379, 379 (1996) (maintaining that the precautionary principle has acquired "almost universal acceptance" as a fundamental rule concerning activities affecting the marine environment). *See generally Rio Declaration*, *supra* note 33, at 11, princ. 15 (codifying the precautionary principle that prevents states from using scientific uncertainty as a justification to postpone cost-effective measures to prevent potentially significant environmental harm); *infra* note 84 and accompanying text (explaining in detail states' duties to conduct environmental impact assessments).

42. *See* Boyle, *supra* note 34, at 350 ("[P]art XII of the Convention represent[s] the first attempt to set out a general framework for a legal regime that establishes on a global, conventional basis the obligations, responsibilities and powers of states in all matters of marine environmental protection.").

43. *See* UNCLOS, *supra* note 10, art. 194(2), 21 I.L.M. at 1308.

> 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.

Id.

draws on emerging preventive and anticipatory environmental norms,[44] while relying on international instruments to supplement detailed environmental and safety standards.[45]

B. *Competing Interests of States Concerned in Marine Environmental Protection*

The evolution of the law of the sea also reflects the conflict between the interests of maritime states and coastal states. Maritime states have interests in the freedom of navigation and wish to insulate their flagged vessels from the control of coastal states. In contrast, coastal states want to exercise as much control as possible over flagged vessels of other states to manage fisheries, as well as to maintain peace, security, and public order within their respective territories.[46]

---

44. *See* UNCLOS, *supra* note 10, art. 23, 21 I.L.M. at 1274 (requiring vessels loaded with nuclear materials and other ultrahazardous substances to comply with "special precautionary measures" established by international agreements); *id.* art. 206, 21 I.L.M. at 1309 (providing for states' duty to assess environmental impacts); *see also id.* art. 119(1)(a), 21 I.L.M. at 1291 (introducing the concept of sustainability in fish stocks management).

45. *See id.* art. 197, 21 I.L.M. at 1308 ("States shall co-operate on a global basis and, as appropriate, on a regional basis, directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention, for the protection and preservation of the marine environment . . ."); *id.* art. 201, 21 I.L.M. at 1309 ("States shall co-operate, directly or through competent international organizations, in establishing appropriate scientific criteria for the formulation and elaboration of rules, standards and recommended practices and procedures for the prevention, reduction and control of pollution of the marine environment."); *id.* art. 207(4), 21 I.L.M. at 1310 ("States, acting especially through competent international organizations or diplomatic conference, shall endeavour to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution of the marine environment from land-based sources . . ."); *see also infra* notes 65, 70, 76, 78 and accompanying text (explaining that UNCLOS uses international standards in defining states' rights to prescribe measures to protect the marine environment).

46. *See* HUNTER ET AL., *supra* note 18, at 679–80; *see also* Mali v. Keeper of the Common Jail ("Wildenhus's Case"), 120 U.S. 1 (1887) (holding that "if crimes are committed on board of a character to disturb the peace and tranquility of the country to which the vessel has been brought," the offenders may be subject to the jurisdiction of the local laws, in sustaining U.S. enforcement jurisdiction over a Belgian national on the Belgian vessel). The Permanent Court of International Justice recognized this preposition in dealing with enforcement jurisdiction regarding collision between French and Turkish vessels on the high seas. S.S. Lotus (Fr. v. Turk.), 1927 P.C.I.J. (Ser. A) No. 9. General principles articulated in the *S.S. Lotus* case are still valid under international law, although Article 11.1 of the Geneva Convention of 1958, *supra* note 30, at 88, effectively overruled the Court's specific holding that authorized the injured state's enforcement jurisdiction over a responsible officer of the culpable foreign vessel in a collision case. *See* HENRY J. STEINER ET AL., TRANSNATIONAL LEGAL PROBLEMS: MATERIALS AND TEXT 858 (4th ed. 1994).

Enforcement jurisdiction, which is the authority to actually enforce laws, is distinct from prescriptive jurisdiction, which refers to the authority to prescribe law. *See* CHURCHILL & LOWE, *supra* note 17, at 11–12. Prescriptive jurisdiction does not always coexist with enforcement jurisdiction and, in some circumstances, coastal states may not directly enforce validly prescribed and applicable local laws against foreign vessels within the territorial sea.

This fundamental conflict of interest in the law of the sea is further replicated in measures to protect the marine environment. Coastal states may have legitimate interests in applying their own environmental and safety standards to protect their unique local marine ecosystems and environmentally sensitive areas, such as habitats of endangered species, spawning sites of fish stocks, and coral reefs. Although states have concluded numerous international agreements to prevent marine environmental pollution,[47] generalized international standards alone may not adequately take into account geographical differences and ecological vulnerabilities in local marine environments.

On the other hand, maritime states want to avoid imposition of domestic environmental measures by coastal states, as this may create inconsistencies in applicable environmental regulations across navigation routes.[48] A coastal state enjoys territorial sovereignty and holds the right to prescribe environmental regulations pursuant to its own economic policy goals and natural resources management plan.[49] In accordance with its own risk preferences, a coastal state may choose to implement domestic environmental standards tougher than those prescribed in applicable multilateral environmental agreements.[50] If such inconsistencies were tolerated across territorial seas, it could hinder

---

See id. at 12; Boyle, *supra* note 34, at 362–63. In discussing measures to prevent marine pollution, this Article focuses on prescriptive jurisdiction unless otherwise noted.

47. The International Convention for the Prevention of Pollution of the Sea by Oil, May 12, 1954, 12 U.S.T. 2989, 327 U.N.T.S. 3, was adopted as the first international pollution control standards. *See* CHURCHILL & LOWE, *supra* note 17, at 339. Subsequently, international efforts to reduce marine pollution was expanded through the International Convention for the Prevention of Pollution from Ships, Nov. 2, 1973, 1340 U.N.T.S. 61, which sets detailed standards concerning oil (Annex I, mandatory), noxious liquid substances in bulk (Annex II, mandatory), harmful substances carried by sea in packaged forms (Annex III, optional), sewage (Annex IV, optional), garbage (Annex V, optional), and air pollution (Annex VI, optional and added in 1997). *See* CHURCHILL & LOWE, *supra* note 17, at 339–40.

In addition, safety measures concerning the marine transport of dangerous goods are codified in several international instruments. *See, e.g.*, 1 INTERNATIONAL MARITIME ORGANIZATION, INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG) CODE pmbl. (2002), *available at* http://www.imo.org/Safety/index.asp?topic_id=158 (last visited Aug. 1, 2003) (including Amendment 31–02 of May 2002, which makes the IMDG Code mandatory except for certain recommendatory provisions); International Convention for the Safety of Life at Sea, Nov. 1, 1974, 32 U.S.T. 47, 1184 U.N.T.S. 278 (amended May 2002) [hereinafter SOLAS Convention] (incorporating the IMDG Code as mandatory). In addition, international agreements concerning accidental release of marine pollutants, dumping, and liability regimes for pollution damage supplement UNCLOS. *See* CHURCHILL & LOWE, *supra* note 17, at 353–69.

48. *See* CHURCHILL & LOWE, *supra* note 17, at 346; Boyle, *supra* note 34, at 358.

49. This environmental state sovereignty is codified in Principle 21 of the Stockholm Declaration, along with environmental state responsibility. *Stockholm Declaration*, *supra* note 33, princ. 21; *see also Rio Declaration*, *supra* note 33, at 8, princ. 2.

50. *See* Boyle, *supra* note 34, at 352 (stating that before UNCLOS entered into force, international standards concerning marine pollution were merely permissible and states had considerable discretion to determine whether and how to control pollution).

freedom of navigation and impose substantial compliance costs on the relevant industries.

In addition, a coastal state and its neighboring states may disagree over measures to curtail land-based pollution. Although a coastal state may unilaterally impose tough emissions standards on activities within its territory, unilateral measures do not address land-based pollution from neighboring states.[51] As a result, the coastal state's unilateral measure may ineffectively protect the shared marine environment, while its industries incur substantial compliance costs from stricter measures. To avoid the race to the bottom, neighboring coastal states may want to harmonize emissions standards and take collective action to curtail pollution from land-based sources.

Thus, in marine environmental protection there is tension between maritime states' interest in the freedom of navigation and preference for international standards, and coastal states' interest in maritime safety and local environments and preference for domestic standards. In addition, to address marine pollution from land-based sources, neighboring coastal states have an interest in cooperating and coordinating with one another, while rejecting interferences with territorial sovereignty.

C. *Marine Environmental Protection Measures Under UNCLOS*

To address these competing interests of concerned states, UNCLOS adjusted customary jurisdictional arrangements and the associated rights and obligations of states regarding marine environmental protection measures.[52] In particular, states' rights and obligations are elaborated in Part XII of the Convention. Thus, under UNCLOS, "[a]ll parts of the Convention must be viewed as equally important and the duty to protect and preserve the marine environment is just as much an international norm as the rights to innocent and transit passage."[53]

---

51. *See* CHURCHILL & LOWE, *supra* note 17, at 379; *see also* Boyle, *supra* note 34, at 352 (explaining that because the law of the sea before the adoption of UNCLOS failed to cover marine pollution from land-based sources, preventing pollution from land-based sources depended on unilateral measures of states concerned).

52. *See* Boyle, *supra* note 34, at 352–53.

53. NCI, *supra* note 6 (quoting a statement made by Professor Jon M. Van Dyke of William S. Richardson School of Law, University of Hawaii at Manoa); *see also* Marin, *supra* note 25, at 368 (stating that although the right of innocent passage is a primary concept in UNCLOS, the Convention addresses the duty to protect the marine environment in much depth).

1. Substantive Environmental Measures for Marine Pollution Prevention

Under Article II of UNCLOS, coastal states enjoy sovereignty over the territorial sea,[54] which is subject to the right of innocent passage by flagged vessels of another state.[55] Importantly, such passage must be "not prejudicial to the peace, good order or security of the coastal State."[56] In the context of marine environmental protection, passage of a foreign ship conducting "any act of willful and serious pollution" is not innocent.[57] To prevent such passage, coastal states "may take the necessary steps" including expulsion of non-innocent vessels from the territorial sea.[58] Without serious harm, however, a coastal state may not deprive the right of innocent passage from a vessel merely carrying ultrahazardous substances, such as nuclear materials and highly toxic chemicals.[59] The coastal state may confine its passage to designated sea-lanes,[60] while the vessel loaded with such substances must carry documents and comply with "special precautionary measures" in applicable international instruments.[61] In addition, coastal states may not hinder innocent passage with impracticable requirements and discriminatory measures.[62]

In conformity with these general rights and obligations, a coastal state may prescribe laws and regulations using its preferred standards to preserve the marine environment and curtail pollution from foreign vessels within the territorial sea.[63] The foreign vessels must comply with

---

54. UNCLOS, *supra* note 10, art. 2(1), 21 I.L.M. at 1272.

55. *Id.* art. 2(3), 21 I.L.M. at 1272 ("The sovereignty over the territorial sea is exercised subject to this Convention . . ."); *id.* art. 17, 21 I.L.M. at 1273 ("Subject to this Convention, ships of all States . . . enjoy the right of innocent passage through the territorial sea").

56. *Id.* art. 19(1), 21 I.L.M. at 1274.

57. *Id.* art. 19(1)(h), 21 I.L.M. at 1274; *see also* Raul A.F. Pedrozo, *Transport of Nuclear Cargoes by Sea*, 28 J. MAR. L. & COM. 207, 223 (1997).

58. UNCLOS, *supra* note 10, art. 25(1), 21 I.L.M. at 1275. Although this provision does not expressly spell out the coastal state's right to exclude vessels not engaged in innocent passage, customary international law supports this right. *See* CHURCHILL & LOWE, *supra* note 17, at 87.

59. Pedrozo, *supra* note 57, at 223–24.

60. UNCLOS, *supra* note 10, art. 22(2), 21 I.L.M. at 1274.

61. *Id.* art. 23, 21 I.L.M. at 1274. For relevant international instruments concerning the maritime transport of ultrahazardous materials, see *supra* note 47.

62. UNCLOS, *supra* note 10, art. 24(1)(a)–(b), 21 I.L.M. at 1275.

63. *Id.* art. 21(1)(f), 21 I.L.M. at 1274 ("The coastal State may adopt laws and regulations, in conformity with the provisions of this Convention and other rules of international law . . . in respect of . . . the preservation of the environment of the coastal States and the prevention, reduction and control of pollution thereof"); *id.* art. 211(4), 21 I.L.M. at 1310 (providing that coastal states may, "in exercise of their sovereignty within their territorial sea," adopt laws and regulations to curtail pollution from foreign vessels, while "[s]uch laws and regulations shall . . . not hamper innocent passage of foreign vessels"); *see also* Boyle, *supra* note 34, at 359 (stating that UNCLOS, in general, maintains the basic preference for coastal states' domestic rules and standards for pollution prevention within the territorial sea).

properly prescribed laws and regulations of the coastal state during innocent passage.[64] Nevertheless, coastal states may not apply domestic regulations to affect the design, construction, manning, or equipment of foreign vessels "unless they are giving effect to generally accepted international rules or standards."[65] UNCLOS introduced this significant exception to take into account maritime states' interests in navigation while creating an incentive for them to adopt international safety standards established by the International Maritime Organization (IMO).[66]

Within the EEZ, a coastal state has a sovereign right to explore and manage natural resources.[67] A healthy marine environment is necessary to manage living natural resources on a sustainable basis. Nevertheless, coastal states do not maintain full sovereignty within their respective EEZs. Foreign vessels enjoy the freedom of navigation within the EEZ of another state.[68] This arrangement creates tension between coastal states and maritime states in exercising their rights and performing their duties under UNCLOS. Part XII of the Convention purports to strike a balance between the two sides.[69] Under Article 211.5, coastal states may prescribe rules to prevent pollution from vessels "conforming to and giving effect to generally accepted international rules and standards."[70] This formulation gives coastal states no discretion in adopting their own standards, which must be neither higher nor lower than applicable international standards.[71] Nevertheless, a coastal state may apply "special mandatory measures" to foreign vessels within an environmentally sensitive area, provided that the coastal state obtains necessary authorizations from the IMO acting as "the competent international organization."[72]

---

64. UNCLOS, *supra* note 10, art. 21(4), 21 I.L.M. at 1274.

65. *Id.* art. 21(2), 21 I.L.M. at 1274.

66. *See* CHURCHILL & LOWE, *supra* note 17, at 94–95 (explaining that this provision puts limitation on the legislative competence of coastal states to avoid differing standards in design, construction, manning and equipment to which vessels cannot adjust during a voyage); Boyle, *supra* note 34, at 360–61 (stating that the "international standards" provisions in UNCLOS, in effect, limit the freedom of states to decline to ratify or apply relevant international agreements). As a result, while maritime states may be compelled to apply international standards that they have never ratified, they may exert influence over the development of international safety standards through the IMO. *Id.* at 362.

67. UNCLOS, *supra* note 10, art. 56(1)(a), 21 I.L.M. at 1279.

68. *Id.* art. 58(1)(a), 21 I.L.M. at 1279.

69. *See* Boyle, *supra* note 34, at 358.

70. UNCLOS, *supra* note 10, art. 211(5), 21 I.L.M. at 1311. When states adopted this formulation in 1982, they seemed to have in mind the MARPOR Convention adopted in 1973 under the auspices of the IMO. *See* Boyle, *supra* note 34, at 361.

71. *See* Boyle, *supra* note 34, at 361.

72. UNCLOS, *supra* note 10, art. 211(6)(a), 21 I.L.M. at 1311. Within the designated area, the coastal state may apply IMO standards specifically established for that area and, additionally, its own domestic laws and regulations concerning discharges or navigation. *Id.* art. 211(6)(a), (c).

While coastal states obtain these quite novel jurisdictional bases for pollution prevention within EEZs,[73] their legislative competence in this matter is narrowly tailored to minimize effects on maritime states' freedom of navigation.

On the high seas, flagged vessels are subject to exclusive control of the flag states in exercising their right to the freedom of navigation.[74] Accordingly, marine environmental protection on the high seas depends on flag states' domestic measures. Part XII imposes individual and collective obligations on states to take measures to protect the marine environment from pollution.[75] In particular, domestic pollution prevention measures "shall at least have the same effect as that of generally accepted international rules and standards established through the competent international organization or general diplomatic conference."[76] Unlike coastal states' laws and regulations, flag states' pollution prevention measures are consistently applied to flagged vessels throughout a voyage.[77] Thus, to prevent pollution from flagged vessels, flag states are encouraged to adopt stricter rules.

Regarding land-based sources, UNCLOS requires states to adopt pollution prevention measures "taking into account internationally agreed rules, standards and recommended practices and procedures."[78] According to this provision, such domestic standards can be lower than international standards.[79] Because this matter squarely falls within the territorial sovereignty of each state, the language is quite lenient compared with the other provisions discussed above. To fill the gap, UNCLOS requires that states endeavor to harmonize their pollution prevention measures at the regional level,[80] and encourages regional and

---

73. *See* CHURCHILL & LOWE, *supra* note 17, at 169 (explaining that coastal states' prescriptive jurisdiction over marine environmental protection within EEZs was not generally recognized prior to UNCLOS).

74. UNCLOS, *supra* note 10, art. 87, 21 I.L.M. at 1286 (the freedoms of the high seas); *id.* art. 92(1), 21 I.L.M. at 1287 (flag states' exclusive jurisdiction).

75. *Id.* art. 194(1), 21 I.L.M. at 1308 ("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 . . ."); *id.* art. 194(2), 21 I.L.M. at 1308 (providing for states' duty to prevent transboundary marine environmental pollution resulting from activities under their jurisdiction or control); *id.* art. 195, 21 I.L.M. at 1308 (spelling out states' duty not to transfer damage or hazards or transform one type of pollution into another).

76. *Id.* art. 211.2.

77. *See* Boyle, *supra* note 34, at 358 (arguing that the prescriptive jurisdiction of coastal states in marine environmental protection plays a secondary role to supplement the primary duty of flag states to regulate pollutants from their own vessels).

78. UNCLOS, *supra* note 10, art. 207(1), 21 I.L.M. at 1310.

79. *See* Boyle, *supra* note 34, at 354–55.

80. UNCLOS, *supra* note 10, art. 207(3), 21 I.L.M. at 1310 (regional harmonization); *id.* art. 207(4), 21 I.L.M. at 1310 (global and regional rules).

global cooperation in marine environmental protection.[81] Indeed, these provisions gave rise to regional regimes, including the OSPAR Convention[82] and other similar regional seas conventions.[83]

2. Environmental Assessment as a Procedural Requirement for Marine Environmental Protection

Thus far, this Article has examined the command-and-control aspect of marine environmental pollution measures under UNCLOS. In addition, the Convention introduces measures to facilitate marine environmental protection including, *inter alia*, assessment of potential environmental impacts. An environmental impact assessment is a process to examine, analyze, and evaluate planned activities in order to attain sustainable development through environmentally informed decision-making.[84] As contemporary environmental law shifts emphasis from command-and-control measures to more holistic and preventive approaches, a state's duty to conduct environmental impact assessment has emerged as a fundamental principle of international environmental law.[85]

---

81. *Id.* art. 197, 21 I.L.M. at 1308 (dealing with global and regional cooperation for marine environmental protection); *id.* art. 200, 21 I.L.M. at 1309 (providing for facilitation of studies, research programs, and exchange of information and data for marine environmental protection); *id.* art. 201, 21 I.L.M. at 1309 (encouraging the development of scientific criteria for regulations to protect the marine environment).

82. OSPAR Convention, *supra* note 11, pmbl., 32 I.L.M. at 1072 ("Recalling the relevant provisions of customary international law reflected in Part XII of the United Nations Law of the Sea Convention and, in particular, Article 197 on global and regional cooperation for the protection and preservation of the marine environment").

83. *See* UNEP, *supra* note 39 (listing regional seas conventions and protocols).

84. UNEP Governing Council, Goals and Principles of Environmental Impact Assessment, Dec. 14/25, UN Doc. UNEP/GC/DEC/14/25 (1987), *available at* http://www-penelope.drec.unilim.fr/penelope/library/Libs/Int_nal/unep.html (last visited Jan. 26, 2004) [hereinafter UNEP Guidelines]; World Bank, *Environmental Assessment*, *in* THE WORLD BANK OPERATIONAL MANUAL: OPERATIONAL POLICIES 4.01, ¶ 2 (1999), *available at* http://wbln0018.worldbank.org/Institutional/Manuals/OpManual.nsf/944eea1d5fb31d95852564a30060b223/9367a2a9d9daeed38525672c007d0972?OpenDocument (last visited Apr. 9, 2004); HUNTER ET AL., *supra* note 18, at 366; Knox, *supra* note 33, at 291; Okowa, *supra* note 33, at 279.

85. *See* Kevin R. Gray, *International Environmental Impact Assessment: Potential for a Multilateral Environmental Agreement*, 11 COLO. J. INT'L ENVTL. L. & POL'Y 83, 88 (2000); *see also Agenda 21*, *supra* note 40, ¶ 8.5(b) (urging states to introduce "comprehensive analytical procedures" to assess economic, social and environmental impacts as well as costs, benefits and risks in projects, policies, and programs to support more integrated decision-making). Many commentaries regard the duty of states to conduct environmental impact assessments as an emerging norm of customary international law. HUNTER ET AL., *supra* note 18, at 367; *see also* Erika L. Preiss, Student Article, *The International Obligation to Conduct an Environmental Impact Assessment: The ICJ Case Concerning the Gabcikovo-Nagymaros Project*, 7 N.Y.U. ENVTL. L.J. 307, 308 & n.6 (1999); Gray, *supra*, at 127 (arguing that a state's duty to conduct an environmental impact assessment "is arguably a customary principle of international law at least where the environmental impact is expected to be grave"); Nicholas A. Robinson, *International Trends in Environmental Impact Assessment*, 19 B.C. ENVTL.

Since 1969, when the United States initially instituted environmental impact assessment through the National Environmental Policy Act (NEPA),[86] more than a hundred countries have introduced similar domestic procedures[87] and numerous international legal instruments have incorporated environmental impact assessment provisions.[88] Principle 17 of the *Rio Declaration on Environment and Development* of 1992 codifies this basic duty as follows:

> Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.[89]

Agenda 21, an action plan for the Rio Declaration, urges states to apply environmental impact assessment in order to protect the marine environment.[90]

A proposed activity may have domestic environmental impacts as well as transboundary environmental impacts, which may extend beyond the jurisdiction or control of the originating state. In the domestic con-

---

AFF. L. REV. 591, 602 (1992) ("It is becoming a norm of customary international law that nations should engage in effective EIA [environmental impact assessment] before taking action that could adversely affect either shared natural resources, another country's environment, or the Earth's commons."). *But see* Okowa, *supra* note 33, at 279, 317, 335–36 (providing a cautious assessment that the duty to conduct transboundary environmental impact assessment has not yet attained the status of customary international law, although this duty has been affirmed in a number of international legal instruments).

86. 42 U.S.C. §§ 4321–4370d (2000).

87. *See* Knox, *supra* note 33, at 296–97; Gray, *supra* note 85, at 89.

88. *See, e.g.*, United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses, *opened for signature* May 21, 1997, art. 12, 36 I.L.M. 700, 707 (1997) (providing for timely notification and information exchange including the results of relevant environmental impact assessments); 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, *opened for signature* Dec. 4, 1995, arts. 5(c), 6(1), 6(3), U.N. Doc. A/CONF.164/37 (1995), *reprinted in* 34 I.L.M. 1542, 1550–51 (1995) (requiring that coastal states and maritime states cooperate in assessing impacts of fishing, other activities, and environmental factors on target stocks and related species); United Nations Convention on Biological Diversity, June 5, 1992, art. 14, 1760 U.N.T.S. 79, 151, 31 I.L.M. 818, 827 (1992) (including environmental impact assessment procedures with notification, information exchange, and consultation processes); United Nations Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Mar. 17, 1992, art. 3, 31 I.L.M. 1312, 1316–17 (1992) (requiring states to introduce legal, administrative, economic, financial, and technical frameworks to implement environmental impact assessment); *see also* discussion *infra* Part IV (examining in detail major international environmental impact assessment instruments). For a comprehensive list of earlier international instruments dealing with environmental impact assessments, see Robinson, *supra* note 85, app. 2, at 617–19.

89. *Rio Declaration*, *supra* note 33, princ. 17.

90. *See Agenda 21*, *supra* note 40, ¶ 17.21.

text, an environmental impact assessment (1) promotes fully informed decision-making that takes into account the potential environmental effects of the proposed activity and (2) offers an opportunity for affected citizens to understand the proposed activities and provide input in decision-making.[91] In the transboundary context, an environmental impact assessment involves the interstate processes of notification, information exchange, and consultation.[92] Accordingly, transboundary environmental impact assessment ensures: (1) that transboundary environmental effects of a proposed activity are fully considered in the decision-making process of the originating state, and (2) that affected states are given prior notification and adequate information on the proposed activity and an

---

91. HUNTER ET AL., *supra* note 18, at 367; Knox, *supra* note 33, at 297; Preiss, *supra* note 85, at 310; Robinson, *supra* note 85, at 594; Van Dyke, *supra* note 34, at 402.

92. *See* Okowa, *supra* note 33, at 279–80, 302. The Rio Declaration codifies the basic norm of the interstate processes as follows: "States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith." *Rio Declaration*, *supra* note 33, princ. 19. The originating state's obligations to notify and consult stem from the customary international law principle of good neighborliness. *See* Fisheries Jurisdiction Case (U.K. v. Ice.), 1974 I.C.J. 3, 23–35 (July 25), (holding that the parties are "under mutual obligations to undertake negotiations in good faith for the equitable resolution of their differences concerning their respective fishery rights" pursuant to existing international law); Lake Lanoux Case (Fr. v. Spain), 53 AM. J. INT'L L. 156, 167–69 (1959) (Ad hoc Arb. 1957) (opining that according to the rules of good faith, the upstream state has the obligation to consider different interests of other riparian states and that the parties concerned have the duty to negotiate in good faith during which they "must consent to suspend the full exercise of their rights"); *see also ILC Commentaries*, *supra* note 33, art. 4, ¶¶ 1–2 (explaining the duty to cooperate in good faith in the context of significant transboundary harm); Boyle, *Nuclear Energy*, *supra* note 33, at 312 (concluding that it is "firmly established" that states have "a customary law obligation to co-operate with neighbouring States in the management of transboundary environmental risks," which entails notification and negotiation to curtail risks of transboundary environmental hazards from planned activities); Van Dyke, *supra* note 34, at 401 (stating that the duty to consult derive from the duty to consider the interests of other states as well as the duty to inform, which in turn flows from the principle of good faith in international relations). ITLOS affirmed the originating state's obligations to inform and consult with potentially affected states partly based on the duty to cooperate under customary international law. *See infra* notes 252–54 and accompanying text.

Some commentators regard the originating state's obligations to notify and consult also as basic due diligence requirements concerning environmental state responsibility. *See ILC Commentaries*, *supra* note 33, art. 3, ¶¶ 4, 7; art. 9, ¶ 6; art. 12, ¶ 2; Gunther Handl, *State Liability for Accidental Transnational Environmental Damage by Private Persons*, 74 AM. J. INT'L L. 525, 557 (1980); John M. Kelson, *State Responsibility and the Abnormally Dangerous Activity*, 13 HARV. INT'L L.J. 197, 242–43 (1972); Okowa, *supra* note 33, at 280, 302. *But see Developments in the Law*, *supra* note 33, at 1515 (questioning the wisdom of the duty to assess environmental impact and the duty to inform as the procedural extension of environmental state responsibility); Knox, *supra* note 33, at 291, 319 (questioning the majority view that transboundary environmental impact assessment is corollary to environmental state responsibility and constitutes part of customary international law). For the fundamental difference between the majority and minority views regarding environmental state responsibility, see *supra* note 33.

opportunity to consult with the originating state regarding the potentially significant transboundary impacts of the proposed activity.[93] By taking into account the results of the assessment and concerns expressed by the affected states, the originating state may decide to deny authorization for or may attach conditionality to the proposed activity including modification of the project design, use of mitigation measures, or adoption of a less environmentally harmful alternative.[94] Thus, environmental impact assessments, combined with command-and-control measures, enable states to better address transboundary pollution.

In 1982, UNCLOS incorporated this basic international environmental norm at the rudimentary stage of its development. Article 206, entitled "Assessment of potential effects of activities," which reads as follows:

> 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 . . . .[95]

Unlike the pollution prevention measures discussed above, Article 206 is quite vague. This provision fails to identify which state should be responsible for assessing the impacts of an activity that falls under concurrent jurisdiction of several states. The provision does not specify the factors to be considered in evaluating the effects of proposed activities. It is also silent as to the treatment of applicable international standards for environmental impact assessments.

In addition, interstate processes are not well articulated under UNCLOS. Although the Convention has provisions for information exchange, Article 200, which addresses the exchange of information and data "for the purpose of promoting studies,"[96] does not deal with information exchange regarding specific activities. Article 206 establishes states' obligation to disseminate environmental assessment reports in accordance with Article 205, which requires states to "provide such reports *at appropriate intervals* to the competent international organizations, which *should* make them available to all States."[97] Under this lenient provision, affected states might not obtain timely information, or the competent international organizations might fail to provide

93. *See* UNEP Guidelines, *supra* note 84, Preliminary Notes (Goals 1 & 3); *see also* Handl, *supra* note 92, at 557; Okowa, *supra* note 33, at 277–78.

94. *See* Handl, *supra* note 92, at 557; Okowa, *supra* note 33, at 277.

95. UNCLOS, *supra* note 10, art. 206, 21 I.L.M. at 1309.

96. *Id.* art. 200, 21 I.L.M. at 1309.

97. *Id.* art. 205, 21 I.L.M. at 1309 (emphasis added).

vital information to the affected states. UNCLOS also lacks any explicit reference to prior notification and consultation. Although Article 198 requires states to notify affected states and the competent international organizations of "*imminent* or *actual* damage" of the marine environment, this provision does not cover *prior* notification of *potential* harm.[98]

Unfortunately, these ambiguities have been replicated in regional seas conventions. Most of the regional conventions have incorporated similar environmental impact assessment provisions without detailed procedures.[99] Although some regional conventions include provisions for the interstate processes, these provisions again lack details to make them operational.[100]

As a result, the rudimentary environmental impact assessment provisions in UNCLOS and regional seas conventions offer little guidance in resolving the MOX plant dispute, in which Ireland alleges that the United Kingdom failed to conduct an adequate environmental impact assessment and refused to engage in meaningful information exchange and consultation with Ireland regarding the potential impacts

---

98. *Id.* art. 198, 21 I.L.M. at 1309 (emphasis added); *see also* Van Dyke, *supra* note 41, at 382 (stating that the duty of *prompt* notification in the event of emergency is distinct from the duty of *prior* notification and consultation to create a contingency plan in ultrahazardous activities).

99. *See* Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, as revised June 10, 1995, art. 4(c), *available at* http://www.unep.ch/seas/main/med/medconvii.html (last visited Nov. 12, 2003) [hereinafter Barcelona Convention]; Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, Mar. 24, 1983, art. 12.2, T.I.A.S. 11085, at 9, 1506 U.N.T.S. 157, 161, *available at* http://www.cep.unep.org/pubs/legislation/cartxt.html (last visited Nov. 12, 2003) [hereinafter Caribbean Sea Convention]; Protocol Concerning Pollution from Land-Based Sources and Activities, Oct. 6, 1999, art. 7(2), to the Caribbean Sea Convention *supra*, *available at* http://www.cep.unep.org/pubs/legislation/lbsmp/final%20protocol/lbsmp_protocol_eng.html (last visited Nov. 14, 2003); Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region, June 21, 1985, art. 13(1), *reprinted in* 1986 O.J. (C 253) 10, 12, *available at* http://www.unep.ch/seas/main/eaf/eafconv.html (last visited Nov. 10, 2003) [hereinafter Eastern African Convention]; Convention on the Protection of the Black Sea Against Pollution, Apr. 21, 1992, art. 15(2), (5), 32 I.L.M. 110, 115–16, *available at* http://www.unep.ch/seas/main/backsea/bsconv.html (last visited Nov. 10, 2003); Convention for Cooperation in the Protection and Sustainable Development of the Marine and Coastal Environment of the Northeast Pacific, Feb. 18, 2002, arts. 5(6)(c), 6(2)(b), *available at* http://www.unep.ch/seas/main/nep/nepconve.html (last visited Nov. 10, 2003); Convention on the Protection of the Marine Environment of the Baltic Sea Area, Jan. 17, 2000, art. 7(1), *available at* http://www.helcom.fi//helcom/convention.html#Article7 [hereinafter Helsinki Convention]. Although the OSPAR Convention provides for "Assessment for the Quality of the Marine Environment" with detailed procedures, it deals with *general assessment through regular monitoring* and does not codify *environmental impact assessments for proposed activities.* OSPAR Convention, *supra* note 11, art. 6, 32 I.L.M. at 1077.

100. *See* Barcelona Convention, *supra* note 99, art. 4(d); Eastern African Convention, *supra* note 99, art. 13(3), 1986 O.J. (C 253) at 12; Helsinki Convention, *supra* note 99, art. 7(2), 1507 U.N.T.S. at 171.

of the proposed MOX project on the marine environment of the Irish Sea. The following section will examine the details of this dispute.

II. THE MOX PLANT CASE (IR. V. U.K.)

A. *The Dispute*

1. Radioactive Discharges from the Sellafield MOX Plant

The dispute between Ireland and the United Kingdom involves potential transboundary environmental risks to the Irish Sea from the operation of the proposed MOX plant, related activities at Sellafield, and marine transports of radioactive materials.[101] BNFL, a government-owned company, is responsible for most of the activities at Sellafield, which include the reprocessing of spent nuclear fuel, the manufacturing of MOX fuel, and the management of radioactive waste.[102] Currently, BNFL and COGEMA, its French counterpart, conduct reprocessing in a large scale at a commercial basis to "recycle" plutonium and uranium for nuclear power generation.[103] Conventional commercial light water reactors use low-enriched uranium fuel to generate electricity. Spent low-enriched uranium fuel contains unused fissile uranium and fissile plutonium created through nuclear fission, as well as highly radioactive waste products.[104] Through reprocessing, fissile uranium and plutonium are

---

101. Request for Provisional Measures and Statement of Case of Ireland, MOX Plant (Ir. v. U.K.), at 4, ¶ 5 (Int'l Trib. for the Law of the Sea 2001), *available at* http://www.itlos.org/case_documents/2001/document_en_191.pdf (last visited Apr. 9, 2004) [hereinafter ITLOS Ir.'s Statement of Case].

102. Annex VII Ir.'s Memorial, *supra* note 5, at 17–18, ¶ 1.44; Counter-Memorial of the United Kingdom, MOX Plant (Ir. v. U.K.), at 17, ¶ 2.2 (Perm. Ct. Arb. 2003), *at* http://www.pca-cpa.org/PDF/UK%20Counter%20-Memorial.pdf (last visited Jan. 27, 2003) [hereinafter Annex VII U.K.'s Counter-Memorial]; ITLOS Ir.'s Statement of Case, *supra* note 101, at 4, ¶ 5.

103. *See* World Nuclear Association, Nuclear Energy Made Simple: Nuclear Fuel Cycle, *at* http://www.world-nuclear.org/education/nfc.htm (last updated Jan. 2002). Japanese utility companies have engaged reprocessing contracts with BNFL and COGEMA, which have Europe's two largest reprocessing facilities at Sellafield and at La Hague respectively. *See* Greenpeace, Plutonium—Questions and Answers 2, 4, *at* http://www.greenpeace.org/~nuclear/bnfl/docs/plutoniumq&a_final.pdf (last visited Jan. 26, 2004).

104. Annex VII Ir.'s Memorial, *supra* note 5, at 28, ¶ 2.11 (explaining that spent fuel still contains 96 percent of the original uranium as well as one percent plutonium and three percent waste products); *see also* Helton, *supra* note 6, at 180 (outlining the process of nuclear fission, which creates plutonium and other fission products "dangerously radioactive for tens of thousands of years") (quoting Mark Holt, *Civilian Nuclear Waste Disposal*, Issue Brief for Congress, 92-059 at ¶ 35 (July 30, 2001), *at* http://www.cnie.org/NLE/CRSreports/Waste/waste-2.cfm (last visited Jan. 26, 2004)).

separated from the waste.[105] Recovered uranium is reused to manufacture low-enrichment uranium fuel. Recovered plutonium is mixed with uranium and converted into MOX fuel.[106] In theory, MOX fuel would be used in fast breeder reactors that could reproduce more fissile plutonium than they had consumed while generating electricity.[107] In practice, technical difficulties have prevented realizing viable commercial fast breeder reactor technology.[108] To avoid accumulating plutonium inventory, instead, MOX fuel is directed to light water reactors as an alternative to low-enriched uranium fuel.[109]

BNFL recovers plutonium and uranium at Sellafield's two reprocessing plants.[110] The Thermal Oxide Reprocessing Plant (THORP) treats most foreign customers' spent fuel, except for a fraction of Japanese fuel that is reprocessed at the Magnox Reprocessing Plant.[111] BNFL has

---

105. Annex VII Ir.'s Memorial, *supra* note 5, at 29, ¶¶ 2.15–.16; *see also* Helton, *supra* note 6, at 181; Larry R. Foulke & Ruth F. Weiner, *Plutonium Transportation—Risks and Benefits*, AM. NUCLEAR SOC'Y, June 17–21, 2002, at 6 (prepared for presentation at the *Latin American Symposium on Power Supply and Its Problems: The Nuclear Proposal*), *available at* http://www.ans.org/pi/sptopics/pdfs/pluttrans.pdf (last visited Nov. 11, 2003).

106. World Nuclear Association, *supra* note 103, ¶ 7.

107. *See* Bayan Rahman, *Ruling Hits Japan's Nuclear Power Sector: Electricity Generation Court Rules That Controversial Reactor Must Not be Restarted*, FIN. TIMES, Jan. 28, 2003, at 7.

108. Greenpeace, *supra* note 103, at 4 (stating that France, Germany, the United Kingdom, and the United States have abandoned their fast breeder reactor programs because of technical and economic problems). Japan has closed its prototype fast breeder reactor, Monju, since a fire caused by a major leak of liquid sodium coolant on December 8, 1995. Citizen's Nuclear Information Center, *Major Victory to Brow Nuclear Fuel Cycle Policy: The Ground Breaking Ruling on the Monju Fast Breeder Reactor*, NUKE INFO TOKYO, Jan.–Feb. 2003, at 1–2, *available at* http://cnic.jp/english/nit/files/nit93.pdf (last visited Jan. 26, 2004). Although the Japanese government hopes to resume the operation of Monju by 2005, the plan was effectively blocked by Nagoya High Court's judgment on January 27, 2003 that recognized flaws in the Monju pre-construction safety review and ultimately nullified the Japanese authority's construction permission of 1983. *Id.*; Rahman, *supra* note 108, at 7.

109. *See supra* note 6.

110. Request for Provisional Measures: Written Response of the United Kingdom, MOX Plant (Ir. v. U.K.), at 16, ¶ 29 (Int'l Trib. for the Law of the Sea 2001), *at* http://www.itlos.org/case_documents/2001/document_en_192.pdf (last visited Apr. 9, 2004) [hereinafter ITLOS U.K.'s Response]; *see also* Annex VII Ir.'s Memorial, *supra* note 5, at 31–33, ¶¶ 2.27–.35 (detailing the process of manufacturing MOX fuel).

111. *See* U.K. Dep't for Env't, Food & Rural Affairs (DEFRA), *Re BNFL's MOX Plant at Its Site in Sellafield, Cumbria: Justification for the Manufacture of MOX Fuel: Decision of the Secretary of State for Environment, Food & Rural Affairs and the Secretary of State for Health* 22, ¶ 78 (2001), *at* http://www.defra.gov.uk/environment/radioactivity/mox/pdf/mox-decision.pdf (last visited Apr. 9, 2004) [hereinafter DEFRA Decision]. Currently, BNFL's reprocessing business at THORP depends substantially on foreign customers. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 30, ¶ 2.22 (noting that between 1994 and 2004, about two thirds of the THORP reprocessing contracts are from overseas customers including Japan, Germany, Switzerland, Sweden, and the Netherlands). THORP is designed to reprocess uranium-dioxide fuel encased in stainless steel cladding, while the Magnox Reprocessing Plant

manufactured MOX fuel assemblies for foreign utility companies from fissile materials obtained at THORP by using the existing MOX Demonstration Facility (although its operation is presently suspended due to the falsification incident).[112] The proposed full-scale commercial plant will increase BNFL's MOX production capacity from 8 tons to 120 tons a year.[113] To reduce a stockpile of plutonium recovered under existing THORP reprocessing contracts,[114] BNFL has already entered into separate contracts with utility companies in Germany, Japan, Sweden, and Switzerland to manufacture MOX fuel assemblies at the new MOX plant.[115] BNFL has sought the substantial expansion of MOX production capacity to attract further reprocessing contracts with foreign customers in competition with COGEMA, which already operates a large-scale commercial MOX plant.[116]

---

deals with Magnox fuel, which consists of natural uranium metal covered by cladding made from magnesium oxide. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 17, 30, ¶¶ 1.42, 2.19.

112. *See* Bellona Foundation, *supra* note 2, at 20, ¶ 3.1; *see also* Her Majesty's Nuclear Installations Inspectorate (NII), *Summary Report on the Progress of BNFL in Responding to HSE's MDF and Team Inspection Recommendations* ¶ 4 (2000) (stating that when the NII authorizes BNFL to restart the MOX Demonstration Facility, BNFL will use the demonstration facility to support the development of the Sellafield MOX Plant and will not operate it for MOX production), *at* http://www.hse.gov.uk/nsd/bnflprog.htm (last visited Aug. 16, 2003).

113. *See* BNFL, *supra* note 8, at 6, ¶¶ 2.7, 2.9. MOX production capacity is measured by heavy metal ton per year (HMt/y).

114. No new reprocessing contracts at THORP have been concluded since 1997. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 66, ¶ 3.22(5).

115. Arthur D. Little Ltd., *Assessment of BNFL's Business Case for the Sellafield MOX Plant: Public Domain Version of the Report Submitted to DEFRA/DH on 15 June 2001*, app. A9, at 25 (2001), *available at* http://www.defra.gov.uk/environment/consult/mox/adl/pdf/ADL-public.pdf (last visited Feb. 3, 2004); *see also* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 12, 65–66, ¶¶ 1.35, 3.22.

116. *See* Arthur D. Little Ltd., *supra* note 115, app. A8, at 21; MacPherson, *supra* note 3; *see also* Annex VII Ir.'s Memorial, *supra* note 5, at 31, ¶ 2.23 ("Without MOX it is unlikely that THORP would obtain any new contracts."); Arthur D. Little Ltd., *supra* note 115, at 30 (confirming that "there would be little point" for the foreign customers to sign further reprocessing contracts with BNFL without the MOX plant); BNFL, *supra* note 8, at 6, ¶ 2.6 (explaining that overseas customers, who are obliged to take the return shipments of plutonium under reprocessing contracts with BNFL, increasingly prefer to receive plutonium in the form of MOX fuel).

Despite the above expectation, on August 26, 2003, BNFL made public its intention to cease the operation of THORP by 2010 after it has fulfilled existing contracts. *See* Paul Brown, *Sellafield Shutdown Ends the Nuclear Dream: Pounds 1.8bn Thorp Plant that Promised Limitless Electricity to Close by 2010*, THE GUARDIAN, Aug. 26, 2003, at 1, *available at* http://www.guardian.co.uk/uk_news/story/0,3604,1029333,00.html (last visited Nov. 13, 2003). The Magnox Reprocessing Plant is also to be phased out by 2012. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 43, ¶ 2.73. Thereafter, BNFL plans to convert itself into a nuclear waste disposal company. BNFL's withdrawal from reprocessing business is apparently not because of the MOX plant dispute but because of operational problems in the reprocessing plants as well as its exposure to British Energy's financial crisis. *See* Brown, *supra*, at 1 (reporting that THORP's output has been reduced to about a half of its capacity because of its inability to treat radioactive liquid waste generated through reprocessing speed-

The United Kingdom has developed the Sellafield nuclear industrial complex in Cumbria on the northeast English coast of the Irish Sea, a semi-closed sea lying between the United Kingdom and Ireland.[117] The distance between the British nuclear industrial site and the Irish coast at its closest point is about 112 miles.[118] In 1977, both states claimed a 200-mile EEZ over the Irish Sea, and the relevant EC legislation presently authorizes Irish vessels to fish within 6 miles of the Sellafield site.[119]

The Sellafield site has concerned the Irish people since the 1950s, due to routine radioactive discharges, as well as the accumulation of radioactive waste[120] and a history of accidents including a major fire at a nuclear reactor in 1957.[121] The Irish Sea is presently known as one of "the most radioactively polluted seas in the world,"[122] although discharges from the Sellafield site have declined since the 1970s.[123] Ireland is concerned not only about direct discharges from the new MOX plant, which the United Kingdom claims as *de minimus*,[124] but also about the intensification of reprocessing business at THORP, which has routinely

---

ily enough to comply with government regulations); Paul Brown, *Meacher Applauds Thorp Closure: Reprocessing was Pointless, Says Former Environmental Minister*, THE GUARDIAN, Aug. 27, 2003, at 6 (stating that BNFL had to renegotiate reprocessing contract with British Energy to save the struggling nuclear energy company from recent financial crisis), *available at* http://www.guardian.co.uk/guardianpolitics/story/0,3605,1029877,00.html (last visited Nov. 15, 2003).

117. ITLOS Ir.'s Statement of Case, *supra* note 101, at 4, ¶ 5; Annex VII Ir.'s Memorial, *supra* note 5, at 176–91, ¶¶ 8.165–.237.

118. Annex VII Ir.'s Memorial, *supra* note 5, at 16, ¶ 1.39; ITLOS Ir.'s Statement of Case, *supra* note 101, at 4, ¶ 5.

119. ITLOS Ir.'s Statement of Case, *supra* note 101, at 4, ¶ 5. Although the median line across the Irish Sea is established as the formal boundary between the two sides for fishery control purposes, Irish vessels do fish within six miles of Sellafield. *Id.*

120. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 22, ¶ 1.59 (noting that currently, BNFL is estimated to have 1,600 cubic meters of liquid high-level waste in the storage facility at Sellafield). Sellafield's high-level evaporation and storage facility is known as "the largest single nuclear inventory in Europe." Paul Brown, *Inside Sellafield: Decaying and Dangerous, the Legacy of a Flawed Nuclear Vision: Sellafield's Building 277 Is One of the UK's Most Hazardous Radioactive Sites*, THE GUARDIAN, Aug. 26, 2003, at 4, *available at* http://www.guardian.co.uk/uk_news/story/0,3604,1029273,00.html (last visited Feb. 3, 2004).

121. ITLOS Ir.'s Statement of Case, *supra* note 101, at 9, ¶ 15; Annex VII Ir.'s Memorial, *supra* note 5, at 23, ¶ 1.64; *see also* Annex VII Ir.'s Memorial, *supra* note 5, at 16, ¶ 1.41 (noting that the 1957 fire at Windscale (renamed Sellafield) is one of the world's worst nuclear power accidents along with Chernobyl and Three Mile Island).

122. ITLOS Ir.'s Statement of Case, *supra* note 101, at 6, ¶ 10; Annex VII Ir.'s Memorial, *supra* note 5, at 3, 9–10, ¶¶ 1.2, 1.19, 1.20 & n.22.

123. ITLOS U.K.'s Response, *supra* note 110, at 40, ¶ 99; Memorial of Ireland, Dispute Concerning Access to Information Under Article 9 of the OSPAR Convention (Ir. v. U.K.), at 4, ¶ 9 (Perm. Ct. Arb. 2002), *at* http://www.pca-cpa.org/PDF/Ireland%20-%20Memorial.pdf (last visited Jan. 31, 2004) [hereinafter OSPAR Ir.'s Memorial].

124. Annex VII Ir.'s Memorial, *supra* note 5, at 52–55, ¶¶ 3.7–.13; ITLOS U.K.'s Response, *supra* note 110, at 11, ¶ 14 (maintaining that discharges from the MOX plant will be "infinitesimally small").

discharged radioactive substances into the Irish Sea at a much higher level.[125] Low concentrations of artificially made radionuclides are already detected in seaweeds, shellfish, and wildlife in sea areas affected by discharges from Sellafield.[126] Although it is officially regarded that heavy consumption of affected seafood does not pose significant radiological health risks,[127] great uncertainty exists regarding the potential ecological impacts of radionuclides in the marine environment.[128]

---

125. OSPAR Ir.'s Memorial, *supra* note 123, at 4, ¶ 9; *see also* Annex VII Ir.'s Memorial, *supra* note 5, at 3, 19–20, ¶¶ 1.2, 1.51. As to gaseous discharges, the dose impact of THORP is 5,000 times larger than that of the MOX plant; as to liquid discharges, the dose impact of THORP is 666,667 times larger than that of the MOX plant. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 60, 71, ¶¶ 3.9, 3.33. The dose impacts here refer to the estimated radiation doses to the most exposed group in the United Kingdom. *Id.*

Ireland's concern about cumulative impacts was by no means speculative when the dispute had arisen. *See supra* note 116 and accompanying text; *see also* BNFL, *supra* note 8, at 9, ¶¶ 3.6–.9 (stating that BNFL has chosen the Sellafield site for the new MOX plant because of the advantages of "integrated access with THORP," "management and operations . . . combined with THORP," and shared facilities with THORP). While BNFL's recent decision to withdraw completely from reprocessing business may not affect Ireland's case in the pending proceedings, it could have ramifications for the embattled MOX plant. *See* Brown, *supra* note 120, at 4 (interviewing Michael Meacher, the former U.K. environment minister, who said, "[t]his decision to close Thorp must be the death knell for the MOX plant too, because one is dependent on the other.").

126. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 11, 13, ¶¶ 1.26, 1.32 (quoting the OSPAR Quarterly Status Report 2000). In addition, it is estimated that 200 kilograms of plutonium contaminates the Irish Sea as sediments, which resulted mostly from routine and accidental releases from Sellafield. *Id.* at 9, 10, 13, ¶¶ 1.19, 1.27, 1.31. Environmental degradation in the Irish Sea is "irreversible in the human scale" given that some of released radioactive isotopes have extreme radiotoxicity or overwhelmingly long half-lives. *Id.* at 63, 199, ¶¶ 3.51, 8.285. *See generally* Foulke & Weiner, *supra* note 105, at 1 (explaining that plutonium has 15 isotopes with half-lives ranging from 20 minutes to 76 million years). For more information about radiological effects of plutonium and other radionuclides, see *infra* notes 332–33 and accompanying text.

127. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 64, ¶ 3.59; *see also* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 75–77, 78, ¶¶ 3.44–.46, 3.49; ITLOS U.K.'s Response, *supra* note 110, at 40, ¶ 99 (quoting the words of the Deputy Chief Executive of the Radiological Protection Institute of Ireland).

128. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 11, 13, ¶ 1.29 (pointing out that "no internationally accepted radiological criteria for the protection of marine flora and fauna" is available because radiological effects on the marine ecosystems are little studied). According to several studies, there are no currently identifiable impacts of radioactive discharges on populations of marine biota of the northeast Irish Sea. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 83–85, ¶¶ 3.59–.63; Rejoinder of the U.K., MOX Plant (Ir. v. U.K.), at 33–34, ¶¶ 2.41–.43 (Perm. Ct. Arb. 2003), *at* http://www.pca-cpa.org/PDF/UK%20Rejoinder%20Part%20I.pdf, http://www.pca-cpa.org/PDF/UK%20Rejoinder%20Part%20II.pdf (last visited July 31, 2003) [hereinafter Annex VII U.K.'s Rejoinder]. Nevertheless, these studies are not designed to capture radiological impacts on the complex ecosystems of the marine environment, which entail diverse habitats and an intricate balance between species. Reply of Ir., MOX Plant (Ir. v. U.K.), at 24–25, ¶¶ 2.73–.76 (Perm. Ct. Arb. 2003), *at* http://www.pca-cpa.org/PDF/Ireland%20Reply.pdf (last visited July 31, 2003) [hereinafter Annex VII Ir.'s Reply]; *see also* de Fontaubert, *supra* note 18, at 761.

Given the evidence that marine currents have carried radioactivity from the Irish Sea into some of the most valuable fishing ground for Scandinavian vessels, Denmark, Finland, Iceland, Norway, and Sweden have also expressed concern about radioactive releases from Sellafield.[129] In July 1998, the parties to the OSPAR Convention, including the Scandinavian countries as well as the United Kingdom and Ireland, adopted the OSPAR Strategy "with the ultimate aim of concentrations in the environment . . . close to zero for artificial radioactive substances" by 2020.[130] In October 2001, the five Scandinavian states demanded that the United Kingdom halt all radioactive discharges from Sellafield and stop the reprocessing business at THORP.[131] In particular, Norway formally conveyed its strong regret to the United Kingdom when the U.K. government determined that the new MOX plant was economically justified.[132]

---

129. David McKittrick, *Irish Flotilla to Confront Sellafield Ships*, INDEPENDENT, Sept. 13, 2002, at 12, *available at* 2002 WL 26239159. The 2000 OSPAR Report found the rapid spread of technetium-99 from the Irish Sea into the North Sea. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 11, ¶ 1.26; *see also* Perera, *supra* note 14 (reporting that the Institute of Marine Research in Bergen found a tenfold increase in levels of technetium-99 carried from Sellafield into the sea around northern Norway). Technetium-99 is an artificially made radionuclide with a half-life of 212,000 years. *See* United States Envtl. Prot. Agency (U.S. EPA), *Radiation Information: Technetium-99*, *at* http://www.epa.gov/radiation/radionuclides/technetium.htm (last updated Aug. 5, 2002). Not only Sellafield's reprocessing plants but also those of La Hague, France contribute to the contamination of northern European seas with artificially made radionuclides, although radioactive discharges from Sellafield are much higher than those of the French counterpart. Annex VII Ir.'s Memorial, *supra* note 5, at 10, ¶¶ 1.23–.24.

130. *Sintra Statement*, Jul. 23, 1998, OSPAR Comm'n, Ministerial Mtg. ¶ 13, *available at* http://www.ospar.org/eng/html/md/sintra.htm (last visited Oct. 17, 2003). The Sintra Statement also notes a unanimous decision of the OSPAR Commission terminating the possible future exemptions for France and the United Kingdom from the prohibition on the dumping of low-level and intermediate-level radioactive wastes. *Id.* ¶ 12. At the Sintra Ministerial meeting, the U.K. authorities further indicated that they would address the Scandinavian countries' concern about technetium-99 through the discharge authorization process for Sellafield. *Id.* ¶ 17.

131. Annex VII Ir.'s Memorial, *supra* note 5, at 24, ¶ 1.68; ITLOS Ir.'s Statement of Case, *supra* note 101, at 8, ¶ 13. In March 2002, the Parties to the North Sea Conference, except France, also supported the ministerial declaration that called for the evaluation of "the options for spent fuel management after current reprocessing contracts have come to an end." Ariane Sains, *North Sea States Propose Future 'Evaluation' of Reprocessing*, NUCLEONICS WEEK, Mar. 28, 2002, at 15, *available at* 2002 WL 10528791. This formulation accommodates Sweden's contradictory position where it condemns radioactive discharges from Sellafield while its utility company has already contracted with BNFL for reprocessing of spent fuel. *See supra* notes 115–29 and accompanying text.

132. Annex VII Ir.'s Memorial, *supra* note 5, at 24, ¶ 1.68; ITLOS Ir.'s Statement of Case, *supra* note 101, at 8, ¶ 13. Although Norway ultimately decided not to join Ireland in legal actions against the United Kingdom, Norway is ready to take future action if the United Kingdom fails to reduce discharges of technetium-99 from Sellafield. Perera, *supra* note 14, at 7. To appease the concerns of Ireland and the Scandinavian countries, the United Kingdom decided to require BNFL adopt two types of abatement technology to curtail technetium-99

2. Marine Transports of Nuclear Materials Associated with MOX Production

In addition to reprocessing and fuel manufacturing, BNFL transports MOX fuel as a separate business through its subsidiary, Pacific Nuclear Transport, Ltd. (PNTL).[133] Although MOX fuel can be transported by rail or road in Europe, delivery of MOX fuel to Japan almost inevitably involves marine transport.[134] Customarily, Japanese electric utilities sign separate sea transport contracts with BNFL, which establish the required MOX transport routes to Japan.[135] BNFL has already accumulated an inventory of 45 tons of plutonium dioxide reprocessed from previously contracted Japanese spent fuel.[136] To appease the international community's concern about grave threats of terrorism to plutonium shipments, BNFL mixes the plutonium inventory with uranium and sends it back to Japan in the form of MOX fuel.[137] MOX fuel contains three to ten percent plutonium dioxide, depending on the type of the reactor.[138] Assuming each fuel assembly contains five percent plutonium, the 45-ton plutonium inventory will be converted into 900 tons of MOX fuel. Ireland estimates that this will require at least 60 shipments if PNTL vessels are fully loaded.[139]

The United Kingdom maintains that MOX will be shipped in compliance with all applicable international standards developed and administered by the International Atomic Energy Agency (IAEA) and

---

almost exclusively released from the reprocessing of Magnox spent fuel. *See* DEFRA, *Radioactive Discharges: Sellafield/Technetium-99* (Dec. 11, 2002), *at* http://www.defra.gov.uk/environment/radioactivity/discharge/sellafield/index.htm (last modified July 8, 2003).

133. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 51, ¶ 2.88 & n.88 (noting that BNFL owns 62.5 percent of PNTL shares with the remaining shares held by COGEMA of France and three Japanese utilities and three Japanese trading companies).

134. *See* NCI, *Plutonium Air Shipments*, *at* http://www.nci.org/airtrans.htm (last visited June 25, 2003) (reporting that in 1987, when plutonium air shipments were about to begin between Europe and Japan over Alaska, the U.S. Congress introduced legislation preventing such shipments, which compelled Japan to shift to maritime transportation of plutonium). Given a delay in building a domestic reprocessing plant, Japanese utilities continue depending on the European reprocessing industry to reduce a stockpile of spent fuel. *See* Arthur D. Little Ltd., *supra* note 115, app. A3, at 6; Greenpeace, *supra* note 103, at 4.

135. Arthur D. Little Ltd., *supra* note 115, at 22, ¶ 1.6.1.

136. ITLOS Ir.'s Statement of Case, *supra* note 101, at 17, ¶ 33.

137. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 92, ¶ 3.83 & n.120; ITLOS U.K.'s Response, *supra* note 110, at 31, ¶ 70; Underhill, *supra* note 6, at 44; *see also* NCI, *supra* note 6, ¶ 3 (stating that the marine transport of pure plutonium is politically unacceptable after the controversial plutonium dioxide shipments).

138. Annex VII Ir.'s Memorial, *supra* note 5, at 31, ¶ 2.27; Foulke & Weiner, *supra* note 105, at 6.

139. Annex VII Ir.'s Memorial, *supra* note 5, at 34–35, ¶ 2.41; ITLOS Ir.'s Statement of Case, *supra* note 101, at 18, ¶ 33.

the IMO.[140] IAEA instruments cover the security of nuclear cargoes and the safety of packages containing nuclear materials.[141] The Convention on Physical Protection of Nuclear Material of 1979 imposes the duty to safeguard radioactive materials loaded on British vessels on the United Kingdom.[142] In addition, the IAEA Regulations for the Safe Transport of Radioactive Material[143] provide for performance requirements and test standards for the transportation package of radioactive materials. Through domestic legislation, the United Kingdom applies the IAEA Regulations to BNFL's nuclear shipments to overseas customers.[144]

The IMO deals with the safety of vessels carrying highly radioactive cargoes. The International Maritime Dangerous Goods Code (IMDG Code),[145] which governs the maritime transport of various ultrahazardous materials, incorporates the IAEA Regulations and the Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes in Flasks on Board Ships (INF Code).[146] To transport MOX

140. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 27–32, 47–54, 90–96, ¶¶ 2.33–.45, 2.79–.96, 3.79–.92. *See generally* Pedrozo, *supra* note 57, at 214–18 (arguing that even if a cask that complies with IAEA standards is lost at sea, serious radioactive release in the marine environment is highly unlikely).

141. *See generally* Boyle, *Nuclear Energy*, *supra* note 33, at 261–66 (discussing IAEA's function to ensure health and safety in every aspect of the use of nuclear energy).

142. *See* Convention on the Physical Protection of Nuclear Material, Oct. 26, 1979, art. 3, T.I.A.S. No. 11,080, at 7, 1456 U.N.T.S. 101, 126 [hereinafter Physical Protection Convention]; Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 28, ¶ 2.37 (noting that the Convention took effect for the United Kingdom, Ireland, and Euratom in 1991); *see also* Code of Practice on the International Transboundary Movement of Radioactive Waste, ¶ 3, IAEA Res. GC(XXXIV)/RES/530 (Nov. 13, 1990), *available at* http://www.iaea.org/Publications/Documents/Infcircs/Others/inf386.shtml (last visited Apr. 9, 2004) [hereinafter IAEA Code of Practice] ("Every State should take the appropriate steps necessary to ensure that radioactive waste within its territory or under its jurisdiction or control is safely managed . . . to ensure the protection of human health and the environment"); Joint Convention on Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Sept. 5, 1997, *available at* http://www.iaea.org/Publications/Documents/Conventions/jointconv.html (last visited Apr. 8, 2004) [hereinafter Joint Safety Convention] (requiring each party involved in transboundary movement of spent fuel and radioactive waste "take the appropriate steps to ensure that each movement is undertaken in a manner consistent with the provisions of this convention and relevant binding international instruments"). The Joint Convention entered into force for Ireland and the U.K. on June 18, 2001. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 28, ¶ 2.38.

143. IAEA Regulations for the Safe Transport of Radioactive Material, No. TS-R-1 (ST-1, Revised 1996); *see also* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 30, 48–49, ¶¶ 2.40, 2.80–.81.

144. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 47, ¶ 2.80 (noting that the IAEA Regulations are implemented through the domestic legislation of 130 countries including the parties to this dispute).

145. IMDG Code, *supra* note 47.

146. Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Waste in Flasks on Board Ships, IMO Assembly Resolution A.748(18) (Nov. 4, 1993) [hereinafter INF Code]; *see also* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 50, ¶ 2.86. In May 2002, the IMO made these codes almost universally binding through the

fuel, spent fuel, and high-level waste between Europe and Japan, PNTL has five U.K. registered vessels classified as INF Class 3, which are certified to carry materials covered by the INF Code without restrictions on the maximum aggregate radioactivity.[147] The United Kingdom claims that the PNTL fleet has always complied with the 1993 INF Code standards, although all five vessels were built between 1979 and 1987.[148]

Ireland accepts these international standards, recognizing that they "reflect majority views as to the proper balance between safety and other factors" at the time when they were adopted.[149] However, Ireland is strongly concerned that recent frequent MOX shipments will increase the likelihood of accidents or terrorist attacks, which could involve serious radioactive contamination of the Irish Sea and impose significant health effects on the Irish public.[150] An amount of plutonium dioxide

---

revision of the International Convention for the Safety of Life at Sea of 1974. *See* SOLAS Convention, *supra* note 47; *see also* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 30–31, ¶ 2.42 (pointing out that 146 states have ratified the SOLAS Convention, which makes the Convention applicable to 98.5 percent of the world merchant gross tonnage).

147. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 50, ¶ 2.86; Annex VII Ir.'s Memorial, *supra* note 5, at 37, ¶ 2.50 (citing Tim Deere-Jones, *A Review of Aspects of the Marine Transport of Radioactive Materials: A Report to Greenpeace International* 9, *at* http://archive.greenpeace.org/~nuclear/bnfl/docs/TDJmarine_transports.pdf (last visited June 25, 2003)).

148. *See* Deere-Jones, *supra* note 147, at 9–10, 25; *see also* Paul Cullen, *Voyage to the Heart of a Deadly Nuclear Cargo Ship*, IRISH TIMES, July 23, 2002, at 3, *available at* 2002 WL 24080466 (discussing additional equipments in PNTL vessels).

149. Annex VII Ir.'s Memorial, *supra* note 5, at 197, ¶ 8.276.

150. *Id.* at 38, ¶ 2.56. Although MOX fuel does not contain weapons-grade plutonium, the possibility of terrorist attacks to the MOX plant and the associated shipments of highly radioactive materials remains a matter of global concern and has been fiercely debated between the parties involved. United Kingdom contends that it took appropriate measures to assure nuclear safety and security and cooperated with Ireland in providing relevant nuclear security information. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 174–78, ¶¶ 6.117–.129. Ireland, however, argues that the United Kingdom breached its duty to cooperate over nuclear safety and security at Sellafield and associated nuclear shipments. Annex VII Ir.'s Memorial, *supra* note 5, at 176–91, ¶¶ 8.165–.237. In response, the U.K. rejects Ireland's contention concerning potential terrorist attacks against Sellafield and nuclear shipments. ITLOS U.K.'s Response, *supra* note 110, at 116–19, ¶¶ 67–71. Ireland maintains that there is urgency to grant the provisional measures due to terrorist threats, especially in light of September 11th. ITLOS Ir.'s Statement of Case, *supra* note 101, at 51–55, ¶¶ 118–213; *see also* Greenpeace, *supra* note 1, at 3 (asserting that the maritime transport of "weapons usable, highly radiotoxic plutonium material" for two months would be vulnerable to terrorist attacks); Council for Nuclear Fuel Cycle (CNFC) & Inst. for Energy Economics Japan (IEEJ), *Can Reactor Grade Plutonium Produce Nuclear Fission Weapons?* (May 2001), *at* http://www.cnfc.or.jp/e/proposal/reports/rep0105e.html (last visited Oct. 17, 2003) (concluding that "it is theoretically possible to use reactor grade plutonium for the weapons purposes, but there is no positive evidence that a meaningful arsenal can be realized through such processes"); Ingrid Bazinet, *Sellafield: Britain's Nuclear Plant Steps up Security*, AGENCE FRANCE-PRESSE, Oct. 5, 2002, *available at* 2002 WL 23617391 (stating that BNFL insists that it has tightened security measures at Sellafield in response to September 11th, while environmentalists are concerned about the security of Sellafield's waste tanks filled with highly

powder the size of a tiny pollen grain can cause cancer if inhaled.[151] As typical MOX shipping packages were originally developed for land transports, they might not necessarily be calculated to withstand accident conditions peculiar to ocean shipments.[152] If a ship loaded with MOX fuel were to catch fire, a large quantity of respirable nuclear particles could be released into the atmosphere and the marine environment.[153] If the ship sank into the sea, unrecovered fuel rods could ultimately corrode and release highly radioactive substances into the marine environment, which could have devastating impacts on fisheries (especially in the context of the semi-closed seas).[154]

In addition, the operation of the MOX plant would increase the frequency and volume of shipments of INF Code materials between Europe and Japan. Since 1969, BNFL, COGEMA, and the Overseas Research Council (a consortium of Japanese utility companies) have routinely

---

radioactive materials); Cullen, *supra* note 148, at 3 (detailing BNFL's explanations on security measures adopted in major PNTL vessels).

151. NCI, *supra* note 6, ¶ 8. More precisely, the inhalation of less than 100 micrograms of plutonium dioxide can cause lung cancer, and the ingestion of only a few milligrams may likely result in liver or bone cancer. Annex VII Ir.'s Memorial, *supra* note 5, at 31, ¶ 2.27.

152. Edwin S. Lyman, *The Sea Shipment of Radioactive Materials: Safety and Environmental Concerns*, Nuclear Control Inst. (1999), *at* http://www.nci.org/e/el-malaysia.htm (last visited Apr. 9, 2004) (presented to the *Conference on Carriage of Ultrahazardous Radioactive Cargo by Sea: Implications and Responses*).

153. *See* ITLOS Ir.'s Statement of Case, *supra* note 101, at 18, ¶ 34; Jon M. Van Dyke & Eldon V.C. Greenberg, *International Law Permits Panama to Prohibit Shipments of Ultrahazardous Radioactive Materials Through the Panama Canal*, Nuclear Control Inst. (2000), *at* http://www.nci.org/v-w-x/vd-eg-canal.htm (last visited Oct. 25, 2003). Type B casks used for INF shipments are typically designed to withstand a half-hour engulfing fire at 800 degrees Celsius to meet IAEA standards. Pedrozo, *supra* note 57, at 212–13; Foulke & Weiner, *supra* note 105, at 3. However, Type B casks might not escape damage from a ship fire involving irradiated nuclear materials that can burn for a day or more at 1000 to 2000 degrees Celsius. Marin, *supra* note 25, at 372; Van Dyke, *supra* note 34, at 404; *see also* Annex VII Ir.'s Memorial, *supra* note 5, at 191–92, ¶ 8.242.

154. *See* ITLOS Ir.'s Statement of Case, *supra* note 101, at 18, ¶ 34; *see also* Annex VII Ir.'s Memorial, *supra* note 5, at 38, ¶ 2.56. MOX shipping casks in compliance with the IAEA Regulations are required to survive immersion to a depth of 200 meters and typically calculated to withstand immersion in deep water between 2,000 and 3,000 meters. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 94, ¶ 3.87; Pedrozo, *supra* note 57, at 212–13; Foulke & Weiner, *supra* note 105, at 3. Nonetheless, Type B casks might not survive corrosive effects of salt water during prolonged immersion in the sea. Marin, *supra* note 25, at 372; Van Dyke, *supra* note 41, at 381–82. The United Kingdom refutes Ireland's concern by citing an IAEA study conducted between 1995 and 1999 that concludes neither the loss of a flask into the sea nor the release of radioactive substances into the air as the result of a severe fire "are likely to subject *exposed individuals* to radiation doses that are significant by comparison to normal background doses." Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 94, ¶ 3.87 (emphasis added). In 1999, however, the IAEA recognized that "there is a growing need to examine methods to explicitly address the protection of *the environment* from radiation" in order to put environmental protection and human protection on an equal footing in accordance with the concept of sustainable development. Annex VII Ir.'s Memorial, *supra* note 5, at 12, ¶ 1.30 (emphasis added).

transported spent fuel from Japan for reprocessing in Europe.[155] The first known return shipment of plutonium took place in 1984, when a Japanese vessel sailed from France to Japan through the Panama Canal with 250 kilograms (638 pounds) of pure plutonium dioxide.[156] After U.S. opposition killed a Japanese plan to transport nuclear cargoes via air,[157] a Japanese ship carried the second plutonium return shipment in 1992.[158] Thereafter, PNTL has transported MOX fuel and vitrified waste containing highly radioactive residues from reprocessing of spent fuel from Europe to Japan.[159] These ships have carried more than 8,000 tons of nuclear materials on more than 160 roundtrip voyages covering 4.5 million miles across the oceans.[160] Thus far, no accidental releases have been recorded during sea transport of INF Code materials carried by Class 3 vessels.[161]

Nevertheless, given the extreme radiotoxicity of the cargoes involved, a number of coastal states have opposed nuclear shipments between Europe and Japan. There are three possible nuclear transport routes: (1) through the southwest Pacific around the Cape of Good Hope; (2) around Cape Horn; and (3) through the Caribbean Sea via the Panama Canal.[162] In addition to the environmental impacts of nuclear shipments on coastal communities, transports of highly radioactive materials via Cape Horn and the Cape of Good Hope, in particular, involve potentially harmful effects on the fragile ecosystems of the

---

155. Deere-Jones, *supra* note 147, at 9; Foulke & Weiner, *supra* note 105, at 5.

156. *See* David Marsh, *Plutonium Cargo Sets Sail from Cherbourg*, FIN. TIMES, Oct. 6, 1984, at 2; James Tyson, *Deadly Plutonium Shipment Arrives in Japan*, UNITED PRESS INT'L, Nov. 15, 1984, LexisNexis Academic Universe.

157. *See supra* note 134; *see also* David Marsh, *French Plutonium to be Flown to Japan*, FIN. TIMES, Feb. 20, 1985, at 2.

158. *See* Van Dyke, *supra* note 34, at 399.

159. *See generally* NCI., *Nuclear Sea Shipment Chronology*, *at* http://www.nci.org/s/seatrans-chron.htm (last visited June 25, 2003). The liquid high-level nuclear waste generated from reprocessing of spent fuel is immobilized through "vitrification," in which the dried radioactive residues are incorporated in the solid and stable crystalline structure of borosilicate glass, which is in turn contained in stainless steel canisters. Annex VII Ir.'s Memorial, *supra* note 5, at 29, ¶ 2.12; Pedrozo, *supra* note 57, at 212. Even under normal conditions, glass blocks containing high-level waste remain extremely hot. Van Dyke, *supra* note 41, at 380.

160. Foulke & Weiner, *supra* note 105, at 5.

161. *Id.*; ITLOS U.K.'s Response, *supra* note 110, at 18–19, ¶¶ 33–34. Nevertheless, it is reported that some maritime accidents involved INF Class 1 or 2 vessels. *See, e.g.*, Deere-Jones, *supra* note 147, at 23 (reporting that in 1999, a vessel carrying fissile uranium refined at a BNFL plant had an engine room fire, drifted for a while, and was ultimately tugged to a port in Pembrokeshire without cargo damages). In addition, in the mid 1980s, consignment of radioactive Californium 252, which is non-INF material, was lost in the Irish Sea while heading from Liverpool to Dublin. *Id.* The U.K. Department of Transport was not sure whether the cargoes would float or sink and what would be the ultimate fate of the lost consignment. *Id.*

162. Annex VII Ir.'s Memorial, *supra* note 5, at 34, ¶ 2.41.

Antarctica and its marine environment.[163] Thus far, en-route countries including New Zealand, South Africa, the Rio Group (led by Chile), and the Heads of Government of the Caribbean Community have officially protested nuclear shipments.[164] In 1995, Chile mobilized aircraft and ships to expel from its EEZ a PNTL vessel carrying vitrified waste between France and Japan via Cape Horn.[165] Because the parties involved in nuclear business transactions refuse to disclose in advance the itinerary of ships loaded with INF Code materials, en-route countries are unprepared in the event of an accident or emergency.[166] Indeed, in 1998,

---

163. *See id.* at 36, ¶ 2.48; ITLOS Ir.'s Statement of Case, *supra* note 101, at 20, ¶ 38.

164. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 35–37, ¶¶ 2.43–.49; Van Dyke, *supra* note 34, at 399; NCI, *supra* note 6, ¶ 14.

165. *See* Marin, *supra* note 25, at 362; Van Dyke, *supra* note 41, at 386–87; Jon M. Van Dyke, *The Legitimacy of Unilateral Actions to Protest the Ocean Shipment of Ultrahazardous Radioactive Materials*, Nuclear Control Inst. (1996), *at* http://www.nci.org/i/ib121396.htm (last visited Oct. 26, 2003). Similarly, in Argentina, the Administrative Law Division of the Federal Appeal Court ordered that the government prohibit the Pacific Swan (loaded with vitrified waste) from entering its EEZs. *Government Ignores Court Ruling on UK-Registered Nuclear Waste Ship*, LA NACION (Arg.), Jan. 11, 2001, *translated in* BBC SUMM. OF WORLD BROADCASTS, Jan. 16, 2001, LexisNexis Academic Universe [hereinafter *Government Ignores*]. Although the Argentine Government did not take forcible measures against the British vessel, the Navy's missile-armed escort ship followed it until the ship left Argentine waters. *Id.*

166. *See* Roisin Ingle, *BNFL Refuses to Give Location of Nuclear Ship*, IRISH TIMES, Aug. 19, 2002, at 3, *available at* 2002 WL 25943165 (reporting that BNFL's spokesperson said, "[f]or security reasons we never release details of location or when a ship will arrive at its destination"); Van Dyke, *supra* note 34, at 399 (noting that Japan declined to disclose the planned route of plutonium shipments in detail, citing security reasons). Many coastal states have requested prior notification and consultation regarding INF shipments. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 191, ¶¶ 8.238, 8.241 (contending that the United Kingdom has a duty to enter into prior consultation with Ireland regarding nuclear shipments so that the Irish Coast Guard can "develop a preparedness, response and co-operation framework, in order to respond if incident should take place"); *see also* Pedrozo, *supra* note 57, at 220 (explaining that the Solomon Islands and its supporters advocated for prior notification and consultation with en-route states to make appropriate preparations in the event of emergency in vessels carrying radioactive materials); NCI, *supra* note 6, ¶ 14 (reporting that in 1996, New Zealand's Minister of Foreign Affairs and Trade called for transparency on the routing of vessels loaded with nuclear cargoes). Similarly, Brazil, Argentina, Chile, and Uruguay issued a joint declaration in 1997 demanding "prior notification of routes, consultation on emergency plans, commitment to salvage and other measures" in the marine transport of nuclear materials. NCI, *supra* note 6, ¶ 14. Although recently shippers are prepared to offer public notice of a shipment two days before it leaves and to disclose the route a day after departure, there is still no advance consultation with en-route countries. Van Dyke, *supra* note 165.

Their refusal of prior notification is based on a narrow interpretation of the applicable IAEA instruments providing for prior notification to the "state of transit." Physical Protection Convention, *supra* note 142, art. 4(5), T.I.A.S. No. 11,080, at 8, 1456 U.N.T.S. at 126–27 (providing for advance notification to "[s]tates which the nuclear material is expected to transit by land or internal waterways, or whose airports or seaports is expected to enter"); Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 152–53, ¶ 6.50 (contending that the relevant IAEA instruments do not require prior notification of INF shipments specifically to en-route states); *see also* Pedrozo, *supra* note 57, at 221 (supporting this view through concern that

when Greenpeace activists exposed the vulnerability of nuclear shipments by venturously boarding a PNTL freighter carrying vitrified waste through the Panama Canal, Canal authorities failed to act promptly due to "dysfunctional communication, command and control" between the responsible agencies.[167]

3. Environmental Impact Assessments Regarding the MOX Plant and Associated Nuclear Shipments

Although Ireland and other states have legitimate substantive concerns about BNFL's MOX-related activities, their claims are anticipatory. Without materialized harm, they may have difficulty establishing the United Kingdom's breach of substantive obligations concerning marine environmental protection.[168] As a result, the crux of this dispute lies in procedural claims regarding the adequacy of environmental impact

---

information disclosure may attract terrorists and other criminals as well as radical anti-nuclear activists to impede the safe shipments of INF Code materials). The Joint Safety Convention and the IAEA Code of Practice also include the requirements for notification to transit states. Joint Safety Convention, *supra* note 142, art. 27 (stating that the transboundary shipments of spent fuel and radioactive waste through a transit state is subject to international obligations applicable to the specific modes of transport used); IAEA Code of Practice, *supra* note 142, para. 3 (requiring prior notification and consent of transit state in the international transports of radioactive waste). The Joint Safety Convention merely defines "State of transit" as "any State, other than a State of origin or a State of destination, through whose territory a transboundary movement is planned or takes place." Joint Safety Convention, *supra* note 142, art. 2(s). Coastal states argue that the term "territory" should include the "territorial sea." *See* Annex VII Ir.'s Memorial, *supra* note 5, at 187, ¶ 8.225. The IAEA Code of Practice leaves this question unanswered without offering a definition of "the state of transit" while "[t]aking into account the provisions of the Basel Convention ... and other relevant international instruments" and at the same time, nothing that "[n]othing in this Code prejudices or affects in any way" the navigation rights of flagged vessels under customary international law as reflected in UNCLOS. *See* IAEA Code of Practice, *supra* note 142, ¶ 1 n.2.

167. NCI, *supra* note 6, ¶ 6. In addition, in January 2001, when the *Pacific Swan* carried vitrified waste through Cape Horn, Argentina needed three days of aerial searching to find the British vessel "190 nautical miles from the coast in an area in which there is a high concentration of fishing boats," which "made it more difficult to identify this particular ship." *Government Ignores*, *supra* note 165 (quoting the statement of the commander of the Argentine Southern Naval Area, Rear-Adm Alegandro Kenny).

168. *See* Boyle, *supra* note 34, at 365–66 (stating that although UNCLOS emphasizes the prevention and control of marine pollutants, the customary norm of state responsibility for *loss or damage* remains instrumental in defining states' obligations to make reparation for marine environmental pollution); *see also State Responsibility*, *supra* note 33, at 17 (regarding the holding of the *Trail Smelter* arbitration "as a case of responsibility for breach of an obligation not to cause harm, in which proof of material damage is a precondition of responsibility"). This is because environmental state responsibility attaches to the *act* of failing to prevent transboundary harm, while international law does not directly prohibit the *activity* that may cause transboundary harm, such as operating a smelter. *See Nuclear Energy*, *supra* note 33, at 312; *see also State Responsibility*, *supra* note 33, at 14 (noting that the *Trail Smelter* arbitration prescribed a fume control regime without prohibiting the operation of the smelter).

assessments for the proposed MOX plant and the associated transports of radioactive materials.[169]

a. The 1993 Environmental Statement for the Proposed MOX Plant

The domestic authorization process for the new MOX plant began in October 1992, when BNFL filed a formal application to the Copeland Borough Council, the local planning authority, for permission to construct the plant.[170] The Town and County Planning (Assessment of Environmental Effects) Regulations 1988 (1988 Regulations), which implement Directive 85/337EEC of 1985, require an environmental impact assessment for the construction of a nuclear fuel manufacturing plant if it is "likely to have significant effects on the environment."[171] Initially, BNFL did not submit an environmental assessment on the basis that the MOX plant likely would not involve significant environmental effects.[172] In July 1993, Ireland sent the United Kingdom a letter stating that the European Community (EC) Directive and the U.K. legislation required an environmental impact assessment for the proposed MOX plant.[173] Subsequently, BNFL "voluntarily" prepared the Environmental Statement of 1993.[174]

Generally reflecting the criteria in the 1988 Regulations,[175] the Statement consists of a non-technical summary statement and the

---

169. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 69, ¶¶ 4.1, 4.5 (remarking that "[t]he dispute . . . concerns serious procedural violations of UNCLOS by the United Kingdom," and "the 1993 MOX environmental statement is at the heart of this dispute"); Separate Opinion of Judge *Ad Hoc* Székely, Provisional Measures of Dec. 3, MOX Plant (Ir. v. U.K.), ¶ 12 (Int'l Trib. for the Law of the Sea 2001), *at* http://www.itlos.org/case_documents/2001/document_en_205.doc (last visited Apr. 9, 2004) [hereinafter Székely Opinion] (discussing Article 206, which provides for the environmental impact assessment requirement of UNCLOS, as "crucial for determining the viability of the . . . provisional measures" requested by Ireland); ITLOS U.K.'s Response, *supra* note 110, at 38, ¶ 94(2) ("The complaint that Ireland has brought before the Annex VII tribunal is essentially procedural in nature.").

170. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 126, ¶ 5.47; BNFL, *supra* note 8, ¶¶ 1, 5.

171. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 124, 126–27, ¶¶ 5.42, 5.47.

172. *Id.*

173. *Id.* at 127 ¶ 5.47.

174. *Id.* at 22, 127–28, ¶¶ 2.17, 5.48.

175. *See id.* at 22, 129, ¶¶ 2.17, 5.51. The 1988 Regulations require the developer to include the following information:

- a description of the project comprising information on the site, design and size of the project,
- a description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects,

following five chapters: (1) "Introduction," which briefly describes BNFL's business and applicable procedural requirements; (2) "The Need for the Development," which discusses the benefits of MOX fuel and its supply and demand; (3) "Site Selection," which identifies the selection criteria and the alternative sites considered; (4) "The Proposed Development," which offers details of the construction, operation, and decommissioning of the MOX plant; and (5) "Assessment of Environmental Effects," which describes the present situation and considers the potential impacts of the MOX plant and measures to mitigate such impacts during construction, operation, and decommissioning.[176]

The Environmental Statement, however, contains no section (or even a paragraph) explaining the potential impacts of the proposed MOX plant on the marine environment of the Irish Sea. According to Chapter 4, liquid and gaseous effluents from the MOX plant will be discharged via the THORP facilities.[177] BNFL fails to complete the process description of the MOX plant, and neglects to describe how liquid and gaseous effluents are treated at the THORP facilities and ultimately discharged into the Irish Sea. It is also unclear whether BNFL has explored any alternative methods of treating radioactive discharges or measures to mitigate the radiological impacts on the marine environment. In the section on water, the Environmental Statement focuses on the effects of the diversion of water for the operation of the plant and the treatment of non-active effluents.[178] Regarding active effluents, it simply states, "The treatment and quantity of active liquid effluent from the operation of SMP [the Sellafield MOX Plant] will be as described earlier in the assessment of Health and Safety."[179] However, the "Health and Safety" section does not deal with issues concerning the marine environment and merely concludes that radiation doses to a "critical group" of the United Kingdom's population will be insignificant.[180] In reaching this conclusion, the Environmental Statement fails to disclose the scientific methodology and the data used in constructing this hypothetical group.[181]

- the data required to identify and assess the main effects which the project is likely to have on the environment,
- a non-technical summary of the information mentioned in indents 1 to 3.

Id. at 123, ¶ 5.38.

176. BNFL, *supra* note 8, at iii.

177. *Id.* ¶¶ 4.37, 4.41.

178. *See id.* ¶¶ 5.75–.83.

179. *Id.* ¶ 5.81.

180. *See id.* ¶¶ 5.49, 5.50, 5.52.

181. *Id.* ¶ 5.36. The Statement merely offers the following general (or vague) description of the critical group: "The critical group represents a small group of people with extreme habits such as the consumption of specific foods at a high rate and/or occupancy of certain area." *Id.*

Although the section on flora and fauna cursorily references radiation monitoring programs and sampling of "locally caught fish," it fails to identify which areas will be monitored and what species of fish will be subject to monitoring.[182] Ireland is particularly disturbed by BNFL's omission of any discussion about expected radioactive discharges from the reprocessing at THORP to reclaim plutonium for MOX fuel manufacturing at the new plant.[183]

The Environmental Statement notably fails to discuss the transport of nuclear materials, even though this will be an essential part of BNFL's business at the proposed MOX plant. The sections on the site selection and process description of the MOX plant are completely silent about how the ingredients of MOX fuel are obtained, or about how MOX fuel assemblies are shipped to the customers. Although Chapter 5 references transports, the description focuses on domestic transportation. For example, the chapter emphasizes the history of safe transport of MOX fuel within the United Kingdom[184] and the expected "marginal increase of rail and road movements per year from Sellafield."[185] It also stresses that because containers must meet the IAEA standards, accidents in MOX fuel transport "would not pose an unacceptable threat to the public"[186] and "doses to transport workers [would be] extremely low."[187] The Statement is completely silent on the transport of MOX fuel across the Irish Sea and other seas between Europe and Japan.[188]

In addition, this environmental assessment process lacked procedures for interstate consultation and information exchange. Under the

---

182. *Id.* ¶ 5.92.

183. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 124–25, ¶¶ 7.43–.47; Annex VII Ir.'s Reply, *supra* note 128, at 76–77, ¶¶ 6.49–.54 (emphasizing the linkage between THORP and the MOX plant in rebutting the United Kingdom's arguments regarding the adequacy of the 1993 Environmental Statement). In this context, notably, THORP was not subject to any environmental assessment during its planning stages in the 1970s without domestic environmental impact assessment requirements. Annex VII Ir.'s Memorial, *supra* note 5, at 18, ¶ 1.48. In 1992, the European Commission examined under Article 37 of the Euratom Treaty whether radioactive waste discharges from THORP was likely to cause significant contamination of the territory of another member state. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 19, ¶ 2.7. However, the assessment did not specifically deal with the marine environment and Ireland did not have access to the data the United Kingdom submitted to the European Commission. Annex VII Ir.'s Memorial, *supra* note 5, at 18, ¶ 1.48. *Cf.* discussion *infra* Part III.A.3 (discussing the inappropriateness of the European Commission's Article 37 Opinion for the purpose of marine environmental impact assessment of the MOX plant).

184. *See* BNFL, *supra* note 8, ¶ 5.54.

185. *Id.* ¶ 5.21.

186. *Id.* ¶ 5.55.

187. *Id.* ¶ 5.56.

188. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 123, ¶ 7.40; *see generally id.* at 46, ¶ 2.91 ("As far as Ireland is aware, these shipments have never been subject to any environmental impact assessment requirement, and their impacts on the environment have never been assessed.").

1988 Regulations, the local planning authority is required to consult with authorities in neighboring municipalities and relevant domestic statutory bodies. Although the local authority may consult with other domestic institutions and individuals, the Act does not require interstate consultation or public participation.[189] In 1994, Ireland initiated communication with the Copeland Borough Council by sending a letter summarizing its concerns about the quality and adequacy of BNFL's Environmental Statement.[190] In reply, the Council solicited supplementary information from BNFL and conveyed it to Ireland.[191] Nevertheless, Ireland received no satisfactory response from the local authority about the foreseeable additional impacts of THORP or the impacts of the MOX plant on the Irish Sea's marine environment.[192]

BNFL was also required to obtain an authorization from Her Majesty's Nuclear Installations Inspectorate (NII), which consulted with Her Majesty's Inspectorate of Pollution and the Ministry of Agriculture, Fisheries and Food.[193] Again, no interstate consultation was required at this stage. Although the Environmental Statement "does not form part of the formal applications which BNFL will make to the NII,"[194] the United Kingdom authorities agreed to permit the construction of the MOX plant, apparently based on this Statement.[195] Accordingly, BNFL completed the construction of the MOX plant in August 1995.[196]

b. The 1997 Opinion of the European Commission Concerning the MOX Plant

In 1996, BNFL applied for variations to existing discharge authorizations for Sellafield with reference to the proposed MOX plant.[197] Under Article 37 of the Euratom Treaty, the United Kingdom is required to obtain an opinion from the Commission of the European Communities

---

189. *See* BNFL, *supra* note 8, ¶ 1.5.

190. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 70, 166, ¶¶ 4.8, 8.114.

191. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 127–28, ¶ 5.48.

192. *See* Annex VII Ir.'s Reply, *supra* note 128, at 76–77, ¶¶ 6.55–.58.

193. *See* BNFL, *supra* note 8, ¶ 1.6. NII deals with the operation of nuclear facilities including the storage of radioactive wastes and is responsible for the administration of the United Kingdom's civil nuclear site licensing system. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 35, ¶ 2.52(2).

194. BNFL, *supra* note 8, ¶ 1.9.

195. Annex VII Ir.'s Memorial, *supra* note 5, at 123, 166, 167, ¶¶ 7.37, 8.114, 8.119; ITLOS Ir.'s Statement of Case, *supra* note 101, at 11, ¶ 20.

196. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 23, ¶ 2.19.

197. *See* DEFRA, *Variations to the BNFL Sellafield Radioactive Waste Discharge Authorizations: Decisions of the Secretary of State for the Environment, Transport and the Regions and the Minister of Agriculture, Fisheries and Food (The Ministers)* ¶ 8 (Nov. 19, 1999), *at* http://www.defra.gov.uk/environment/radioactivity/sellawaste/index.htm (last visited July 14, 2003) [hereinafter DEFRA Variations Authorization].

(European Commission) regarding whether "any plan for the disposal of radioactive waste in whatever forms" will likely result in significant radioactive contamination in another member state.[198] Accordingly, the United Kingdom submitted relevant documents regarding the MOX plant to the European Commission.[199] The Commission's Opinion found that both under normal operating condition of the MOX plant and in the event of "an accident on the scale considered in the general data," the radiation doses to the Irish public would not be significant "from the health point of view."[200] Ultimately, the Commission concluded that routine and accidental discharges from the MOX plant are "not liable to result in radioactive contamination . . . of the water, soil, or airspace" of Ireland.[201]

Nonetheless, the opinion does not fully address Ireland's concern, as it failed to provide a holistic account of the radiological impacts on the marine environment of the Irish Sea. It also failed to assess the cumulative effects of the MOX project, including the sea transportation of nuclear materials and the expected increase of radioactive discharges from THORP.[202] In addition, Article 37 of the Euratom Treaty does not provide for interstate processes. Although the Commission adopted the Opinion based on a report by an expert panel, which included two Irish nationals nominated by Ireland,[203] the Irish government itself did not have access to the information the United Kingdom submitted to the Commission.[204] The Irish government and the affected members of the public had little grasp of the reasons for the Commission's Opinion, which is formulated in standardized and conclusory language.[205]

---

198. Treaty Establishing the European Atomic Energy Community, Mar. 25, 1957, art. 37, 298 U.N.T.S. 167.

199. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 23, ¶ 2.19.

200. Comm'n Op. of Feb. 1997 Concerning the Plan for the Disposal of Radioactive Waste Arising from the Operation of the BNFL Sellafield Mixed Oxide Fuel Plant Located in the U.K., in Accordance with Article 37 of the Euratom Treaty, 1997 O.J. (C 68) 4 [hereinafter 1997 Comm'n Op. Concerning the MOX Plant].

201. *Id.*

202. *See* Annex VII Ir.'s Reply, *supra* note 128, at 39, ¶¶ 3.45–.46; Annex VII Ir.'s Memorial, *supra* note 5, at 18, 128, ¶¶ 1.48, 7.58.

203. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 163, ¶ 6.87.

204. Annex VII Ir.'s Memorial, *supra* note 5, at 128, ¶ 7.58.

205. *Compare* 1997 Comm'n Op. Concerning the MOX Plant, *supra* note 200, *with* Comm'n Op. of 26 Nov. 2002 Concerning the Plan for the Disposal of Radioactive Waste Arising from the Operation of the MOX Demonstration Facility at Sellafield Located in the U.K., in Accordance with Article 37 of the Euratom Treaty, 2002 O.J. (C 292) 7 [hereinafter 2002 Comm'n Op. Concerning the MOX Demonstration Facility]. The 1997 Opinion reads as follows:

> (a) the distance between the plant and the nearest point on the territory of another Member State, in this case Ireland, is 184 km;

c. The 1998 Discharge Authorizations for the Sellafield Site

At the domestic level, the Environment Agency is responsible for gaseous and liquid discharge authorizations under the Radioactive Substances Act 1993.[206] Although BNFL's application for variations primarily concerned changes in THORP and other facilities, BNFL's submission included information on the proposed MOX plant.[207] The Environment Agency decided to process discharge variations for the entire Sellafield site independently from authorizations for uranium and plutonium commissioning of the MOX plant.[208]

BNFL already estimated in the 1993 Environmental Statement that "The liquid and gaseous radioactive discharges from the new MOX plant will not require changes to the activity levels permitted in either the existing or the proposed Discharge Authorization for Sellafield."[209] At that time, the U.K. authorities notably promulgated the discharge authorizations for

---

(b) under normal operating conditions, the discharges of liquid and gaseous effluents will be small fractions of present authorized limits and will produce an exposure of the population in other Member States that is negligible from the health point of view;

(c) low-level solid radioactive waste is to be disposed to the authorized Drigg site operated by BNF plc. Intermediate level wastes are to be stored at the Sellafield site, pending disposal to an appropriate authorized facility;

(d) in the event of unplanned discharges of radioactive waste which may follow an accident on the scale considered in the general data, the doses likely to be received by the population in other Member States would not be significant from the health point of view.

In conclusion, the Commission is of the opinion that the implementation of the plan for the disposal of radioactive wastes arising from the operation of the BNFL Sellafield mixed oxide fuel plant, both in normal operation and in the event of an accident of the magnitude considered in the general data, is not liable to result in radioactive contamination significant from the point of view of health, of the water, soil or airspace of another Member State.

1997 Comm'n Op. Concerning the MOX Plant, *supra* note 200, at 4. The 2002 Opinion, which deals with the MOX Demonstration Facility suspended after the falsification incident, is almost identical except that paragraph (b) identifies the harm that is "not significant" and paragraph (c) discusses the temporal storage of plutonium-contaminated materials before offsite transport for disposal. *See* 2002 Comm'n Op. Concerning the MOX Demonstration Facility, *supra*, at 7. From these opinions, it is difficult to learn that the proposed commercial MOX plant is "a different plant in a different building" with production capacity fifteen times larger than that of the MOX Demonstration Facility. *See* ITLOS U.K.'s Response, *supra* note 110, at 42, ¶ 103(2).

206. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 35, ¶ 2.52(1).

207. *See id.* ¶ 2.23, at 24; DEFRA Decision, *supra* note 111, at 2, ¶ 2.

208. *See* DEFRA Decision, *supra* note 111, at 2, ¶ 2; Department of the Environment, Transport and the Regions (DETR), *Ministers' Decision on the Justification for the Uranium Commissioning of BNFL's Mixed Oxide Plant* ¶ 3 (June 25, 1999), *at* http://www.defra.gov.uk/environment/consult/mox/3.htm (last visited Nov. 7, 2003).

209. BNFL, *supra* note 8, ¶ 3.5.

the entire Sellafield site under the Radioactive Substances Act 1993, which took effect in 1994 to permit BNFL to operate THORP.[210]

In October 1998, the Environment Agency issued three separate proposed decisions regarding discharge variations and the uranium and plutonium commissioning of the MOX plant.[211] In the proposed decision on variations for the Sellafield site, the Agency substantially reduced the discharge limit for technetium-99, an artificial radionuclide, highlighting the United Kingdom's commitment to the OSPAR Strategy of June 1998.[212] However, the reduction would have no practical effects on the operation of THORP and the MOX plant that generate little or no discharge of technetium-99.[213] While the proposed decision also attached an information condition requiring that BNFL conduct scientific research concerning the biological effects of radioactivity in the vicinity of Sellafield,[214] the Environment Agency added another condition obligating BNFL to use the best available technology to control the *timing* of discharges to the Irish Sea so as to limit the radiological impact on the critical group.[215] Although the Environment Agency conducted its own assessment regarding Sellafield's radioactive discharges, the Agency restricted its consideration to only five

210. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 19–20, ¶¶ 2.8–.9. Later, the new discharge authorizations survived a challenge in *R. v. Secretary of State for the Environment and Others, ex parte Greenpeace Ltd and Another*, 4 All E.R. 352 (1994), where the High Court concluded that an environmental impact assessment was not required in the new discharge authorizations because the construction and operation of THORP constitute a single operation, which predated the first EC Directive (85/337 EEC). *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 20, ¶ 2.10; Case Comment, *Radioactive Substances*, (1994) PLAN. & ENVTL. L. BUL. 74–75.

211. DEFRA Variations Authorization, *supra* note 197; DETR, *supra* note 208; Env't Agency, *Document Containing the Agency's Proposed Decision on the Justification for the Plutonium Commissioning and Full Operation of the Mixed Oxide Fuel Plant, British Nuclear Fuel plc Sellafield* (Oct. 1998), *at* http://www.defra.gov.uk/environment/radioactivity/mox/pdf/mox-annex2.pdf (last visited Apr. 13, 2004) (Annex II to Decision of the Secretary of State for DEFRA and the Secretary of State for Health, Oct. 2001).

212. DEFRA Variations Authorization, *supra* note 197, ¶ 13 (quoting the paragraph 3.8 of the Environment Agency's proposed decision on variations that would reduce the liquid discharge limit for technetium-99 from 200 to 90 terabecqerels a year); *see also id.* ¶¶ 20, 32.

213. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 78, ¶ 3.50 n.67. ("[T]he MOX plant generates no discharges of technetium-99 whatsever [sic]." Because technetium-99 is created almost exclusively through the reprocessing of spent Magnox fuel, the substantial reduction in the discharge limit of technetium-99 does not affect the reprocessing of spent uranium-dioxide fuel at THORP to produce the ingredient of the proposed MOX plant. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 78, ¶ 3.50 n.67 (noting that currently, THORP contributes up to 0.05 percent of technetium-99 discharges from the entire Sellafield site); DEFRA, *supra* note 132; *supra* note 111 and accompanying text. The Environment Agency's proposed decisions of October 1998 and the subsequent economic justification for the MOX plant deal with plutonium reclaimed at THORP, and further authorizations would be required for BNFL to use Magnox derived plutonium at the new MOX plant. *See* DEFRA Decision, *supra* note 111, at 23–24, ¶¶ 82–83; Env't Agency, *supra* note 211, at 6, ¶ 3.4.

214. DEFRA Variations Authorization, *supra* note 197, ¶ 13 (quoting the paragraph 3.15 of the Agency's proposed decision).

215. *Id.* (quoting the paragraph 3.13 of the Agency's proposed decision).

of the numerous radioactive substances discharged from the nuclear industrial complex.[216] Overall, the proposed decision added little to the existing scheme to control discharges from THORP into the marine environment.

Separately, the Environment Agency considered radioactive discharges from the MOX plant in the proposed decision on plutonium commissioning.[217] The Agency agreed with BNFL that gaseous and liquid radioactive releases from the new MOX plant would be within the discharge limits for the entire Sellafield site, and concluded that BNFL was not required to obtain further discharge authorizations for the new MOX plant.[218] This determination effectively permitted BNFL and the United Kingdom authorities to continue relying on the 1993 Environment Statement. Aside from additional technical information made available through the authorization processes, "the Environment Statement has never been updated or revisited, despite longstanding and regularly repeated requests from Ireland," especially regarding the relationship between the MOX plant and THORP as well as the direct and cumulative impacts of the MOX plant on the marine environment of the Irish Sea.[219] This remains so, even though in the intervening time, UNCLOS, the OSPAR Convention, and the new EC Directive[220] entered into force for the United Kingdom to impose an obliga-

---

216. *Id.* ¶¶ 9, 26–29.

217. *See* DEFRA Decision, *supra* note 111.

218. ITLOS Ir.'s Statement of Case, *supra* note 101, at 12, ¶ 23. In the Proposed Decision, the Environment Agency reached the following conclusion:

> The Agency is satisfied that the gaseous, liquid and solid wastes arising from the operation of the MOX plant can be disposed of within the constraints of the existing Sellafield authorizations under [the] R[adioactive] S[ubstances] A[ct 1993] . . . It is satisfied that the MOX plant can be operated in accordance with those more restrictive limits [for the substances identified in the variations].

Env't Agency, *supra* note 211, at 6, ¶ 3.1.

219. ITLOS Ir.'s Statement of Case, *supra* note 101, at 11, ¶ 20; *see also supra* notes 191–92 and the accompanying text. The proposed decision of 1998 includes some details pertaining to *air* shipments of MOX fuel. Env't Agency, *supra* note 211, app. 4, at ¶ A4.128 ("BNFL has stated that 12 to 24 movements in total involving 'non-military radioactive material, excluding irradiated fuel' from Sellafield will be made using Carlisle Airport per year."). In contrast, the proposed decision offers no specifics concerning *sea* shipments of MOX fuel and only includes generalized references to the relevant international standards. *See id.* app. 4, at ¶¶ A4.126–.140. Without giving any factual references or scientific assumptions, the Environment Agency makes a conclusory statement regarding the radiological impacts on marine life from the operation of the MOX plant and associated nuclear shipments. *See id.* app. 4, at ¶¶ A4.156–.157. Because the Agency's proposed decision is "based on a recognition that THORP has already been justified," it does not include any additional assessment on THORP in relation to the plutonium commissioning of the MOX plant. *Id.* app. 4, at ¶ A4.10.

220. Council Directive 97/11/EC, 1997 O.J. (L 73) 5 [hereinafter 1997 EC Directive] (amending Directive 85/337/EEC of 1985).

tion on it to conduct adequate environmental impact assessments before the authorization of the proposed activity.[221]

d. The 2001 Economic Justification of the MOX Plant

Lastly, an economic justification for the MOX plant is required under relevant Euratom Directives.[222] To authorize the operation of the MOX plant, the United Kingdom must ensure that the MOX plant is economically justified and that the economic, social, or other benefits of the plant are shown to outweigh the health detriments it may cause.[223] The Environment Agency issued the proposed decision of 1998 on the plutonium commissioning of the MOX plant as part of this justification exercise.[224] In addition, the United Kingdom authorities held five rounds of public consultations between April 1997 and August 2001.[225] Ireland was invited to this public consultation process as one of the consultees.[226] The Irish government, as well as the Irish public, was also given an opportunity to make submissions.[227] Indeed, Ireland participated in four of the five consultation sessions, during which Ireland made submissions and received data concerning radioactive discharges from the MOX plant.[228]

However, Ireland was not satisfied with this process because material business information and quantitative data were substantially removed from the publicly circulated version of the independent consultees' reports[229] due to commercial confidentiality.[230] For example, an appendix in

221. *See* ITLOS Ir.'s Statement of Case, *supra* note 101, at 39, ¶ 87.

222. Council Directive 80/836/EURATOM, 1980 O.J. (L 246) 1, *repealed by* Council Directive 96/29/EURATOM, art. 6, 1996 O.J. (L 159) 1.

223. *See* DEFRA Decision, *supra* note 111, at 5–8, ¶¶ 13–28; Annex VII Ir.'s Memorial, *supra* note 5, at 45–46, ¶ 2.90; *see also* Council Directive 96/29/EURATOM, *supra* note 222, art. 6 ("Member States shall ensure that all new classes or types of practice resulting in exposure to ionizing radiation are justified in advance of being first adopted or first approved by their economic, social or other benefits in relation to the health detriment they may cause.").

224. *See* DEFRA Decision, *supra* note 111, at 10, ¶¶ 37–38.

225. Annex VII Ir.'s Memorial, *supra* note 5, at 72, ¶ 4.11; ITLOS Ir.'s Statement of Case, *supra* note 101, at 12–13, ¶ 24.

226. ITLOS U.K.'s Response, *supra* note 110, at 44, ¶ 106.

227. *Id.*; DEFRA, *Sellafield MOX Plant Consultation 2001* ¶ 12 (Apr. 5, 2001), *available at* http://www.defra.gov.uk.environment/consult/mox/sellafield/03.htm (last visited Nov. 12, 2003) (inviting "comments from anyone in the U.K. or abroad").

228. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 25, ¶ 2.26.

229. *See* Arthur D. Little Ltd., *supra* note 115; PA Consulting Group, *Final Report—Assessment of BNFL's Economic Case for the Sellafield MOX Plant* (Dec. 1997), *available at* http://www.defra.gov.uk/environment/consult/mox/pac/index.htm (last visited July 24, 2003). After the PA Consulting Group prepared the report, the data falsification incident emerged at BNFL's MOX Demonstration Facility, which required some adjustments regarding the economic case of BNFL's MOX manufacturing business. *See* DEFRA Decision, *supra* note 111, at 3–4, ¶ 8. Subsequently, the U.K. authority engaged Arthur D. Little Ltd. to prepare the revised report taking into account the effects of the falsification incident. *See id.* at 4, ¶ 9.

230. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 71–73, ¶¶ 4.10, 4.12–.17; ITLOS Ir.'s Statement of Case, *supra* note 101, at 12–13, ¶ 24.

the report prepared by Arthur D. Little (ADL) includes tables that summarize contract information on "parties involved," "dates of contract," "required volume," "due date," "price," "payment schedule," "other [information]," and "status" for each customer. In the publicly available version, almost all information has been deleted from the tables except for the parties involved in the Swedish contract and the date of their contract.[231]

During the public consultation process, Ireland raised the issue of inadequate information and requested the United Kingdom to supply deleted information including: (1) details of secured and forecast sales volumes; (2) details of required annual production capacity; (3) figures for the sales volumes and sales prices assumed for MOX fuel; (4) details of plant capacity and commissioning start dates for plutonium commissioning; and (5) the number of annual voyages relating to the MOX plant operation.[232] Although the above information did not directly pertain to the marine environment, it would help Ireland assess the pattern and intensity of the MOX plant operation, which would likely affect the environmental quality of the Irish Sea. In reply, however, the United Kingdom rejected Ireland's information request, again based on commercial confidentiality.[233]

e. Ireland's Legal Actions Against the United Kingdom

Because the economic justification is a critical part of authorizing the operation of the MOX plant, Ireland requested the constitution of an arbitral tribunal under Article 32 of the OSPAR Convention (OSPAR tribunal) on June 15, 2001. Ireland alleged that the United Kingdom violated Article 9 of the Convention in authorizing the proposed MOX plant without offering adequate information to Ireland.[234] Despite Ireland's attempt to suspend the authorization process, the United Kingdom took a decisive step on October 3, 2001.[235] Based on the ADL Report and the Environment Agency's proposed decision on plutonium commissioning, the United Kingdom determined that the MOX plant was economically

231. *See* Arthur D. Little Ltd., *supra* note 115, app. A9.

232. OSPAR Ir.'s Memorial, *supra* note 123, at 34–35, ¶ 114.

233. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 77–78, ¶¶ 4.31–.32, 4.34, 4.37; Counter-Memorial of the U.K., Dispute Concerning Access to Information Under Article 9 of the OSPAR Convention (Ir. v. U.K.), at 1, ¶ 1.2 (Perm. Ct. Arb. 2002), *at* http://pca-cpa.org/PDF/UK%20-%20CM%20prelims.pdf, http://pca-cpa.org/PDF/UK%20-%20Counter%20Memorial.pdf (last visited Nov. 11, 2003) [hereinafter OSPAR U.K.'s Counter-Memorial].

234. OSPAR Final Award, *supra* note 15, at 18, ¶ 38.

235. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 79, ¶¶ 4.41–.42 (noting that the United Kingdom rejected Ireland's request not to authorize the MOX plant pending the result of the OSPAR arbitration).

justified and the social, economic, and other benefits exceeded the detriment to public health.[236]

Shortly thereafter, on October 25, 2001, Ireland instituted arbitral proceedings against the United Kingdom under Article 287 of UNCLOS, alleging that the United Kingdom violated basic obligations in Part XII of the Convention including, *inter alia*, assessment of environmental impacts under Article 206.[237] On November 15, 2001, pending the constitution of an arbitral tribunal under Annex VII of the Convention (Annex VII tribunal), Ireland requested provisional measures from ITLOS to prevent the operation of the new MOX plant and to freeze the transport of radioactive materials associated with the MOX plant.[238] By that time, the United Kingdom had substantially raised the stakes of the MOX project. The suspension of the MOX plant would wipe out 480 potential jobs on the depressed northwest coast of England,[239] as well as BNFL's MOX business of at least £10 million. Additionally, while the MOX plant had already absorbed the capital investment of £470 million, maintaining it in the condition of operational readiness would cost £385,000 per week.[240] It was only about a month before the plutonium commissioning of the MOX plant, which was planned on December 20, 2001.[241]

As a result of Ireland's desperate attempts, the three tribunals under the UNCLOS and the OSPAR Convention have dealt with essentially identical disputes concerning the adequacy of transboundary environmental impact assessments regarding the proposed MOX project.[242]

---

236. DEFRA Decision, *supra* note 111, at 2, 4, 24, ¶¶ 3, 9, 11, 89–91. Ireland questions the adequacy of economic analysis that failed to take into account capital costs as well as costs associated with safety and security. Annex VII Ir.'s Memorial, *supra* note 5, at 73–74, ¶¶ 4.16, 4.18, 4.23; *see also* Underhill, *supra* note 6, at 44 (reporting that even the most optimistic observers think that the MOX plant will be far from recouping its £470-million start-up costs, considering the competitiveness of energy markets and the expensiveness of MOX fuel). *But see* Case Comment, *Proposed Mixed Oxide Fuel Plant at Sellafield*, 2002 J. PLANNING & ENVTL. L. 1113–22 (involving a case that upheld DEFRA's decision to justify the operation of the MOX plant). The Court of Appeal rejected the appeal on December 7, 2001. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 26, ¶ 2.30.

237. *See* ITLOS Ir.'s Statement of Case, *supra* note 101, at 37, ¶ 82.

238. *Id.* at 63, ¶ 150.

239. ITLOS U.K.'s Response, *supra* note 110, at 14, 86, ¶¶ 23, 232; Underhill, *supra* note 6, at 44; *see also* Arthur D. Little Ltd., *supra* note 115, at 29 (estimating that in addition to 400 direct jobs, 80 related jobs in the local business community would be lost if the operation of the MOX plant would not be authorized).

240. ITLOS U.K.'s Response, *supra* note 110, at 13, 86, ¶¶ 20, 232.

241. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 81–82, ¶¶ 4.54–.55.

242. In addition to the ITLOS, the Annex VII tribunal, and the OSPAR tribunal, the European Court of Justice (ECJ) may have power to adjudicate the MOX plant dispute under Article 226 of the European Community Treaty. *See* Annex VII Further Provisional Measures, *supra* note 16, at 7, ¶ 21. Ireland has repeatedly manifested its intention to bring action against the United Kingdom before the ECJ, although such a lawsuit has not yet materialized. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 25, ¶ 2.26. In the interim, the

B. *Proliferation of Tribunals*

1. ITLOS Judgment on Provisional Measures

On December 3, 2001, ITLOS issued an order regarding the provisional measures in this dispute. Under Article 290(5), ITLOS may grant provisional measures to preserve the rights of the parties or to prevent serious harm to the marine environment pending the constitution of an Annex VII tribunal, if ITLOS determines that (1) the Annex VII tribunal would have *prima facie* jurisdiction over the disputed matters, and (2) the urgency of the situation requires such measures.[243] In this proceeding, ITLOS must determine whether these conditions are satisfied based on information from parties' submissions and, if it determines so, what provisional measures are appropriate in the given circumstances. A decision on the merits must be left for the Annex VII tribunal.

Regarding jurisdictional bases, Ireland argued that the Annex VII tribunal would have *prima facie* jurisdiction because the dispute involved the issue of whether the United Kingdom fulfilled its duties: (1) to prevent, reduce, and control pollution of the Irish Sea under Articles 192, 194, 207, 211, 212, and 213 of UNCLOS; (2) to cooperate with Ireland in marine environmental protection of the Irish Sea under Articles 123 and 197; and (3) to assess the potential impacts of the MOX plant and related activities on the marine environment of the Irish Sea under Article 206.[244] According to Ireland, there was urgency because, without provisional measures, Ireland's "right to insist the United Kingdom fulfill those duties" would be irrevocably violated by the irreversible effects of radioactive discharges from the MOX plant.[245]

In response, the United Kingdom contended that the Annex VII tribunal would lack *prima facie* jurisdiction over this dispute under Article 287(5),[246] because Ireland's claims turned on the interpretation and application of relevant provisions in regional agreements. In particular, both parties agreed to submit the dispute concerning the information disclosure provision of the OSPAR Convention to the OSPAR tribunal, pursuant to the dispute settlement provision of the regional sea convention.[247] The

---

European Commission has commenced the proceedings against Ireland regarding its attempt to settle the dispute through means other than adjudication before the ECJ. *See infra* note 316 and accompanying text.

243. UNCLOS, *supra* note 10, art. 290(5), 21 I.L.M. at 1323.

244. ITLOS Ir.'s Statement of Case, *supra* note 101, at 51, ¶ 126.

245. *Id.* at 57, ¶ 144; *see also id.* at 56–58, ¶¶ 141–48.

246. UNCLOS, *supra* note 10, art. 287(5), 21 I.L.M at 1323 ("If the parties to a dispute have not accepted the same procedure for the settlement of dispute, it may be submitted only to arbitration in accordance with Annex VII, *unless the parties otherwise agree.*") (emphasis added).

247. ITLOS U.K.'s Response, *supra* note 110, at 6–7, ¶¶ 2–4.

United Kingdom further contended that there was no urgency because the MOX plant would have only *de minimus* environmental effects.[248] To support its position, the United Kingdom gave assurance that there would be no export of MOX fuel from the disputed plant and no import to THORP of spent fuel in accordance with contracts for conversion to the MOX plant by October 2002.[249]

ITLOS agreed with Ireland that the Annex VII tribunal would have *prima facie* jurisdiction over the present dispute.[250] However, ITLOS found for the United Kingdom on the issue of urgency and rejected the provisional measures requested by Ireland.[251] Instead, the Tribunal prescribed alternative provisional measures to require the parties to work together in information exchange, monitoring, and pollution prevention measures concerning the operation of the MOX plant.[252] The provisional measures were based on the duty to cooperate as a fundamental principle for marine environmental protection under Part XII of UNCLOS as well as general international law.[253] In particular, the Tribunal believed that "prudence and caution require that Ireland and the United Kingdom cooperate in exchanging information concerning risks or effects of the operation of the MOX plant,"[254] and ordered both parties to submit the initial report concerning the provisional measures by December 17, 2001, only three days before the plutonium commissioning of the disputed plant.[255]

As Judge Ad Hoc Székely pointed out, the ITLOS order was contradictory. On one hand, the Tribunal rejected Ireland's contention that its right to have an adequate environmental impact assessment under Article 206 would be irrevocably nullified with the plutonium commissioning of the MOX plant. On the other hand, the Tribunal did require the United Kingdom to exchange information with Ireland concerning environmental impacts of the MOX plant *before* its plutonium commissioning.[256]

---

248. *Id.* at 10, ¶ 11.

249. *Id.* at 10, ¶ 12; ITLOS Provisional Measures, *supra* note 12, at 17–18, ¶¶ 78–80. Ireland considers the MOX return shipments from Japan on October 2002 in contravention to this assurance. *See supra* note 5. Apparently, however, the United Kingdom carefully and deliberately formulated the wording of its assurance precisely to exclude the particular shipments because the return of the falsified MOX fuel technically constitutes neither "the *export* of MOX fuel" nor "the import of *spent* fuel." *See* ITLOS U.K.'s Response, *supra* note 110, at 75, ¶ 201

250. ITLOS Provisional Measures, *supra* note 12, at 40, ¶¶ 50–51.

251. *Id.* at 17–18, ¶¶ 72–80.

252. *Id.* at 19–20, ¶ 89(1).

253. *Id.* at 18–19, ¶ 82.

254. *Id.* at 19, ¶ 84.

255. *Id.* at 20, ¶ 89.2.

256. Székely Opinion, *supra* note 169, at 1, ¶¶ 2–5.

Apparently, this contradiction resulted from a compromise between the United Kingdom's sovereign rights over economic activities within its own territory and Ireland's rights to adequate information and meaningful consultation as part of transboundary environmental impact assessment procedures.[257] The Tribunal possibly wanted to avoid unnecessary intrusion in the United Kingdom's sovereignty by ordering the suspension of the governmental authorizations for a MOX facility located within its territory.[258] However, the Tribunal appeared to be equally concerned that considerations of the transboundary environmental effects of the MOX project were almost completely left out in domestic authorization processes without meaningful consultation and information exchange with Ireland.[259] As a result, effectively, if not on its face, the ITLOS decision affirmed the originating state's duty to assess transboundary environmental impacts and associated obligations of consultation and information exchange with affected states.

Nevertheless, given the generality of the relevant UNCLOS provisions, ITLOS was unable to define the standard of adequate information and what steps are required to result in meaningful information exchange and consultation. Therefore, the ITLOS judgment offered little guidance to evaluate whether the parties have indeed complied with the provisional measures.[260] As discussed below, the OSPAR tribunal was also far

257. *See generally* John E. Noyes, *The International Tribunal for the Law of the Sea*, 32 CORNELL INT'L L.J. 109, 137 (1998) (commenting that "judicial balancing of several factors is the essence of any decision to prescribe provisional measures").

258. Separate Opinion of Judge Anderson, Provisional Measures of Dec. 3, MOX Plant (Ir. v. U.K.), at 4, ¶ 3 (Int'l Trib. for the Law of the Sea 2001), *at* http://www.itlos.org/case_documents/2001/document_en_201.pdf (last visited Feb. 8, 2004) ("It is common ground that the plant is situated on the territory of the United Kingdom and thus under the sovereignty of the United Kingdom.").

259. Joint Declaration of Judges Caminos, Yamamoto, Park, Akl, Marsit, Eiriksson and Jesus, Provisional Measures of Dec. 3, MOX Plant (Ir. v. U.K.), at 1, ¶¶ 1, 4 (Int'l Trib. for the Law of the Sea 2001), *at* http://www.itlos.org/case_documents/2001/document_en_198.pdf (last visited Feb. 8, 2004) (highlighting "almost total lack of agreement on the scientific evidence with respect to the possible consequences of the operation of the MOX plant on the marine environment of the Irish Sea" and "the almost complete lack of cooperation between the Governments of Ireland and the United Kingdom with respect to the environmental impact of the planned operations").

260. During Annex VII proceedings, the parties actually expressed disagreements in the adequacy of the information exchanged pursuant to the ITLOS provisional measures. On December 5, 2001, Ireland sent the United Kingdom a list of fifty-five questions that mostly reiterate Ireland's concerns previously communicated to the United Kingdom. Ireland felt that the United Kingdom's response was vague and procrastinated. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 83–84, ¶¶ 4.64–.66, 4.69–.72. The United Kingdom contends that it provided the requested information fully except for confidential one especially concerning national security. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 6–7, 162–63, ¶¶ 1.20, 6.83–.84. The United Kingdom made a counteroffer to review the existing mechanisms for coordination and monitoring regarding Sellafield, which Ireland has not yet accepted. *Id.*

from resolving a similar problem in interstate information exchange under the relevant provisions of the OSPAR Convention.

2. OSPAR Tribunal's Final Award Concerning Access to Information

On July 2, 2003, the OSPAR tribunal issued its final award on the MOX plant dispute.[261] Ireland's case was "narrow" and only concerned Article 9 of the Convention.[262] Article 9(2) provides for access to information "on the state of the maritime area, on activities or measures adversely affecting or likely to affect it and on activities or measures introduced in accordance with the Convention."[263] Article 9(1) requires the parties to the Convention to make such information available "to any natural or legal person, in response to any reasonable request . . . as soon as possible and at the latest within two months."[264] This requirement is subject to the exceptions recognized under Article 9(3) including "commercial and industrial confidentiality."[265]

Apparently, Article 9(1) is designed to ensure public access to information in the domestic context without expressly providing for interstate information exchange.[266] Ireland, nonetheless, relied on this provision in the MOX dispute because a state may correctly be classified as "any legal person."[267] Ireland contended that the United Kingdom violated its obligation to provide Ireland with access to information relevant to the effects of the MOX plant on the marine environment of the Irish Sea.[268] Ireland's allegations focused on the adequacy of information in the publicly circulated version of the two reports, in which the independent experts assessed the economic viability of the MOX project.[269] Ireland maintained that the expert reports *as a whole* should constitute "environmental information" because the entire reports dealt with the evaluation of the functioning of the MOX plant, an activity that would potentially adversely affect the maritime area with radioactive discharges

---

261. OSPAR Final Award, *supra* note 15.

262. *Id.* at 4, ¶ 2.

263. OSPAR Convention, *supra* note 11, art. 9(2) , 32 I.L.M. at 1078.

264. *Id.* art. 9.1

265. *Id.* art. 9.3(d).

266. *See* OSPAR U.K.'s Counter-Memorial, *supra* note 233, at 1, 19, ¶¶ 1.4, 3.2 (asserting that Article 9 does not directly confer Ireland the right to receive information).

267. *See* Reply of Ir., Dispute Concerning Access to Information Under Article 9 of the OSPAR Convention (Ir. v. U.K.), at 3, ¶ 7 (Perm. Ct. Arb. 2002), *at* http://www.pca-cpa.org/PDF/Ireland%20-%20Reply.pdf (last visited Nov. 11, 2003) [hereinafter OSPAR Ir.'s Reply].

268. *See* OSPAR Ir.'s Memorial, *supra* note 123, at 4–5, ¶¶ 2–3.

269. *See id.* at 24, ¶¶ 75–77.

into the Irish Sea.[270] Thus, the omitted commercial information, as part of the expert reports, should constitute information within the purview of Article 9(2).[271] Ireland further asserted that the United Kingdom, by categorically rejecting Ireland's requests, failed to demonstrate that the withheld information qualified for the commercial confidentiality exception under Article 9(3).[272]

The United Kingdom questioned the tribunal's jurisdiction over the dispute and the admissibility of Ireland's claims under Article 9(1) without express provisions for interstate information exchange.[273] The United Kingdom contended that it fulfilled its obligation under Article 9(1) by

---

270. OSPAR Ir.'s Reply, *supra* note 267, at 5, ¶ 13; *see also* OSPAR Ir.'s Memorial, *supra* note 123, at 30–31, ¶¶ 98–103.

271. OSPAR Ir.'s Reply, *supra* note 267, at 5, ¶ 13 ("The reports were created as a whole and cannot be sliced into individual pieces of data."). Ireland specifically references the following fourteen categories of information.

(A) Estimated annual production capacity of the MOX facility;

(B) Time taken to reach this capacity;

(C) Sales volumes;

(D) Probability of obtaining higher sales volumes;

(E) Probability of being able to win contracts for recycling fuel in significant quantities;

(F) Estimated Sales demand;

(G) Percentage of plutonium already on site;

(H) Maximum throughput figures;

(I) Life span of the MOX facility;

(J) Number of employees;

(K) Price of MOX fuel;

(L) Whether and to what extent, there are firm contracts to purchase MOX from Sellafield;

(M) Arrangements for transport of plutonium to, and MOX from, Sellafield;

(N) Likely number of such transports.

OSPAR Ir.'s Memorial, *supra* note 123, at 2, ¶ 754.

272. OSPAR Ir.'s Memorial, *supra* note 123, at 33–34, ¶¶ 108–10.

273. *See* OSPAR Final Award, *supra* note 15, at 39, ¶ 118; *see also* Rejoinder of the U.K., Dispute Concerning Access to Information Under Article 9 of the OSPAR Convention (Ir. v. U.K.), at 5–7, ¶¶ 11–14 (Perm. Ct. Arb. 2002), *at* http://pca-cpa.org/PDF/UK%20-%20Rej.%20cover.pdf, http://pca-cpa.org/PDF/UK%20-%20Rejoinder.pdf (last visited Nov. 11, 2003) [hereinafter OSPAR U.K.'s Rejoinder]. The United Kingdom asserted, "The only possible cause of action for breach of Article 9 would be in respect of a failure to provide for a domestic regulatory framework dealing with the disclosure of information." OSPAR U.K.'s Counter-Memorial, *supra* note 233, at 19, ¶ 3.4. According to the United Kingdom's interpretation, Ireland should have no cause of action concerning the right to receive specific information under Article 9(1). OSPAR U.K.'s Rejoinder, *supra*, at 5, ¶ 11. This interpretation would further require Ireland to exhaust domestic remedy before resorting to international arbitration under the OSPAR Convention. *Id.* at 5, ¶ 10.

simply putting in place a *domestic* information disclosure system.[274] As to the merits, the United Kingdom argued that Article 9(2) did not cover the specific categories of commercial information requested by Ireland, which was not "directly and proximately related to the state of the maritime area or to activities or measures adversely affecting or likely to affect the maritime area."[275] The United Kingdom also pointed to the commercial confidentiality exception of Article 9(3) to justify its rejection of Ireland's information disclosure requests, as well as its elimination of the requested information from the publicly available version of the independent experts' reports.[276]

In its final award, the OSPAR tribunal rejected the United Kingdom's arguments regarding jurisdiction and admissibility.[277] According to the majority of the tribunal, Article 9 entails more than "aspirational objectives" for the domestic implementation legislation because (1) the first subparagraph is written in the strongest expression to achieve the objectives of regional marine environmental protection and pollution prevention,[278] and (2) the dispute settlement clause in Article 32 covers Article 9 as an enforceable obligation in this particular subject matter.[279] In light of these findings, the information disclosure provisions must be construed as having "an intended bite" to ensure the specific performance of information disclosure in reply to a valid information request,[280] and the failure to do so would constitute a breach of international obligations.[281]

The arbitral tribunal, however, denied Ireland's information requests by narrowly interpreting Article 9(2).[282] According to the majority opinion, the information sought under this provision must satisfy all of the following three conditions: (1) "on the state of the maritime area," (2) "on activities or measures adversely affecting or likely to affect it," and (3) "on activities or measures introduced in accordance with the Convention."[283] In delineating the scope of Article 9(2), the majority

274. OSPAR U.K.'s Counter-Memorial, *supra* note 233, at 1, ¶ 1.4 (maintaining that Article 9 merely requires member states "to establish a domestic framework for the disclosure of information").

275. *Id.* at 26, ¶¶ 4.8–.9.

276. *Id.* at 2, ¶ 1.6.

277. OSPAR Final Award, *supra* note 15, at 27, 58, ¶¶ 78(i)–(ii), 185(i)–(ii).

278. *Id.* at 40–41, ¶¶ 128–34; OSPAR Convention, *supra* note 11, art. 9(1), 32 I.L.M. at 1078 ("The Contracting Parties *shall ensure* that their competent authorities are required to make available the information . . . to any natural or legal person, in response to any reasonable request . . . .") (emphasis added).

279. OSPAR Final Award, *supra* note 15, at 40, ¶ 127.

280. *Id.* at 40, 42, 43, ¶¶ 127, 132, 136.

281. *Id.* at 27, 45–46, 58, ¶¶ 78(iii), 145–46, 185(iii).

282. *Id.* at 27, 58, ¶¶ 78(iv), 185(iv).

283. *Id.* at 53–5, ¶¶ 167–684; *see also supra* note 263 and accompanying text.

considered the second condition crucial, and found that Ireland failed to establish that each category of the redacted commercial information pertained to an activity or measure involving "an adverse effect" on the maritime area presently or prospectively.[284] Having resolved the dispute, the tribunal declined to consider the issue of the commercial confidentiality exception under Article 9(3).[285]

Like ITLOS, the OSPAR tribunal apparently intended to strike a balance between Ireland's rights to information in the transboundary context and the United Kingdom's sovereignty over a domestic commercial activity. On one side, the arbitral tribunal broadly construed Article 9(1) to open the door to interstate information exchange between the neighboring coastal states to realize the goals of the regional sea convention. By contrast, the tribunal manipulated the scope of information under Article 9(2) seemingly to avoid upsetting the U.K. authorities by scrutinizing their determinations concerning the issue of commercial confidentiality in MOX production.

The tribunal's narrow reading of Article 9(2), however, created undue hurdles to meaningful information exchange. As Dr. Griffith argued in his dissenting opinion, Article 9(2) should not entail the showing of "an *adverse* effect" involved in the proposed activity.[286] The plain text of the provision deals with "activities or measures adversely affecting *or likely to affect* the state of the maritime area."[287] Thus, the showing of "a *potential* effect" should suffice for the activity that had not yet commenced.[288] In addition, the majority's approach would encourage the originating state to segment a complex activity so as to decline information disclosure for each segment of the proposed activity. Segmentation could prevent a holistic account of the potential environmental impacts of the planned activity. Furthermore, the majority put the onus of proof on the affected state, which had no control over the potentially hazardous activity and thus was not in the position to collect evidence sufficient to demonstrate "an adverse effect" in every segment of the activity.[289] The

284. OSPAR Final Award, *supra* note 15, at 56, 57, ¶¶ 175, 179–80.

285. *Id.* at 27, 58, ¶¶ 78(v), 185(v).

286. *Id.* at 88, ¶ 79 (Dr. Gavan Griffith QC, dissenting).

287. OSPAR Convention, *supra* note 11, art. 9.2, 32 I.L.M. at 1078 (emphasis added); *see also supra* note 263 and accompanying text.

288. *See* OSPAR Final Award, *supra* note 15, at 89, ¶¶ 81–82 (Dr. Gavan Griffith QC, dissenting).

289. *Id.* at 87, ¶ 76 (Dr. Gavan Griffith QC, dissenting) (criticizing the majority's "wrong approach to the burden of proof" in finding that "Ireland has failed to '*demonstrate adverse effect*'" in its information requests). Dr. Griffith contends that Article 2(2)(a) of the OSPAR Convention, which provides for the precautionary principle, justifies the imposition of preventive measures "*even when there is no conclusive evidence of a causal relationship between the import and the effects*" and further shifts the responsibility for offering scientific evidence to the originating state. *Id.* at 87, ¶ 73.

majority's holding would ultimately defeat the very purpose of the interstate process, designed to fill a gap in information and knowledge regarding the transboundary environmental impacts of the proposed activity.

The perplexity of the OSPAR tribunal's final award fundamentally resulted from the structural inadequacy of the Convention itself. Article 9(1) is primarily designed to deal with information access in the *domestic* context. The arbitral tribunal's elastic construction of the information disclosure provision cannot address the root of the MOX plant dispute, namely the lack of an adequate procedure for transboundary environmental impact assessment including interstate consultation and information exchange. As discussed below, the Annex VII tribunal has also exhibited difficulty confronting this issue under UNCLOS.

3. Annex VII Tribunal's Order on Further Provisional Measures

On July 26, 2002, just four days after its rebuttal submission in the OSPAR proceeding, Ireland made its first written submission to the Annex VII tribunal. Ireland's case under UNCLOS is essentially procedural. Ireland argues that the United Kingdom failed to fulfill its obligation to conduct a proper impact assessment under Article 206 without fully considering the environmental effects of the entire process of MOX production, and in particular radioactive discharges from reprocessing at THORP, accumulation of radioactive waste at Sellafield, and the international shipments of radioactive materials.[290] In addition, by engaging in inadequate information exchange and improper consultation with Ireland, the United Kingdom breached its duty to cooperate under Article 123 (regarding semi-closed seas) and Article 197 (concerning the marine environment in general).[291] As a result of these procedural violations, the United Kingdom authorized MOX production to increase radioactive discharges into the Irish Sea, which is inconsistent with its substantive obligations under Articles 192, 193, 194, 207, 211, 212, 213, 217 and 222 regarding marine environmental protection and pollution prevention.[292] Ireland seeks relief from the tribunal through an order that the United Kingdom suspend the authorization of MOX production and the associated international transports of radioactive materials until the United Kingdom conduct a

290. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 3, 111, ¶¶ 1.3(1), 7.1.
291. *Id.* at 3–4, 140, ¶¶ 1.3(2), 8.6.
292. *Id.* at 4, 201–02, ¶¶ 1.3(3), 9.1–.2.

thorough transboundary environmental impact assessment of the MOX plant using appropriate interstate processes.[293]

The United Kingdom maintains that it complied with Article 206. Even though that provision applies to the 1993 Environmental Statement,[294] it "certainly does not require that the potential effects of planned activities be assessed by reference to any set of formula."[295] As such, Article 206 requires that impact assessments be "simply part of an ongoing process of information gathering and sharing."[296] According to this interpretation, after the proposed activity is commenced, the proper remedy for inadequate environmental impact assessments, if any, would be to *monitor* the actual effect of the activity under Article 204.[297] The United Kingdom also asserts that it fulfilled its obligations of cooperation under Articles 123 and 197, as well as prior notification and consultation under customary international law, if applicable.[298] The United Kingdom contends that it performed its obligations through international and regional institutions and bilateral arrangements, which include, *inter alia*, the processes for the European Commission's Opinion and the economic justification for the MOX plant.[299] Because planned radioactive discharges from the MOX plant are infinitely small and generate no appreciable risks, the United Kingdom's authorization of MOX production does not breach the substantive provisions.[300]

The first hearing by the Annex VII tribunal on the merits was to be held on June 10, 2003.[301] Despite the ITLOS ruling on *prima facie* jurisdiction, the tribunal was concerned about jurisdictional problems in relation to EC law.[302] The European Community has deposited a formal

---

293. *Id.* at 253–55, ¶ 10.15(5).

294. Although the United Kingdom and Ireland were signatories to UNCLOS, the Convention took effect between the parties on August 24, 1997. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 109, ¶ 5.7.

295. *Id.* at 109, ¶ 5.6(3).

296. *Id.* at 114, ¶ 5.18.

297. *See id.* at 108–09, 243, ¶¶ 5.4, 8.14.

298. The United Kingdom insists that under Article 288, the Annex VII tribunal's competence is confined to the interpretation or application of UNCLOS without the consent of the parties to enlarge the tribunal's jurisdiction over rights and obligations under other international agreements and customary international law. *See id.* at 98–107, ¶¶ 4.7–.32. On the other hand, Ireland argues that under Article 293, the tribunal must "apply '[UNCLOS] and other rules of international law not incompatible with [the] Convention,' " which include the OSPAR Convention, relevant EC Directives, and principles of customary international law. Annex VII Ir.'s Memorial, *supra* note 5, at 99–109, ¶¶ 6.1–.35.

299. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 151–66, ¶¶ 6.46–.95.

300. *See id.* at 181–88, ¶¶ 7.1–.23.

301. *See* Annex VII Further Provisional Measures, *supra* note 16, at 7, ¶ 21; Perm. Ct. Arb., *Recent and Pending Cases*, *at* http://www.pca-cpa.org/ENGLISH/RPC/ (last visited Nov. 10, 2003).

302. *See* Annex VII Further Provisional Measures, *supra* note 16, at 7, ¶ 20.

declaration to assert its "exclusive competence" over pollution prevention provisions in Part XII of UNCLOS, to the extent that such provisions affect the Community's common rules.[303] Article 292 of the Treaty on the European Union prohibits member states from employing alternative methods of dispute settlement for issues concerning the interpretation or application of the EC instruments.[304] On June 5, only five days before the beginning of the hearings, the tribunal was notified that the European Commission was considering whether to initiate infringement proceedings against Ireland for failure to comply with Article 292.[305] Given this sudden development, on June 13 the Annex VII tribunal decided to suspend further proceedings through December 1, 2003.[306]

In the interim, Ireland sought further provisional measures requiring the United Kingdom to (1) freeze radioactive discharges from the MOX plant and THORP at 2002 levels; (2) cooperate with Ireland on a confidential basis in preparing an emergency plan and in providing the requested information and radiological data collected from monitoring and further research; and (3) take no steps or decisions which might prevent the full effect of any environmental assessment the tribunal might order under Article 206, should the tribunal proceed on the merits.[307]

On June 24, 2003, about a week before the OSPAR final award, the Annex VII tribunal issued an order to deny the further provisional measures requested by Ireland.[308] Apparently due to this timing, the Annex VII tribunal avoided giving effect to Ireland's request concerning the disclosure of the withheld information.[309] As to the radioactive discharges, the tribunal found that there was no urgent and serious risk of irreparable harm before the resumption of the proceedings, although it noted that some of the radionuclides discharged from the MOX plant have extremely long half-lives.[310] It also considered that Ireland's request

303. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 101, ¶ 4.19.

304. Treaty of Amsterdam Amending the Treaty on European Union, the Treaties Establishing the European Communities and Certain Related Acts, 1997 O.J. (C 340) 1; Treaty on European Union, 1992 O.J. (C 191) 1, *reprinted in* 31 I.L.M. 253; *see also* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 102, ¶ 4.21.

305. *See* Annex VII Further Provisional Measures, *supra* note 16, at 7, ¶ 21.

306. Statement by the President, MOX Plant (Ir. v. U.K.) (Perm. Ct. Arb. 2003), *at* http://www.pca-cpa.org/ENGLISH/RPC/STATEMENT%20BY%20THE%20PRESIDENT.pdf (last visited Nov. 10, 2003); *see also* Annex VII Further Provisional Measures, *supra* note 16, at 20 (formalizing the decision in the president's statement).

307. *See* Request for Further Provisional Measures, MOX Plant (Ir. v. U.K.) (Perm. Ct. Arb. 2003), *at* http://www.pca-cpa.org/ENGLISH/RPC/Request%20for%20Provisional%20Measures.pdf (last visited Nov. 11, 2003).

308. Annex VII Further Provisional Measures, *supra* note 16, at 20.

309. *See id.* at 19, ¶ 66 ("The Tribunal does not need at this stage to resolve the factual issues in dispute between the Parties as to the adequacy and timeliness of the disclosure of certain information and as to the character and extent of co-operation.").

310. *See id.* at 16–18, ¶¶ 53–62.

regarding environmental assessment under Article 206 failed to "give any clear guidance to the United Kingdom of what conduct is required of it pending a final decision."[311]

Instead, the Annex VII tribunal affirmed the ITLOS provisional measures and promulgated further provisional measures of its own to supplement the ITLOS measures.[312] The arbitral tribunal was particularly concerned about untimely and ineffective cooperation and consultation between the parties under the ITLOS measures.[313] To address its concern, the tribunal recommended that the parties establish an effective intergovernmental mechanism for notification and coordination, and ordered them to submit reports on their compliance twice, by September 12 and November 17, 2003.[314]

By enhancing the ITLOS provisional measures, the Annex VII tribunal endorsed the interstate processes for notification and consultation as part of the procedural obligations under Part XII of UNCLOS. The tribunal, however, exhibited difficulty articulating the parties' rights and obligations under the vague provisions of Article 206. Without knowing precisely what information should have been included in the environmental impact assessment of the MOX plant, Ireland and the United Kingdom continued discordant communication under the ITLOS provisional measures.[315] Thus, despite the Annex VII tribunal's intention, the further provisional measures added little to improve the situation.

On October 21, 2003, the College of Commissioners of the European Community authorized the institution of infringement proceedings against Ireland before the European Court of Justice.[316] In response, on November 14, 2003 the Annex VII tribunal decided to extend the suspension of further proceedings on jurisdiction and merits under UNCLOS until the European Court of Justice has reached a decision

311. *Id.* at 18, ¶ 63.

312. *Id.* at 20.

313. *See id.* at 19, ¶ 66.

314. *See id.* at 19–20, ¶¶ 66–67.

315. *See supra* note 260.

316. Further Suspension of Proceedings on Jurisdiction and Merits, Order No. 4 of Nov. 14, MOX Plant (Ir. v. U.K.), at 2 (Perm. Ct. Arb. 2003), *at* http://www.pca-cpa.org/ENGLISH/RPC/MOX%20Order%20No4.pdf (last visited Nov. 29, 2003) [hereinafter Annex VII Further Suspension of Proceedings]; *see also* Answer Given by Mr. Prodi on Behalf of the Commission, E-1964/03EN (July 16, 2003), *at* http://www2.europarl.eu.int/omk/OM-Europarl?PROG=WQA&L=EN&PUBREF=-//EP//NONSGML+WQA+E-2003-1964-N+0+DOC+WORD+V0//EN&LEVEL=4&NAV=S&SAME_LEVEL=1 (last visited Feb. 10, 2004) (reply to Written Question E-1964/03 by Proinsias De Rossa (PSE) to the Commission, June 3, 2003); Answer Given by Mr. Prodi on Behalf of the Commission, E-1491/03EN (June 16, 2003), *at* http://www2.europarl.eu.int/omk/OM-Europarl?PROG=FORMS&L=EN&PUBREF=-//EP//TEXT+WQ+S-EXPERT+0+FORM+HTML4+V0//EN&LEG_ID=5 (last visited Oct. 19, 2003) (reply to Written Question E-1491/03 by Proinsias De Rossa (PSE) to the Commission,Apr. 22, 2003).

regarding Community law issues (or the tribunal otherwise determines).[317] When the Annex VII tribunal issued this decision, nearly two years have lapsed since the plutonium commissioning of the MOX plant, and there could be further twists and turns before a complete resolution of the entangled dispute.

C. *Lessons to Learn*

As demonstrated by the MOX plant dispute, the existing legal framework is poorly designed to guide states in the conduct of marine environmental impact assessments for proposed activities involving both domestic and transboundary effects. As discussed earlier, environmental impact assessments in this context should (1) facilitate fully informed decision-making that takes into account the potential transboundary and domestic effects of proposed activities and (2) offer an opportunity for affected states and citizens to comprehend the proposed activities and have their concerns considered in decision-making.[318] However, UNCLOS, as well as the regional seas conventions, fails to provide a detailed procedure for initial screening, environmental impact assessment documentation, public participation, and the interstate processes of notification, information exchange, and consultation. In addition, existing dispute settlement mechanisms have failed to bring about the efficient resolution of procedural environmental disputes.

Article 206 of UNCLOS does not provide specific criteria or methods to determine the threshold question of whether the proposed MOX project may involve "substantial pollution of or significant and harmful changes to the marine environment." Without agreed-upon criteria, the parties to the dispute disagree with each other about whether the proposed activity triggers the environmental impact assessment requirement of Article 206. The United Kingdom emphasizes the "infinitesimally small" amount of radioactive discharges from the MOX plant and regards the 1993 Environmental Statement as "voluntarily" prepared by BNFL.[319] In contrast, Ireland focuses on the inherently hazardous nature of nuclear activities and accuses the United Kingdom of failing to fill remaining gaps in the 1993 Environmental Statement.[320] Likewise, the parties maintain dissimilar views about the required contents of assessment under the indeterminate provision of Article 206. The United

317. Annex VII Further Suspension of Proceedings, *supra* note 119, at 2, ¶ 1(a). At the same time, the Annex VII tribunal extended its further provisional measures and required the parties to submit a compliance report by May 31, 2004 and every six months thereafter until the resumption of Annex VII proceedings. *Id.* at 3, ¶ 1(d).

318. *See supra* notes 91–92 and accompanying text.

319. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 28, 186–87, ¶¶ 2.17, 7.19.

320. Annex VII Ir.'s Reply, *supra* note 128, at 65, ¶ 6.22.

Kingdom has consistently excluded from the 1993 Environmental Statement and the subsequent authorization processes information on the cumulative impacts of plutonium reclamation at THORP and international transports of nuclear materials associated with MOX production. Ireland considers this information essential for a proper environmental impact assessment of the MOX plant.

Although the differences between the opposite sides of the Irish Sea might ultimately be resolved in consultation with EC and other relevant regional instruments with more specific criteria,[321] such a solution might not be possible in a similar dispute in a different region without instruments establishing common standards for environmental impact assessments. For example, only an inchoate regional sea program without binding instruments exists in Northeast Asia,[322] where commercial nuclear reactors have rapidly proliferated along the coasts of Japan, China, South Korea, North Korea, and Taiwan.[323] A reprocessing plant is also currently under construction in a coastal village in Japan.[324]

---

321. UNCLOS, *supra* note 10, art. 293, 21 I.L.M at 1324 (requiring Annex VII tribunals to apply "other rules of international law not incompatible with this Convention."); Annex VII Ir.'s Memorial, *supra* note 5, at 104, ¶ 6.19 (contending that the Espoo Convention and relevant EC Directives constitute "other rules of international law" and "show how general obligations in UNCLOS are to be interpreted and applied"); *see also* OSPAR Final Award, *supra* note 15, at 34, ¶¶ 103, 105 (holding that to prevent anachronistic results in interpreting a treaty concluded in an earlier period, the tribunal may take into account subsequent developments in law and apply "other extant international agreements" so long as such instruments are admissible for the purpose of interpretation in accordance with Article 31 of the Vienna Convention on the Law of Treaties).

322. *See* United Nations Environmental Programme (UNEP), *Status of Regional Agreements Negotiated in the Framework of the Regional Seas Programme (Rev. 5), at* http://www.unep.ch/seas/main/hstatus.html# (last visited Nov. 13, 2003) (stating that an action plan was adopted in 1994 for the North West Pacific Region as the newest among the regional seas regimes administered by UNEP). No regional sea convention has yet been concluded among the participants including China, Japan, North Korea, South Korea, and Russia. *Id.*

323. *See* Citizens' Nuclear Information Center, *DATA: Nuclear Maps of East Asia*, Nuke Info Tokyo, Jan.–Feb. 2002, at 8–9, *available at* http://cnic.jp/english/nit/files/nit87.pdf (last visited Feb. 7, 2004). As of December 2001, the status of nuclear plants in East Asia is as follows:

- China: 3 under operation, 8 under construction, and 2 planned;
- Japan: 52 under operation, 4 under construction, and 2 under pre-construction safety review;
- South Korea: 16 under operation, 4 under construction, and 4 planned;
- North Korea: 2 under construction; and
- Taiwan: 6 under operation and 2 under construction.

See id.

324. *See* Citizens' Nuclear Information Center, *Commercial and Research Nuclear Facilities in Japan*, Nuke Info Tokyo, Jan.–Feb. 2003, at 9 (indicating that a reprocessing plant is under construction in the Rokkasho Village nuclear complex along the Pacific Ocean), *available at* http://cnic.jp/english/nit/files/nit93.pdf (last visited Nov. 13, 2003).

In addition, Russia is exploring the possibility of importing spent fuel from Taiwan for future reprocessing, which would involve the frequent shipments of INF Code materials across the semi-closed sea between the Korean Peninsula and the Japanese Archipelago.[325]

UNCLOS, the OSPAR Convention, and Article 37 of the Euratom Treaty all lack express provisions concerning public participation and the interstate processes of prior notification, information exchange, and consultation concerning potentially significant transboundary harm. In accordance with the applicable domestic statute, BNFL prepared the 1993 Environmental Statement without participation by the Irish authorities or affected members of the public. The European Commission's Opinion was inadequate to fill this gap, because Article 37 offers no opportunities for concerned citizens and the affected member states to be informed and have input in the Commission's determination. As discussed, the OSPAR tribunal used interpretative techniques to facilitate interstate information exchange but was unable to overcome the structural shortcomings of the Convention, which primarily deals with information disclosure in the domestic context. Although ITLOS and the Annex VII tribunal infused customary good faith obligations into Part XII of UNCLOS to facilitate the interstate processes,[326] customary norms are expressed at a high level of generality and thus are not helpful to determine the precise timing of notification and consultation or the specific contents of information to be exchanged between the parties.[327] Without clear guidance, the parties have engaged in untimely and unfruitful dialogue during the interim period under the ITLOS provisional measures, as well as during the preparatory phase of the proposed activity. This is only reinforced distrust between one another.

In addition, existing *legal* dispute settlement mechanisms may not be suitable for a dispute between the originating state and a non-notified state in determining whether a transboundary environmental impact assessment is required for the proposed activity. In accordance with general international law concerning state responsibility for internationally wrongful conduct,[328] the non-notified party may resort to

325. *See* Hideyuki Ban, *Conference in Taiwan to Stop International Waste Shipments*, Nuke Info Tokyo, Jan.–Feb. 2002, at 6–7, *available at* http://cnic.jp/english/nit/files/nit87.pdf (last visited Nov. 7, 2003).

326. *See supra* notes 92, 253–55, 312–14 and accompanying text.

327. *Developments in the Law*, *supra* note 33, at 1515. *Cf.* Boyle, *supra* note 34, at 366 (pointing out the high level of generality in the customary principle of state responsibility not to cause transboundary environmental harm).

328. *See Draft Articles on Responsibility of States for Internationally Wrongful Acts, in Report of the International Law Commission on the Work of Its Fifty-third Session*, U.N. GAOR, 56th Sess., Supp. No. 10, art. 2, U.N. Doc. A/56/10 (2001) (providing that an action or omission that "(a) [i]s attributable to the State under international law; and (b) [c]onstitutes a

dispute settlements under UNCLOS and allege that the originating state has committed a breach of procedural obligations concerning transboundary environmental impact assessment.[329] To proceed on the merits, however, competent tribunals must make a substantive determination as to whether the proposed activity involves "substantial pollution of or significant and harmful changes to the marine environment" under Article 206. This determination requires a *factual* inquiry as to the effects of the proposed activity, under which tribunals must inevitably confront highly technical and complex scientific evidence. Renowned judges and arbitrators sitting on the bench of international tribunals may not necessarily have sufficient scientific expertise. For example, in prescribing the further provisional measures, the Annex VII tribunal determined that there would be no serious potential harm from the operation of the MOX plant, pending its judgment on the merits.[330] The arbitral tribunal supported its conclusion with the finding that radioactive discharges from the MOX plant contained a small quantity of radionuclides including plutonium-241 and cesium-137, which have "an extremely long half-life."[331] However, these isotopes have half-lives of 14 years and 30 years, respectively, which are quite short compared with a half-life of 24,000 years for plutonium-239, a key fissile ingredient of MOX fuel.[332] As a shorter half-life indicates more intense radioactivity, discharges of plutonium-241 and cesium-137 could have serious hazardous effects in a short term, while releases of plutonium-239 would involve relatively low level but extremely long term effects.[333] A small quantity of extremely radiotoxic substances could

---

breach of an international obligation of the State" as the requisite elements of an internationally wrongful act of a state).

329. *Cf.* OSPAR Final Award, *supra* note 15, at 45–46, ¶¶ 144–46 (indicating that a state's failure to respond to another state's request for information is admissible under Article 9(1) of the OSPAR Convention in accordance with the principle of state responsibility).

330. Annex VII Further Provisional Measures, *supra* note 16, at 16, ¶ 55.

331. *Id.* at 16, ¶ 54.

332. *See* Argonne Nat'l Lab. Envtl. Assessment Div. & U.S. Dep't of Energy Richland Operations Office, *Summary Fact Sheets for Selected Environmental Contaminants to Support Health Risk Analyses* (July 2002), *available at* http://www.ead.anl.gov/pub/doc/Cover-Intro-Linked.pdf (last visited Nov. 5, 2003) (section on Plutonium); U.S. EPA, *Radiation Information: Cesium*, *at* http://www.epa.gov/radiation/radionuclides/cesium.htm (last updated Dec. 3, 2002). MOX fuel contains plutonium-239 as well as other non-fissile plutonium isotopes as by-products. CNFC & IEEJ, *supra* note 150 (noting that plutonium-239 accounts for 40.4 percent of MOX-grade plutonium).

333. *See* U.S. EPA, *Understanding Radiation: Why Are Some Atoms Radioactive?*, *at* http://www.epa.gov/radiation/understand/radiation.htm (last updated Dec. 3, 2002) (explaining that the rate of radioactive decay, during which the nucleus of the radionuclide emits radiation, is measured by the half-life); *see also* Foulke & Weiner, *supra* note 105, at 2. In addition, these isotopes have different radiological effects due to different types of radiation they emit through radioactive decay. For example, gamma rays can penetrate human tissues entirely; alpha and beta particles cannot, although exposure to the strong emission of beta particles can

produce serious harm to biota in the foreseeable future. As a result, the tribunal's conclusion makes little sense. Without technical and complex scientific knowledge, future tribunals will have similar difficulty evaluating the potential effects of planned industrial activities on the marine environment.

In addition, the structural delay makes a fundamental resolution of the dispute more difficult. Having failed to settle the crucial factual dispute at the threshold of the transboundary environmental impact assessment process, the parties have continued unfruitful dialogue for about a decade. When Ireland resorted to legal dispute settlements, BNFL had already completed the construction of the MOX plant and was about to commence its plutonium commissioning. By that time, the United Kingdom had considerably higher economic stakes in the project.[334] Now, the United Kingdom wants to avoid the suspension of the authorization and is reluctant to make costly changes to take Ireland's environmental concerns into account.[335] To some extent, the originating state may address the affected state's concerns through rigorous post-hoc monitoring under Article 204. Still, post-hoc monitoring may not substitute for prior assessment of environmental impacts under Article 206. Allowing substitution would effectively

---

redden or burn human skin. *See* U.S. EPA, *Understanding Radiation*, *at* http://www.epa.gov/radiation/understand/ (last updated Dec. 3, 2002). Thus, cesium-137, which emits gamma rays as well as beta particles, could pose hazard to a person merely walking through contaminated land. U.S. EPA, *Understanding Radiation: Cesium*, *supra* note 332; U.S. EPA, *Understanding Radiation*, *supra*. On the other hand, plutonium-241, which principally emits beta particles, is hazardous when inhaled or ingested, although the same isotope outside the human body is of less serious concern. *See* Argonne Nat'l Lab. Envtl. Assessment Div. & U.S. Dep't of Energy Richland Operations Office, *supra* note 332; U.S. EPA, *Understanding Radiation*, *supra*. The situation looks more complex when the decay chains of radionuclides are considered. Americium-241, a decay product of plutonium-241, has a longer half-life of 432.7 years to transform into another radionuclide, neptunium-237. U.S. EPA, *Radiation Information: Americium*, *at* http://www.epa.gov/radiation/radiaonuclides/americium.htm (last updated Dec. 3, 2002). Unlike plutonium-241, americium-241 could pose serious hazard to humans without ingestion or inhalation because it emits gamma rays as well as alpha particles. *Id.*; *see also* Inst. for Energy & Envtl. Res., *Science for the Critical Masses: How Plutonium Changes with Time*, 3 ENERGY & SECURITY, *at* http://www.ieer.org/ensec/no-3/puchange.html (last visited Oct. 19, 2003). Plutonium-241, americium-241, and neptunium-237 are among "the most biologically hazardous of materials." Annex VII Ir.'s Memorial, *supra* note 5, at 199, ¶ 8.285. Although these radioactive substances have been routinely discharged into the Irish Sea and contaminated seafood is deemed to pose no hazard to human health, there is scientific uncertainty as to the effects of their additional discharges on biota. *See id.*; *see also supra* notes 126–28 and accompanying text.

334. *See supra* notes 239–40 and accompanying text.

335. *See* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 242, ¶ 8.12. *But see* ITLOS U.K.'s Response, *supra* note 110, at 86, ¶¶ 231–32 (refuting the provisional measures on the ground that such measures involved "not an abstract entitlement to authorise the conduct of an industrial activity on a State's territory, but the exercise of rights with important economic consequences" to BNFL, its employees, and the local community).

nullify the affected state's procedural rights to ensure that the originating state is fully informed about the potential environmental consequences of the proposed activity in making a critical decision.[336] An efficient mechanism to settle the factual dispute is necessary to avoid unnecessary costs to the originating state, and to safeguard the non-notified state's procedural rights.

In order to address these structural problems, the following Section conducts a comparative analysis of major regional and international environmental impact assessment schemes and proposes a marine environmental impact assessment protocol to Article 206 of UNCLOS.

III. COMPARATIVE ANALYSIS OF MAJOR INTERNATIONAL ENVIRONMENTAL IMPACT ASSESSMENT MECHANISMS AND THE PROPOSED PROTOCOL TO UNCLOS

A. *The Framework of Comparative Study*

To facilitate efficient administration of marine environmental impact assessment, there should be a greater degree of coordination between UNCLOS and other relevant international and regional instruments. In designing an environmental impact assessment protocol to UNCLOS, it is necessary to take into account the procedures available in existing instruments on environmental impact assessment, as well as jurisdictional arrangements and states' rights and obligations in protecting the marine environment. Currently, several international instruments provide for transboundary impact assessment procedures. In 1987, five years after the adoption of UNCLOS, the United Nations Environmental Program adopted the *Goals and Principles of Environmental Impact Assessment* (UNEP Guidelines) to provide a set of non-binding guidelines to adequately assess environmental impacts at national, regional, and international levels.[337] In 1991, the basic framework in the UNEP Guidelines

336. *See* Okowa, *supra* note 33, at 285 (arguing that if the originating state were allowed to proceed with an activity having potentially significant transboundary environmental impacts without full consultations with the affected states, this "would render nugatory the very aims of environmental impact assessment procedures."). *But see supra* notes 244–45 and accompanying text (explaining Ireland's contention in the ITLOS proceedings that Ireland's procedural rights would be irrevocably nullified without suspension of the authorization of plutonium commissioning at the MOX plant). *See generally supra* note 84 and accompanying text.

337. UNEP Guidelines, *supra* note 84 (Preliminary Note). The UNEP Guidelines are regarded as an authoritative document codifying a basic framework for an environmental impact assessment. HUNTER ET AL., *supra* note 18, at 368; *see also* Knox, *supra* note 33, at 297 (referencing the UNEP Guidelines as one of international instruments that have helped domestic environmental impact assessment procedures spread among nations). In the MOX plant case, Ireland cites the UNEP Guidelines as a relevant international instrument in support of its arguments concerning the duty to conduct environmental impact assessments. *See* Annex VII

was elaborated on in the *Convention on Environmental Impact Assessment in a Transboundary Context* (Espoo Convention) adopted at the United Nations Economic Commission for Europe.[338] The Espoo Convention is "a useful model for interstate cooperation" in dealing with transboundary environmental impacts,[339] and its procedures were essentially replicated in the 1997 EC Directive.[340] In the same year, the North American Commission for Environmental Cooperation (NACEC) also created a *Draft North American Agreement on Transboundary Environmental Impact Assessment* (Draft North American Agreement).[341] In 2001, interstate environmental impact assessment procedures were further codified in the *Draft Articles on Prevention of Transboundary Harm from Hazardous Activities* adopted by the International Law Commission (ILC Draft Articles).[342] In addition, the World Bank and regional banks

---

Ir.'s Memorial, *supra* note 5, at 116, ¶ 7.17–19. *But see* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 119, ¶ 5.29 (noting that "the tribunal may wish to look at the 1987 UNEP Goals and Principles but *these do not contain rules of international law*.") (emphasis added).

338. Convention on Environmental Impact Assessment in a Transboundary Context, Feb. 25, 1991, pmbl., 30 I.L.M. 800 (1991) [hereinafter Espoo Convention] (referencing the UNEP Guidelines as one of international instruments on which the Convention relied). On May 21, 2003, 35 parties to the Espoo Convention including Ireland and the United Kingdom, as well as the European Community, signed the Protocol on Strategic Environmental Assessment to the Espoo Convention. *See* Convention on Environmental Impact Assessment in a Transboundary Context, *at* http://www.unece.org/env/eia/documents/protocolenglish.pdf (last updated July 30, 2003). While basic environmental impact assessments under the Espoo Convention deal with proposed *activities*, strategic environmental impact assessments under the new Protocol cover proposed *plans* and *programs* that are required by legislative, regulatory, or administrative measures and to be adopted by governmental authorities or legislative bodies. Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, *opened for signature* May 21, 2003, art. 2(5), MP.EIA/2003/1, *available at* http://www.unece.org/env/eia/documents/protocolenglish.pdf. This Article confines the scope of analysis to basic environmental impact assessment under the Espoo Convention.

In the Annex VII proceedings, Ireland references the Espoo Convention to elucidate the United Kingdom's obligation to carry out transboundary environmental impact assessments and associated interstate processes. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 117–18, 154, ¶¶ 7.22–.23, 8.59. *But see* Annex VII U.K.'s Counter-Memorial, *supra* note 102, ¶ 5.29 (pointing out that the Espoo Convention is not applicable to the present dispute because the Convention came into force between the parties only in October 2002, three months after Ireland ratified it). The United Kingdom ratified the Espoo Convention in 1997. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 104, ¶ 6.19 & n.28.

339. Robinson, *supra* note 85, at 608; *see also* HUNTER ET AL., *supra* note 18, at 367; Preiss, *supra* note 85, at 320 (noting that the Espoo Convention is regarded as an authoritative codification of the basic requirements in transboundary environmental impact assessment).

340. 1997 EC Directive, *supra* note 220.

341. North American Comm'n for Envtl. Cooperation (NACEC), *Draft North American Agreement on Transboundary Environmental Impact Assessment* (June 21, 1997), *at* http://www.cec.org/pubs_info_resources/law_treat_agree/pbl.cfm?varlan=english (last visited Nov. 11, 2003).

342. *Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, in Report of the International Law Commission on the Work of Its Fifty-third Session*, U.N.

have applied environmental assessment processes in lending decision-making.[343] The Antarctic Treaty regime also provides for detailed impact

---

GAOR, 56th Sess., Supp. No. 10, at 370–77, U.N. Doc. A/56/10 (2001) [hereinafter *ILC Draft Articles*]. The ILC Draft Articles are outgrowths of the Commission's codification of the general rules concerning state responsibility pursuant to Article 13 of the Charter of the United Nations, June 26, 1945, art. 13, ¶ 1(a), 59 Stat. 1031 (mandating the General Assembly to conduct studies and to make recommendations in order to "encourag[e] the progressive development of international law and its codification"); *see also ILC Draft Articles*, *supra*, pmbl.; Boyle, *State Responsibility*, *supra* note 33, at 2. The ILC has decided to draft the rules concerning international liability separately from the rules governing state responsibility because the Commission feels it necessary to distinguish states' obligations concerning internationally lawful activities involving potential transboundary harm from their obligations concerning internationally wrongful conduct involving a breach of international law. *See ILC Draft Articles*, *supra*, art. 1; *ILC Commentaries*, *supra* note 33, art. 1, ¶ 1, (confining the scope of the Draft Articles "to activities not prohibited by international law which involve a risk of causing significant transboundary harm through their physical consequences."); *Draft Articles on Responsibility of States for Internationally Wrongful Acts*, *supra* note 328, art. 1; *Commentaries to Draft Articles on Responsibility of States for Internationally Wrongful Acts, in Report of the International Law Commission on the Work of Its Fifty-third Session*, U.N. GAOR, 56th Sess., Supp. No. 10, ¶ 4, at 62, U.N. Doc. A/56/10 (2001), *available at* http://www.un.org/law/ilc/texts/State_responsibility/responsibility_commentaries(e).pdf (last visited Apr. 5, 2004) (stating that "for the purpose of these articles, international responsibility results exclusively from a wrongful act contrary to international law."); *see also* Boyle, *State Responsibility*, *supra* note 33, at 2.

ILC's work concerning transboundary harm has sparked heated scholarly debates. *See, e.g.*, Knox, *supra* note 33, at 301 (contending that the ILC Draft Articles attempt to codify "the mythic conception of transboundary E[nvironmental] I[mpact] A[ssessment] as a corollary to Principle 21 and highlight the absence of similar provisions in the regional agreement."); Boyle, *State Responsibility*, *supra* note 33, at 13, 17, 22 (arguing that the ILC's attempt to codify general propositions of international liability without harm or injury may be "unhelpful or misleading" and recommending the Commission to direct its efforts to "more practical and less theoretically questionable standpoint of codifying and developing a set of basic environmental obligations for states"); *Developments in the Law*, *supra* note 33, at 1507 (questioning whether the ILC's study indeed reflects the interests of states by extensively attributing private conduct to states and thereby holding states internationally liable for transboundary harm from almost all private activities). In the MOX plant dispute, Ireland and the United Kingdom disagree about the precise legal effects of the Draft Articles although both parties attach importance to the Commission's work. *Compare* Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 193, ¶ 7.37 (using the ILC Draft Articles "as a guide" in interpreting its obligations under UNCLOS although "The Draft Articles are not binding or in any way dispositive of interpretation of UNCLOS."), *with* Annex VII Ir.'s Memorial, *supra* note 5, at 114, ¶ 7.9 (regarding the Draft Articles as a confirmation that the duty to conduct environmental impact assessments under Article 206 of UNCLOS reflects customary international law).

343. World Bank, *supra* note 84; European Bank for Reconstruction & Development (EBRD), *Environmental Procedures (July 28, 2003)*, *at* http://www.ebrd.com/about/policies/enviro/procedur/procedur.pdf [hereinafter *Procedures*]; EBRD, *Environmental Policy (Apr. 2003)*, *at* http://www.ebrd.com/about/policies/enviro/policy/policy.pdf [hereinafter *Policy*]; Asian Development Bank (ADB), *Operational Procedures*, ¶ 6, *in* ENVIRONMENTAL CONSIDERATIONS IN ADB OPERATIONS (Feb. 28, 2003), *at* http://www.adb.org/Documents/Manuals/Operations/om20.asp (last visited Nov. 11, 2003).

assessment requirements in its *Protocol on Environmental Protection* (Antarctic Protocol).[344]

Although the environmental impact assessment procedures in the above instruments exhibit some similarity, their scopes and designs vary depending on the institutional context and the purpose of the instruments. To address the problems identified in the previous section, the following section examines: (1) methods and criteria to determine whether proposed activities are subject to the impact assessment requirements; (2) notification and information exchange; (3) public participation; (4) the required contents of the environmental impact assessment documentation; (5) interstate consultations; (6) dispute settlement systems, and (7) the role of international and regional institutions in marine environmental impact assessment processes.

B. *Comparative Analysis of Environmental Impact Assessment Mechanisms and Its Application to UNCLOS*

1. Methods and Criteria to Determine Whether Proposed Activities Are Subject to the Environmental Impact Assessment Requirements

In general, environmental impact assessment provisions are applicable only when the proposed activity is likely to have significant environmental impacts.[345] Thus, each instrument discussed above

---

344. Protocol on Environmental Protection to the Antarctic Treaty, Oct. 4, 1991, 30 I.L.M. 1455 (1991) [hereinafter Antarctic Protocol].

345. UNEP Guidelines, *supra* note 84, princ. 1 (providing for a comprehensive environmental impact assessment when a proposed activity "is likely to significantly affect the environment."); *see also* Espoo Convention, *supra* note 338, art. 2, 30 I.L.M. at 803–04 (requiring transboundary environmental impact assessments in planned activities that cause a significant adverse transboundary impact); *ILC Draft Articles*, *supra* note 342, art. 1 (covering "activities not prohibited by international law which involve a risk of causing significant transboundary harm through their physical consequences"); NACEC, *supra* note 341, art. 10.1 (making the transboundary environmental impact assessment procedure applicable when the proposed project "is likely to cause significant adverse transboundary environmental impacts on the environment of another Party"); World Bank, *supra* note 84, ¶ 8(a) (mandating an environmental impact assessment only when the proposed project "is likely to have significant adverse environmental impacts."); ADB, *supra* note 343, ¶ 6 (including a provision similar to that of World Bank); EBD, *Procedures*, *supra* note 343, at 7, 9, ¶¶ 2.3.1, 2.3.3 (stating that an environmental impact assessment is conducted when the proposed project involves "potentially significant adverse future environmental impacts which, at the time of screening, cannot be readily identified or assessed."); *see also ILC Commentaries*, *supra* note 33, art. 2, ¶ 6 & nn. 919–20; Okowa, *supra* note 33, at 283–84. Reflecting the fragile ecosystems of the Antarctica, the Antarctic Protocol uses a lower threshold. *See* Antarctic Protocol, *supra* note 344, Annex I, art. 3.1 (obligating the parties to the Protocol to conduct a comprehensive environmental evaluation for a proposed activity that is likely to involve "more than a minor or transitory impact.").

includes methods and criteria for determining whether a proposed activity has such significant impacts that it is subject to environmental impact assessment procedures. Under these instruments, the originating state makes the initial decision regarding the likelihood of significant transboundary impacts of the proposed activity and the final decision regarding the authorization.[346] By comparison, multilateral development banks' instruments give banks more decisional authority in these matters.[347]

In addition, there are two major approaches in the existing instruments. One is to identify criteria by which the proposed activities are screened initially to determine the applicability of the impact assessment requirements. For example, the UNEP Guidelines identify "the nature and location of the proposed activity" as screening criteria for determining whether a proposed activity is likely to have significant environmental impacts.[348] The World Bank endorses this approach. The Bank staff examines the "type, location, sensitivity, and scale of the project, and the nature and magnitude of its potential impacts" in determining under which category the proposed project belongs.[349] Category A includes projects with potential to have "significant adverse environmental impacts."[350] For this category, an environmental impact assessment is mandatory.[351] Category B includes projects judged to have some adverse environmental impacts but of lesser degree of significance than those for category A projects.[352] For this category, an initial environmental examination is required to determine whether the potential impacts of the proposed activities are so significant that a full environ-

346. Espoo Convention, *supra* note 338, art. 2, 30 I.L.M. at 803 (assigning responsibilities for the transboundary environmental impact assessment processes to the originating state); NACEC, *supra* note 341, art. 10.1 ("The determination whether a proposed project is likely to cause significant adverse transboundary environmental impacts on the environment of another Party shall be made by the Party of Origin . . . ."); *ILC Commentaries*, *supra* note 33, art. 1, ¶ 6 (giving the originating state the responsibility to manage risks in the proposed activity while conferring to the affected states the right of engagement with the originating state through the interstate processes); *see also* Antarctic Protocol *supra* note 344, art. 8.2 (requiring the parties to ensure the application of the assessment procedures in the preparatory processes before the authorization of proposed activities).

347. World Bank, *supra* note 84, ¶ 8 ("The Bank undertakes environmental screening of each proposed project to determine the appropriate extent and type of E[nvironmental] A[ssessment]."); ADB *supra* note 343, ¶ 7 (allocate the responsibility for the final classification of the proposed activity to ADB's chief compliance officer); EBD, *Procedures*, *supra* note 343, at 4, ¶ 2.1 (mandating EBRD staff to prepare terms of reference for environmental impact assessments).

348. UNEP Guidelines, *supra* note 84, princ. 1.

349. World Bank, *supra* note 84, ¶ 8.

350. *Id.* ¶ 8(a).

351. *Id.*

352. *Id.* ¶ 8(b).

mental impact assessment is required.[353] No environmental impact assessment or initial environmental examination is necessary for Category C projects without significant impacts.[354] The Asian Development Bank (ADB) closely follows the World Bank's procedure.[355] The Antarctic Protocol also adopts a similar two-step approach with an initial environmental examination for screening and a comprehensive environmental evaluation for activities more than "a minor or transitory impact."[356]

The other approach is to comprise a list of activities that are, presumably, likely to cause significant adverse environmental impacts. The Espoo Convention includes such a list in Annex I.[357] In addition, Annex III of the Convention also provides for general criteria to determine whether a non-listed activity may have significant adverse impacts.[358] The criteria are very similar to those used by the World Bank. If the concerned parties identify an activity to be likely to have a significant impact, the activity must be treated as though it were listed in Annex I.[359] The interstate process is triggered if Annex I activities are likely to have significant transboundary effects.[360] This determination is left primarily to the originating party. The Draft North American Agreement also uses a combination of a list of activities and a set of criteria for non-listed activities.[361] In addition, the Draft Agreement includes a geographical limit. The proposed projects must be located within 100 kilometers of the borders between the two of the three NACEC member states.[362] The European Bank for Reconstruction and Development (EBRD) also uses an approach similar to the Espoo Convention in its *Environmental Procedures*.[363] Unlike procedures under the Espoo Convention and the Draft Agreement, the EBRD staff determines the terms of reference for environmental impact assessments under its Environmental Procedure.[364]

---

353. *Id.*

354. *Id.* ¶ 8(c) (Category C: a project whose impacts are *de minimus*). If a financial intermediary ("FI") is involved in a Bank-financed project, the World Bank requires the FI to screen proposed subprojects and to ensure that subborrowers prepare an appropriate environmental assessment for each subproject. *Id.* ¶ 11.

355. ADB, *supra* note 343, ¶ 6.

356. Antarctic Protocol, *supra* note 344, Annex I, art. 2.

357. Espoo Convention, *supra* note 338, art. 2(3), app. I, 30 I.L.M. at 804, 812–13.

358. *Id.* app. III, 30 I.L.M. at 814.

359. *See id.* art. 2(5), 30 I.L.M. at 804.

360. *Id.* arts. 2(4), 3(1), 30 I.L.M. at 804.

361. NACEC, *supra* note 341, art. 2.1(a)(b). The Draft Agreement has not yet developed a definitive set of factors and puts Annex III in blankets. *Id.*

362. *Id.* art. 2.1(a).

363. *See* EBD *Procedures*, *supra* note 343, at 8, ¶ 2.3.1; EBD, *Policy*, *supra* note 343, at 5, 15–17, ¶ 15, Annex 1 (including an indicative list of activities to be classified as Category A projects).

364. *See* EBD, *Procedures*, *supra* note 343, at 4, ¶ 2.1.

The ILC Draft Articles are quite vague about methods to determine whether proposed activities are subject to environmental impact assessment procedures. The Draft Articles cover proposed activities that are "not prohibited by international law" and "involve a risk of causing significant transboundary harm through their physical consequences."[365] "A risk of causing significant transboundary harm" encompasses risks in the form of "a high probability of causing significant transboundary harm" and "a low probability of causing disastrous transboundary harm."[366] To identify such an activity, the ILC's Commentaries reference some general characteristics, including the types and sources of energy used in the manufacturing project, the location of the proposed activity, its proximity to the border area, the use of hazardous substances listed in multilateral environmental agreements, and activities listed as having significant impacts in international instruments, including Annex I of the Espoo Convention.[367] Although this broad formulation may encompass criteria and lists used in all the existing environmental impact assessment procedures,[368] the Commentaries fail to specify whether initial screening is required.

Article 206 of UNCLOS provides for impact assessments "[w]hen States have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes of the marine environment."[369] This provision seemingly put responsibility and decisional authority on the originating state. However, an activity can be under concurrent jurisdiction of several states. For example, a Russian vessel carried MOX fuel from Russia to Canada within one mile of the U.S. border as part of the Parallex project, a joint U.S.-Russian-Canadian experiment to reduce global stockpiles of weapons-grade plutonium.[370] The United States provided the full value of the cost of MOX transportation.[371] In that case, Russia was the flag state that exercised jurisdiction and control over the flagged vessel. Regarding environmental regulations, the United States had prescriptive jurisdiction over the vessel passing through the territo-

365. *ILC Draft Articles*, *supra* note 342, art. 1.

366. *Id.* art. 2(a).

367. *ILC Commentaries*, *supra* note 33, art. 7, ¶ 9 & n. 954, at 405.

368. The ILC feels that including a generic list of activities is "not without problems and functionally not essential" because such list might likely be underinclusive and could be outdated. *ILC Commentaries*, *supra* note 33, art. 1, ¶ 4. The Commission is also concerned that such a generic list might not capture the particular application of a proposed activity, its specific context, and the manner of its operation, a combination of which accounts for the risk of the activity. *Id.*

369. UNCLOS, *supra* note 10, art. 206, 21 I.L.M at 1309.

370. Hirt v. Richardson, 127 F. Supp. 2d 833, 843 (W.D. Mich. 1999).

371. *Id.* at 843.

rial sea. Like multilateral development banks, the United States, as the funding body, might also require environmental impact assessments of the federally funded activity.[372]

In a draft protocol to UNCLOS, the originating state should implement and administer the environmental impact assessment process as in the Espoo Convention and similar instruments. Although UNCLOS allows coastal states to prescribe pollution prevention measures applicable within the territorial sea and the EEZ,[373] the Convention confers on them only limited enforcement jurisdiction.[374] In addition, Article 206 provides that states conduct impact assessments "as far as practicable."[375] It is not practicable that coastal states apply their own impact assessment procedures to foreign vessels and facilities due to issues of evidence and regulatory competence. Before the proposed activity is commenced, the owner or operator of the facility retains most of critical evidence concerning the likelihood of significant environmental harm. The host state, in the case of land-based sources, or the flag state, in the case of vessels, controls the proposed activity and related information and is in a better position to administer environmental impact assessment procedures. In the MOX plant case, neither Ireland nor other coastal states had control over BNFL to directly obtain information on controversial activities. Thus, the draft protocol should follow the general model of transboundary environmental impact assessment and, depending on the subject matter, give either the host state or the flag state decisional authority regarding whether the proposed activity could potentially cause significant harm to the marine environment within the territorial sea and the EEZ of another coastal state.[376] Extensive interstate processes should complement the

372. *Id.* at 845 (holding that NEPA was applicable to major federal actions, including federal funding, in a foreign jurisdiction that had effect on the U.S. environment); *see also* Recommendation on Measures to Facilitate the Environmental Assessment of Development Assistance Projects and Programs, Organisation for Economic Co-operation and Development, O.E.C.D. Doc. C(86)26 (Oct. 2, 1986); Recommendation on Environmental Assessment of Development Assistance Projects and Programs, O.E.C.D. Doc. C(85)104 (June 20, 1985).

373. *See supra* note 63 and accompanying text.

374. *See* UNCLOS, *supra* note 10, arts. 27–28, 21 I.L.M at 1275 (prohibiting coastal states from stopping, diverting, and boarding a foreign ship exercising the right of innocent passage except for certain enumerated circumstances); *see also supra* note 46 (explaining difference between prescriptive jurisdiction and enforcement jurisdiction).

375. UNCLOS, *supra* note 10, art. 206.

376. This arrangement is consistent with the U.S. appellate court decision in *Mayaguezanos por la Salud y el Ambiente v. United States*, 198 F.3d 297 (1st Cir. 1999). Without major federal actions in the transport of vitrified waste between France and Japan, the First Circuit declined to entertain plaintiffs' claim that NEPA be applicable to the nuclear waste shipments, even though the shipments passed through a U.S. EEZ in the Mona Passage. *Id.* at 304–05; *see also ILC Commentaries*, *supra* note 33, art. 1, ¶ 8 (stating that in cases of concurrent jurisdictions over a proposed activity, the territorial jurisdiction prevails over other types of jurisdictional bases except that the flag state jurisdiction preempts the territorial jurisdiction of

rights and duties of the potentially affected coastal states in protecting the marine environment. On the other hand, the draft protocol should not prejudice the funding body's right to require an environmental impact assessment as a condition of funding because such an assessment may extend to issues beyond the scope of UNCLOS. To avoid unnecessary duplications, the originating state and the funding body should cooperate and coordinate in preparing an environmental impact assessment of the funded activity.

A draft environmental impact assessment protocol to UNCLOS should also adopt a method of initial determination similar to the Espoo Convention's approach. The two-step approach works in the World Bank and the Antarctic Treaty regime because the covered project is limited by their specific mandates. Such an approach would not be practicable under UNCLOS, which implicates a vast number of land-based sources and commercial vessels regarding marine environmental protection. Accordingly, the proposed environmental impact assessment procedure should include a list of activities similar to the Espoo Convention. If a proposed activity falls in the categories of activities listed in the protocol, the originating state should presumptively "have reasonable grounds for believing" that the proposed activity may substantially pollute or significantly harm the environment. For example, taking into account the lists of the existing instruments, the MOX plant should fall in a category of "installations for the production of nuclear fuel"[377] or "nuclear related projects."[378] As in the Draft North American Agreement, the draft protocol should include a geographical limit measured from a baseline[379] to

---

coastal states). The proposed jurisdictional arrangement is also in line with the general principle of state responsibility to control transboundary harm as well as the principle concerning the allocation of international liability. *See* Handl, *supra* note 92, at 530 (highlighting the "pivotal nature of the linkage" between state control and state liability regarding the harm caused by private activities). When a private activity falls under concurrent jurisdiction, international liability is assigned to "the state whose control bore most directly on the occurrence of the accident." Kelson, *supra* note 92, at 229, 235 (stating that under the principle of original state responsibility, if a private activity involves the substantial risks of transboundary harm, the originating state is responsible and directly liable for the harm); *supra* note 33 and accompanying text. *Handl, supra*, at 535.

In the case of states with federal systems, a competent sub-national authority may administer the transboundary environmental impact assessment procedures. *See* Knox, *supra* note 33, at 315 (explaining that due to concern about the scope of federal jurisdiction, the United States has not yet ratified the Espoo Convention, while Canada ratified the Convention with a reservation to exempt its application from projects that are under provincial jurisdiction).

377. Espoo Convention, *supra* note 338, app. I, ¶ 3, 30 I.L.M. at 812; 1997 EC Directive, *supra* note 220, Annex I, ¶ 3(b).

378. NACEC, *supra* note 341, app. I, ¶ F.

379. The baseline refers to "the line from which the outer limits of the territorial sea and other coastal State zones . . . are measured." CHURCHILL & LOWE, *supra* note 17, at 31. The normal baseline is "the low-water line along the coast as marked on large-scale charts officially recognized by the coastal State." UNCLOS, *supra* note 10, art. 5, 21 I.L.M at 1272.

ensure a nexus between the proposed activity and the marine environment.

As in the Espoo Convention, the draft protocol should also include general criteria for non-listed activities or land-based activities located outside the geographical limit. For example, ships carrying radioactive materials are not listed in the existing instruments concerning environmental impact assessments. Applying the generally recognized criteria, however, such ships should be deemed to have potentially significant effects on the marine environment due to the inherently dangerous *nature* and the *location* of the activities. Requiring prior environmental impact assessment does not hinder the actual exercise of the freedom of navigation by vessels within EEZs and the high seas,[380] and is consistent with the provisions of UNCLOS requiring that the flag state have due regard for coastal states' rights and duties.[381] Although UNCLOS prohibits coastal states from discriminating vessels exercising the right of innocent passage based on their cargoes,[382] prior environmental impact assessments administered by the originating state have nothing to do with hampering vessels' innocent passage.

The United Kingdom, nevertheless, have argued that procedural environmental obligations are already included in Article 23 of UNCLOS to require ships loaded with ultrahazardous cargoes to carry documentation and comply with special precautionary measures pursuant to international agreements.[383] Indeed, the United Kingdom has complied with the applicable regulations prescribed by the IMO and the IAEA regarding marine transportation of INF Code materials. Because this provision reflects a consensus among the parties to the Convention regarding the international movements of radioactive materials, nothing more should be required.[384]

However, when UNCLOS was concluded in December 1982, coastal states might not have been aware of the possibility of international maritime transport of plutonium for commercial purposes. It was in October

---

Normal baselines must be used except for the enumerated special geographical conditions. *See id.* art. 6 (reefs); art. 7 (straight baselines for deeply indented or unstable coasts); art. 9 (river mouths); art. 10 (bays); arts. 11, 12 (port facilities); art. 13 (low-tide elevations).

380. UNCLOS, *supra* note 10, art. 23, 21 I.L.M at 1274–75.

381. *Id.* arts. 58.3, 87.2. Article 87.2 is more broadly formulated than Article 58.3 to require a flag state to take into account the rights and duties of any other states. *Id.*

382. *Id.* arts. 24, 26, 21 I.L.M at 1275.

383. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 133, ¶ 5.56 ("Maritime transports of radioactive materials are subject to . . . detailed and stringent regulations . . . which are implemented in the United Kingdom to a standard that represents international good practice.").

384. *See* Pedrozo, *supra* note 57, at 223–24 (noting that "the carriage of nuclear cargoes was considered during UNCLOS III and resolved to the satisfaction of both coastal and maritime interests.").

1984 that Japan commenced the first plutonium return shipments from Europe.[385] Since then, repeated and persistent official protests by coastal states against the sea shipments of weapons grade plutonium, MOX fuel, and vitrified waste have cast doubt on the existence of such consensus on these matters. Moreover, in 1999, a U.S. district court held that environmental impact assessment provisions under NEPA were applicable to the federally funded marine transport of MOX fuel because of "the logical possibility that an accident involving the Russian MOX shipment might also have transboundary effects on American populations."[386] In light of these developments, the proposed protocol to UNCLOS should at least be applicable to the international maritime transports of the above contested radioactive materials.

2. Notification and Information Exchange Between the Concerned States

In the transboundary context, environmental impact assessments involve a sequence of interstate processes. Under the UNEP Guidelines, when information obtained through environmental impact assessment indicates that a proposed activity is likely to have significant transboundary environmental impacts, the originating state should notify the potentially affected state of the proposed activity.[387] The originating state should transmit any relevant information from the environmental impact assessment documentation to the affected state, subject to domestic information protection rules.[388] Apparently, the Guidelines require notification and information exchange only after the preparation of environmental impact assessments. The Guidelines are silent as to the contents of the notification.

The Espoo Convention provides more elaborate interstate procedures. The originating party must notify affected parties of a proposed Annex I activity that is likely to have significant transboundary impacts "as early as possible and no later than when informing its own public about that proposed activity."[389] This notification must includes "(a) information on proposed activity, including any available information on its possible transboundary impacts, (b) the nature of the possible decision;" and (c) an identification of a reasonable time within which the

385. *See supra* note 156 and accompanying text.

386. Hirt v. Richardson, 127 F. Supp. 2d 833, 843 (W.D. Mich. 1999). The court, however, denied the plaintiffs' request of injunction invoking the political question doctrine due to potential damage to the U.S.-Russian relationship and chilling effect on nuclear nonproliferation. *Id.* at 848.

387. UNEP Guidelines, *supra* note 84, princ. 12(a).

388. *Id.* princ. 12(b).

389. Espoo Convention, *supra* note 338, arts. 2(4), 3(1) , 30 I.L.M. at 804.

notified party must respond with acknowledgement and an indication of whether it intends to participate in the environmental impact assessment process.[390] If the affected parties do not intend to participate in the assessment process, the originating party conducts an environmental impact assessment pursuant to its domestic law.[391]

If the affected party, in reply to notification, indicates its desire to participate in the assessment process, the originating party must supply relevant procedural and substantive information that has not yet been provided at the time of notification. Upon the request of the originating party, the affected party must supply reasonably obtainable information concerning the potentially affected environment under the affected party's jurisdiction.[392] The Espoo Convention further requires the originating party to provide the environmental assessment documentation itself to the affected party.[393] Relevant information may be classified pursuant to the requirements of applicable domestic rules, including commercial confidentiality exceptions.[394]

The Draft North American Agreement also adopts a similar notification procedure. Under the Draft Agreement, the notification document is to include more details of procedural and substantive information,[395] while the information exchange provision is limited to the affected state's request for additional information.[396] Unlike the Espoo Convention, the Draft North American Agreement ignores reciprocity in information exchange, as it lacks a provision dealing with the originating

390. *Id.* art. 3(2)(c), 30 I.L.M. at 805.

391. *Id.* art. 3(4), 30 I.L.M. at 805.

392. *Id.* arts. 3(5), 3(6) , 30 I.L.M. at 805.

393. *Id.* art. 4(2), 30 I.L.M. at 806.

394. *Id.* art. 2(8), 30 I.L.M. at 804.

395. NACEC, *supra* note 341, arts. 7, 10.1(b), 10.2, app. II. Under the Draft North American Agreement, prior notification is required for listed activities located within the geographical limit even when the potential effects of such activities may be confined to the domestic environment. *Id.* art. 7(1). If the proposed activity is not likely to involve transboundary impacts, notification should include; (A) basic information including (1) the nature and location of the project, (2) the description and location of the potentially affected environment, (3) identification of proponent/developer; (B) points of contact; and (C) reasonable time frames for the notified party to respond and make comments, if any. *Id.* art. 7.2, Annex II, pt. I. If the proposed activity is deemed to have potentially significant transboundary impacts, the originating state must provide the general notification as well as the notification of intent to conduct a transboundary environmental impact assessment. *Id.* arts. 7.3, 10.1(b). The notification of transboundary environmental impact assessment must include (A) more details on the proposed project; (B) information on the public participation process in the originating party; and (C) opportunities for the potentially affected party to participate. *Id.* app. II, pt. II. The originating state must specify reasonable time frames within which the affected party responds and comments on notification, if any, and indicates whether it intends to participate in the transboundary environmental impact assessment process. *Id.* art. 10.2, app. II, pt. I.C.

396. *Id.* art. 8.2. If the affected party wishes to obtain additional information, it may make an information request with justifications for the necessity of such information. *Id.*

state's request for information on the affected state's local environment. Currently, it is unclear whether information exchange should occur directly between the concerned parties or be made through the NACEC.[397] As in the Espoo Convention, the Draft Agreement provides for the affected party's right to receive completed environmental impact assessment documentation.[398]

According to the ILC Draft Articles, the notification must be timely with the available supporting technical and other information.[399] The originating state must not make any decision to authorize the proposed activity until the receipt of the affected state's response, which must be made within six months.[400] The Draft Articles require reciprocal information exchange only after the proposed project has been commenced.[401] As in the Espoo Convention, the ILC Draft Articles allow the originating party to withhold information based on national security and commercial confidentiality.[402]

While the Espoo Convention and the Draft North American Agreement provide for notification prior to the environmental impact assessment process, the Draft Articles, as well as UNEP Guidelines, require notification only after the completion of an environmental impact assessment. This is because the Espoo Convention and Draft Agreement give the affected states the right to participate fully in the assessment process and in the interstate process,[403] while the Draft Articles and UNEP Guidelines provide only the right to participate in the interstate process to the affected states.

UNCLOS omits explicit references to prior notification and information from Part XII, which deals with marine pollution prevention.[404] This omission, however, does not mean that interstate processes are irrelevant to the protection of the marine environment. On the contrary, as ITLOS indicated in the provisional measures, information exchange between concerned states is vital to facilitate cooperation in marine environmental protection pursuant to Part XII. The importance of the interstate

397. *See id.* arts. 8.1, 9.

398. *See id.* art. 13.1(a).

399. *ILC Draft Articles*, *supra* note 342, art. 8.1.

400. *Id.* art. 8.2.

401. *Id.* art. 12.

402. *Id.* art. 14.

403. In particular, the Draft North American Agreement explicitly provides that "the notification should be given early enough to provide the Potentially Affected Party and its public a meaningful opportunity to have their comments considered and, in cases where a transboundary environmental assessment is conducted, to participate in that assessment process." NACEC, *supra* note 341, art. 3.

404. *See* discussion *supra* Parts II.C.2, III.B.4. Article 206 merely encourages the circulation of the assessment documentation through the competent international organizations. *See* UNCLOS, *supra* note 10, art. 206, 21 I.L.M at 1306.

process was further highlighted by the Annex VII tribunal, which reiterated the ITLOS ruling in prescribing the further provisional measures. Similarly, the OSPAR tribunal attempted to encourage interstate information exchange through the creative interpretation of the information disclosure provision, although the regional sea regime's attempt turned out to be inefficacious. Therefore, a proposed protocol to UNCLOS should include provisions for interstate processes.

In the draft protocol, the notification process should follow the basic model of the Espoo Convention and the Draft North American Agreement, not the ILC Draft Articles and the UNEP Guidelines. As discussed above, the affected coastal state has no control over activities within the originating state's territory. The affected coastal state also abrogates prescriptive jurisdiction and enforcement jurisdiction regarding environmental impact assessments of foreign vessels within its territorial sea and EEZ.[405] To compensate these limitations and curtailments, the affected state should have the right to participate fully in the environmental impact assessment process of the originating state. In particular, notification followed by information exchange at the pre-decision stage would help the originating state take into account the local marine environment of the affected coastal states in conducting an environmental impact assessment. Thus, a draft protocol to UNCLOS should adopt the basic notification provision and the reciprocal information exchange provision in the Espoo Convention. In addition, as in the Espoo Convention and the Draft North American Agreement, the originating state should also provide the assessment documentation itself to the affected coastal state. These procedural requirements should effectuate what ITLOS envisioned in prescribing the provisional measures.

On the other hand, the draft protocol should allow the originating state to classify the relevant information pursuant to applicable domestic rules concerning national security and commercial confidentiality. This exception is in conformity with the Espoo Convention and the ILC Draft Articles, as well as the tacit recognition of commercial confidentiality in the OSPAR final award. To prevent the abuse of the confidentiality provision, there should be a strict condition of non-discrimination, in which the affected state, as a legal person, enjoys the right of information equal to those of the public of the originating state.[406] In addition, the affected

405. *See* discussion *supra* Part IV.B.1; *see also* discussion *infra* Parts IV.B.3, IV.B.4 (allowing the originating state to apply its own procedures for public participation and the environmental impact assessment documentation).

406. *See ILC Draft Articles*, *supra* note 342, art. 15 (providing that "a State shall not discriminate on the basis of nationality or residence or place where the injury might occur, in granting to [affected natural or legal] persons, in accordance with its legal system, access to judicial or other procedures to seek protection or other appropriate redress"); Knox, *supra*

state should have access to the originating state's administrative and judicial procedures to resolve disputes regarding whether particular information should be classified based on national security or commercial confidentiality.[407]

In the MOX dispute, for example, Ireland should have received the notification of the proposed project and should have exchanged relevant information with the United Kingdom before the preparation of the 1993 Environmental Statement. In addition, the United Kingdom should have notified Ireland and en-route states of the planned maritime transports of INF Code materials and should have disclosed to them at least basic information including the route and itinerary of the planned shipments. Although the United Kingdom might have taken advantage of the recognized exception to withhold information concerning details of business arrangements and security measures for MOX shipments, its complete refusal of prior notification and information exchange should have been unacceptable. On the other hand, Ireland should have sought judicial review before a municipal court of the United Kingdom regarding the U.K. authority's invocation of the commercial confidentiality exception to justify the suppression of particular pieces of information associated with MOX production.[408]

3. Public Participation in the Environmental Impact Assessment Process

In the domestic context, public participation processes in environmental impact assessments offer concerned individuals an opportunity to be heard and considered in decision-making.[409] The UNEP Guidelines broadly encompass "government agencies, members of the public, experts in relevant disciplines and interested groups" as persons to be given an adequate opportunity to comment on an environmental impact assessment before the governmental authority makes a decision concerning whether to authorize the proposed activity.[410] The competent authority should reach such a decision only after a sufficient period to consider the submitted comments has lapsed.[411]

---

note 33, at 300 (stating that under the non-discrimination principle, the originating state should provide nonresidents with opportunities to participate in environmental impact assessments).

407. *See* Knox, *supra* note 36, at 300 (including equal access to all administrative and judicial procedures in the participatory rights protected by the non-discrimination principle).

408. *See* OSPAR U.K.'s Rejoinder, *supra* note 273, at 5, ¶ 12 (indicating that Ireland, as a natural or legal person, had a right to receive certain information under the Environmental Information Regulations 1992, which is enforceable before the United Kingdom's courts).

409. Robinson, *supra* note 85, at 594.

410. UNEP Guidelines, *supra* note 84, princ. 7.

411. *Id.* princ. 8.

In the transboundary context, the right of participation is extended to the concerned persons in affected states.[412] Under the Espoo Convention, the originating state must implement an environmental impact assessment procedure with a public participation process, in which concerned individuals enjoy a participatory opportunity equal to those of the public of the originating state.[413] Concerned parties must ensure that the affected persons in the affected state be informed of the proposed activity and be given opportunities to submit their comments directly or indirectly to the competent authority of the originating state.[414] The Convention requires the originating party to pay due regard to the comments received in reaching the final decision.[415]

The public participation process in the Draft North American Agreement is more extensive. In addition to the basic requirements included in the Espoo Convention,[416] the Draft Agreement provides that the originating party must allow the concerned persons in affected states to attend any domestic public hearing or meeting relating to the transboundary environmental assessment.[417] To compel the originating state to put the public participation procedure into practice, the completed assessment documentation must have a section on public participation including (1) the summary of coordination between governmental agencies and concerned persons in the originating state and the affected state and (2) a summary of substantive comments and responses.[418]

The Antarctic Protocol includes provisions guaranteeing individuals in affected states access to the transmitted information and assessment documentation. Under the Antarctic Protocol, the originating state must make a draft comprehensive environmental evaluation publicly available. In addition, the draft evaluation must be circulated among all the parties, who must make it publicly available. Each party must allow the public to submit comments within a period of ninety days.[419] As in the Draft North American Agreement, a final comprehensive environmental evaluation must include the comments (or their summaries) and address the comments' concerns. The final evaluation must be circulated among the parties *and* made available to the public.[420]

---

412. Knox, *supra* note 33, at 301.
413. Espoo Convention, *supra* note 338, art. 2(6) , 30 I.L.M. at 804.
414. *Id.* art. 3(8), 30 I.L.M. at 806.
415. *Id.* art. 6(1), 30 I.L.M. at 806–07.
416. NACEC, *supra* note 341, art. 12.1(a).
417. *Id.* art. 12.1(b). This provision is subject to domestic immigration laws and regulations. *Id.*
418. *Id.* art. 10.1(a), app. IV.6.
419. Antarctic Protocol, *supra* note 344, Annex I, art. 3.4.
420. *Id.* Annex I, art. 3.6.

Similarly, the World Bank requires the borrower to consult with affected persons and nongovernmental organizations (NGOs) as early as possible during the environmental assessment process for all Categories A and B projects.[421] To facilitate meaningful consultation, the borrower must provide them with relevant information in a timely manner before the consultation.[422] For Categories A and B projects, the borrower must make environmental assessment reports publicly available to the affected persons and local NGOs.[423] The Bank ensures the implementation of this provision by making it a prerequisite for a project appraisal by the Bank.[424] The ADB and EBRD closely follow the World Bank's approach,[425] with EBRD explicitly indicating that the Espoo Convention's public participation procedures must be followed in the transboundary context.[426]

Although the ILC Draft Articles attach importance to public participation,[427] their provisions are quite vague. The Draft Articles require concerned states to (1) provide the public with relevant information and (2) ascertain their views on the proposed activity.[428] Relevant information includes the basic description of the proposed activity, the risks involved, and the potential harm resulting from the activity.[429] As to the second step, the ILC's Commentaries ambiguously note that there are many modalities for ascertaining the views of the public, one of which is to review the factual, legal and policy basis of decision-making through

---

421. World Bank, *supra* note 84, ¶ 15. In a Category A project, for which a full-scale environmental impact assessment is required, the borrower must consult with the persons concerned at least twice. *Id.* The two consultation sessions must be held (a) shortly after the screening process and before the adoption of the terms of reference for the environmental impact assessment and (b) once a draft assessment report is prepared. *Id.*

422. *Id.* ¶ 16. For the first consultation in a Category A project, the borrower must prepare a summary of the objectives, description, and potential effects of the planned project. *Id.* ¶ 17. For the second consultation, the borrower must provide a summary of the conclusions of the environmental impact assessment. *Id.* The borrower must provide information in a form and language that are comprehensible and accessible to the consulted persons. *Id.* ¶ 16.

423. *Id.* ¶¶ 18–19.

424. *See id.* ¶ 19.

425. ADB, *supra* note 343, ¶¶ 9–10. In addition, ADB provides for "120 day rule" in which the environmental impact assessment documentation must be accessible by the public at least 120 days before ADB's project appraisal. *Id.* ¶ 10. EBD adopts a similar rule but the period is sixty days for public sector projects and thirty days for private sector projects. EBD, *Policy*, *supra* note 343, Annex 2, ¶ II.4, at 18.

426. EBD *Procedures*, *supra* note 343, at 10–11, ¶ 2.3.4; EBD, *Policy*, *supra* note 343, at 20, Annex 2, ¶ 10 (outlining details of EBRD's public consultation process).

427. *ILC Commentaries*, *supra* note 33, art. 13, ¶ 10 (commenting that "public participation could also be viewed as a growing right under national law as well as international law.").

428. *ILC Draft Articles*, *supra* note 342, art. 13; *see also ILC Commentaries*, *supra* note 33, art. 13, ¶ 1 (stating that without the second element of ascertaining the views of the public, the purpose of Article 13 would be defeated).

429. *ILC Draft Articles*, *supra* note 342, art. 13.

administrative tribunals, courts, or groups of the persons concerned.[430] The Commentaries make little efforts to elaborate on how to guarantee the affected persons' right to be heard and actually considered in decision-making processes.

Although Article 206 of UNCLOS does not include any provisions on the affected persons' right to participate in environmental impact assessments, a draft protocol should incorporate the widely accepted norm of public participation. As discussed, the Convention promotes the adoption of generally recognized international standards to protect the marine environment.[431] Through the public participation process, the concerned persons in affected states can express their concerns as well as offer knowledge and expertise regarding the affected local marine environment to help the originating state make an informed decision. On the other hand, to respect the originating state's territorial sovereignty, participation by concerned persons in affected states should be subject to the principle of non-discrimination.[432] Under the draft protocol, concerned individuals in the affected state should have the right to obtain information, the right to make comments and objections, and the right to attend hearings to the same extent as the public in the originating state.[433] The originating state need not implement additional procedural safeguards concerned citizens in affected states. To effectuate the affected persons' right to information, the affected state should make the information received through the interstate processes of notification and information exchange publicly available.[434]

To oblige the originating state to consider and address affected persons' concerns, the originating state must create a record of public participation, including at least the summaries of comments and

---

430. *ILC Commentaries*, *supra* note 33, art. 13, ¶ 6.

431. *See supra* notes 65, 70, 76, 78 and accompanying text.

432. *See supra* note 406 and accompanying text.

433. In addition to the above environmental impact assessment instruments, a number of legal documents provides for public participation. *See, e.g.*, Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, June 25, 1998, 38 I.L.M. 517 (1999); *Rio Declaration*, *supra* note 33, princ. 10; *see also* Carl E. Bruch & Roman Czebiniak, *Globalizing Environmental Governance: Making the Leap From Regional Initiatives on Transparency, Participation, and Accountability in Environmental Matters*, 32 ENVTL. L. REP. 10428 (2002) (surveying extensively binding and non-binding regional instruments on this subject matter).

434. *See* NACEC, *supra* note 341, art. 12.2; *see also* discussion *supra* Part IV.B.2. For this purpose, as in the multilateral development banks' procedures, the originating state should endeavor to provide relevant information in the language comprehensible to the ordinary citizens of the affected communities as well as a language designated in UNCLOS. *See supra* note 422; *see also* UNCLOS, *supra* note 10, art. 320, 21 I.L.M at 1329 (making authentic the Arabic, Chinese, English, French, Russian, and Spanish texts of the Convention). If the originating states have difficulty with translation, the originating state should provide information at least in an official language of UNCLOS.

response to them. The originating state may compile the record as part of the assessment documentation, as in the Draft North American Agreement and the Antarctic Protocol, or may produce it as a separate document, as implied by the Espoo Convention (depending on specific requirements in applicable domestic environmental assessment procedures).[435] In either case, the originating state should transfer the record to the affected state, together with the assessment documentation. The affected state should make the record and the assessment documentation publicly available. In addition, applying the principle of non-discrimination, concerned persons in the affected state should have the same right to seek administrative and judicial review as the public of the originating state has. Even though the affected state indicates its intention not to participate in the environmental impact assessment process, concerned individuals in the affected state should be given all the rights under the above public participation procedures.

Indeed, concerned persons in both originating and affected states have exhibited keen interests in MOX related activities. In April 2002, 93 percent of all Irish households participated in a grassroots postal campaign against the operation of the MOX plant.[436] In September 2002, a coalition of Irish and U.K. environmentalists protested the arrival of MOX return shipments at Sellafield.[437] Under the proposed protocol, those persons could have expressed their concerns through the public participation procedure at the beginning of the authorization process, when BNFL prepared the 1993 Environmental Statement.

With extensive rights to participate in environmental impact assessment, concerned persons should refrain from employing physical obstructions in their protests against planned activities. As mentioned above, Greenpeace activists boarded a PNTL ship carrying vitrified waste through the Panama Canal in 1998.[438] These activists operated without the right to be informed of the planned radioactive shipments and the right to voice their concerns before the commencement of international transport. Although they successfully expressed their objections and let the public know about the vulnerability of the ongoing activity, the obstruction could have defeated both their goals and the purposes of

435. The Espoo Convention requires the originating state to transfer to the affected state the environmental assessment documentation and the final decision "along with the reasons and consideration on which it was based." Espoo Convention, *supra* note 338, art. 6(2), 30 I.L.M. at 807.

436. Annex VII Ir.'s Memorial, *supra* note 5, at 24, ¶ 1.67.

437. *See Protest Flotilla Ready*, *supra* note 1; *Irish Students Stage Anti-Nuclear Protest Outside British Embassy*, AGENCE FRANCE-PRESSE, Sept. 16, 2002, *available at* 2002 WL 23602164.

438. *See supra* note 167 and accompanying text.

UNCLOS had an accident occurred.[439] While aggressive actions should be discouraged, concerned persons should be allowed to orderly *monitor* the commenced activity, supplementing the originating state's duty to conduct monitoring under Article 204 of UNCLOS.[440]

4. The Required Contents of the Environmental Assessment Documentation

When the originating state prepares an environmental impact assessment, they are required to include specific categories of information identified by applicable international instruments. The UNEP Guidelines outline the generally accepted contents of the assessment documentation. According to the Guidelines, an environmental impact assessment should include, at least, (1) a description of the proposed activity and the potentially affected environment; (2) practical alternatives; (3) "assessment of direct, indirect, cumulative, short-term, and long-term effects" of the proposed activity and alternatives; (4) available mitigation measures; (5) an identification of knowledge gaps and uncertainties; and (6) a brief and non-technical summary of the above information.[441] In the transboundary context, an environmental impact assessment should also include the potential environmental effects of the proposed activities on "the environment of any other State or areas beyond national jurisdiction."[442]

The Espoo Convention adds several important elements to the UNEP Guidelines. The Convention requires the environmental assessment documentation to identify predictive methods, underlying assumptions, and environmental data.[443] If appropriate, the documentation also includes monitoring and management programs and plans for post-hoc analysis.[444] These elements are also widely accepted in the environmental impact assessment procedures of the Antarctic Protocol, the World Bank, regional banks, and the Draft North American Agreement, although their provisions vary in detail.[445]

---

439. *See* Pedrozo, *supra* note 57, at 221 (expressing the concern that anti-nuclear activists' action could have adversely affected the safe operation of the vessel).

440. *See* UNCLOS, *supra* note 10, art. 204, 21 I.L.M at 1309 (providing for "[m]onitoring of the risks or effects of pollution.").

441. UNEP Guidelines, *supra* note 84, princ. 4.

442. *Id.* princ. 4(g).

443. Espoo Convention, *supra* note 338, art. 4(1), app. II, 30 I.L.M. at 806, 814.

444. *Id.* app. II, ¶ (h) , 30 I.L.M. at 814. The Espoo Convention permits the parties to adopt tougher domestic environmental impact assessment rules. *Id.* art. 2(9), 30 I.L.M. at 804.

445. Antarctic Protocol, *supra* note 344, Annex I, art. 3; ADB, *supra* note 343, ¶ 8; EBD *Procedures*, *supra* note 343, Annex 2, at 23–25; World Bank, *supra* note 84, Annex B (content of an Environmental Assessment Report for a Category A project); NACEC, *supra* note 341, app. IV.

Unlike other instruments, the ILC Draft Articles do not specify the contents of the environmental assessment documentation. The ILC's Commentaries merely identify "evaluation of the possible transboundary harmful impact of the activity" on persons, property, and the environment to be included in the documentation.[446] The Commentaries simply leave details to domestic laws.[447]

To supplement the existing vague provision in Article 206 of the UNCLOS, a draft protocol should require the originating state to include in the environmental assessment documentation the items above that are widely recognized in the existing instruments. In each item, a description should focus on the effects of the planned project on the marine environment. On the other hand, the originating state need not prepare a report specifically tailored to marine environmental impact assessment. To reduce administrative burden on the originating state, it may use a general environmental impact assessment report prepared under its domestic law for the purpose of fulfilling its obligation under Article 206, so long as such a general assessment report is in conformity with the requirements of the draft protocol. This approach is consistent with the philosophy of UNCLOS encouraging states to adopt generally applicable international standards, while respecting the originating state's sovereign rights to regulate activities within its territory.[448]

For example, the 1993 Environmental Statement should have included details of the chosen and alternative methods of treating radioactive effluents from the MOX plant, available mitigation measures, and the data used to estimate radiation doses to the critical group. The Environmental Statement should have discussed radiological impacts on the biota and the ecosystems of the Irish Sea and, should have noted any gaps or uncertainties in scientific knowledge on marine biology. The Statement should have identified the probable increase of THORP reprocessing business and the international movements of radioactive materials as a consequence of MOX production, and should have assessed the cumulative effects of these related activities.[449] The United Kingdom indicated that modifications in the existing reprocessing contracts or any new contracts at THORP would be subject to a separate review process, and therefore should be excluded from the environ-

446. *ILC Commentaries*, *supra* note 33, art. 7, ¶ 7.

447. *Id.*

448. In the case of states with federal systems, laws and regulations adopted by a competent sub-national governmental institution may be applicable provided that such laws and regulations address the content requirements outlined in the proposed protocol. *See* Robinson, *supra* note 85, app. 1, at 611–62, 616 (reporting that sub-national authorities in Australia, Canada, and the United States have implemented their own environmental impact assessment procedures by 1992).

449. *See supra* notes 177–88 and accompanying text.

mental impact assessments of the MOX plant.[450] However, future assessments of related activities should not release the originating state from its existing obligation to assess the cumulative impacts of the planned activity. If this protocol had been introduced, Ireland could have pointed to pieces of information the United Kingdom had been required to supply in the environmental impact assessment of the MOX plant.

5. Interstate Consultation

After the originating state has prepared an environmental impact assessment, the concerned states should enter into consultation. While the UNEP Guidelines require their prior consent to establish the consultation process,[451] the Espoo Convention does not require consent.[452] The Convention provides for mandatory consultations after the completion of the environmental assessment documentation. The originating party must enter into consultations with the affected parties regarding the potential transboundary effects of the proposed activity and actions to minimize its impacts, such as possible alternatives, mitigation measures, monitoring, and other forms of possible mutual assistance.[453] The final decision on the proposed activity must take into account the outcome of the consultations, as well as the environmental assessment documentation and comments.[454] The originating party must provide the affected party with the final decision, together with the reasons and considerations that support the decision.[455]

The Antarctic Protocol also provides for mandatory consultations through the Antarctic Treaty Consultative Meeting, at which the draft comprehensive environmental evaluation is considered.[456] The final comprehensive evaluation must include a summary of comments received during consultation and must be circulated to all parties to the Treaty.[457]

Under Article 9 of the ILC Draft Articles, interstate consultation is contingent upon a request by either of the concerned states.[458] Through interstate consultation, the concerned states must seek acceptable solutions regarding preventive measures to address significant transboundary harm potentially resulting from the proposed activity.[459]

---

450. Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 110–11, ¶ 5.09.
451. UNEP Guidelines, *supra* note 84, princ. 12.
452. *See* Espoo Convention, *supra* note 338, art. 5, 30 I.L.M. at 806.
453. *Id.*
454. *Id.* art. 6(1), 30 I.L.M. at 806–07.
455. *Id.* art. 6(2), 30 I.L.M. at 807.
456. Antarctic Protocol, *supra* note 344, Annex I, art. 3.5.
457. *Id.* Annex I, art. 3.6.
458. *ILC Draft Articles*, *supra* note 342, art. 9.1.
459. *Id.*; *ILC Commentaries*, *supra* note 33, art. 9, ¶ 7 ("Article 9 may be invoked whenever there is a question about the need to take preventive measures.").

The Draft Articles, nevertheless, do not make consultation obligatory at the pre-decision stage. The concerned states may enter into consultation either before decision-making or after the commencement of the activity.[460] Reflecting its broader scope, the Draft Articles mandate that the concerned states equitably balance environmental and other considerations in crafting solutions.[461] Accordingly, the concerned states must take into account "all relevant factors and circumstances" including, *inter alia*, the significance of environmental and other harm and mitigation and prevention measures available; the socioeconomic importance and economic viability of the proposed activity; the costs of prevention to be borne by the originating state and, as appropriate, the affected state; and the domestic standards applicable in the affected state and in comparable regional and international practice.[462]

Unlike the above instruments, the Draft North American Agreement contains no provision concerning interstate consultation prior to decision-making. The Draft Agreement only includes an incomplete provision on on-going consultation, which is apparently designed to facilitate dispute settlement between concerned states.[463]

UNCLOS itself has no explicit provision for interstate consultation regarding a planned activity that lacks an imminent or actual danger. Nevertheless, the originating state's duty to consult with the potentially affected state is regarded as integral part of UNCLOS. ITLOS highlighted the importance of this duty by urging the concerned parties to cooperate in devising measures to address potential risks from the proposed activity within a short timeframe before the commencement of the activity.[464] The Annex VII tribunal not only reiterated the ITLOS ruling, but also specifically recommended that the parties establish a framework for effective bilateral coordination to deal with the disputed activity.[465] Accordingly, a draft protocol to UNCLOS should include a mandatory interstate consultation provision at the pre-decision stage, as well as at the post-decision stage of monitoring. As in the Espoo Convention and the ILC Draft Articles, the concerned states should work together through interstate consultation in formulating measures to prevent and mitigate the potential effects of the proposed project. Like the Espoo Convention and the Antarctic Protocol, the draft protocol should require

460. *ILC Commentaries*, *supra* note 33, art. 9, ¶ 6.

461. *ILC Draft Articles*, *supra* note 342, art. 9.2.

462. *Id.* art. 10.

463. NACEC, *supra* note 341, art. 18 ("Any Party may request consultation regarding any aspect of the operation of these recommendations including any determination, action or inaction taken thereunder.") (provisions to be elaborated).

464. ITLOS Provisional Measures, *supra* note 12, at 19, ¶ 84.

465. *See supra* notes 313–14 and accompanying text.

the originating state to consider the outcome of interstate consultation, as well as the environmental impact assessment documentation, in making a decision regarding the authorization of the proposed activity.

In the MOX plant dispute, the United Kingdom offered to have consultations with Ireland before the justification of the MOX plant, as well as after the ITLOS order. Nevertheless, as revealed in the ITLOS and Annex VII proceedings, there has been almost no indication that the parties to the dispute sought to reach a balanced solution.[466] Under the proposed protocol, the United Kingdom should have taken into consideration not only economic viability of the MOX plant, but also potential harm to the marine environment of the Irish Sea. The United Kingdom should have cooperated with Ireland in crafting measures to monitor and mitigate the direct and cumulative impacts of MOX production.

As to international transports of radioactive materials, the proposed protocol should require the United Kingdom, as the flag state of PNTL vessels, to enter into consultation with en-route states in order to develop monitoring and contingency plans.[467] Although the United Kingdom might claim rights to innocent passage and the freedom of navigation, these rights should be qualified by the United Kingdom's responsibility to prevent transboundary environmental harm to coastal states. When UNCLOS was adopted, the parties to the Convention purported to strike a balance by allowing coastal states to confine the innocent passage of foreign ships carrying ultrahazardous cargoes to designated sea-lanes, while not requiring maritime states to consult with coastal states regarding shipments of ultrahazardous materials.[468] However, this provision does not reflect the consensus among the parties regarding the subsequently protested INF cargoes. A flag state's intentional disregard of customary good faith obligations regarding a contested ultrahazardous activity on its flagged vessel should amount to a willful act to cause serious pollution, which would make the passage of such vessels non-innocent.[469] In addition, the Convention mandates states to resolve the conflict of interests in the use of EEZs "on the basis of equity and in the light of all the relevant circumstances."[470] Thus, the consultation requirement should be applicable to international shipments of INF Code materials through the territorial seas and EEZs of en-route states. With

466. *See supra* notes 259, 313 and accompanying text.

467. *See* Van Dyke, *supra* note 41, at 382; Van Dyke, *supra* note 34, at 400–02; Van Dyke, *supra* note 165 (asserting that states assume the duty of prior notification and consultation by way of customary international law and Article 199 of UNCLOS regarding contingency plans).

468. *See supra* note 60 and accompanying text.

469. Van Dyke, *supra* note 41, 384–85; *see also supra* notes 92, 252–54 and accompanying text.

470. UNCLOS, *supra* note 10, art. 59, 21 I.L.M at 1280.

flag states' prior consultation and cooperation in implementing contingency measures, coastal states should refrain from taking aggressive actions to expel vessels loaded with INF cargoes from sea areas under their jurisdiction. Such aggressive actions could result in disastrous consequences to the local marine environment, as well as to the goals of UNCLOS. On the other hand, en-route states should have the rights to monitor INF shipments closely, which should complement the originating state's duty under Article 204.[471]

6. Dispute Settlement Between the Originating State and a Non-Notified State

The proposed marine environmental impact assessment process could involve the following two types of disputes: (1) legal disputes concerning the interpretation and application of relevant provisions and (2) essentially factual disputes where a non-notified state believes that the proposed activity may likely cause significant transboundary harm to it, while the originating state does not regard the proposed activity as such. Because judicial or arbitral tribunals, which are provided for in UNCLOS,[472] are incapable of resolving scientific and technical factual disputes, a special mechanism is necessary. The Espoo Convention, the Draft North American Agreement, and the ILC Draft Articles envision such dispute settlement provisions.

The Espoo Convention provides for an inquiry commission, which is comprised of three scientific experts.[473] The requesting party and responding party appoint one expert each, and the two appointed experts designate the third expert by common agreement.[474] A party interested in the factual nature of the subject matter and possibly affected by an opinion in the matter may, upon the consent of the inquiry commission, intervene in the inquiry proceedings.[475] The commission must issue the final opinion within two months, unless it extends this time limit for a period not exceeding two months.[476]

The Draft North American Agreement uses the information request procedure for a non-notified party as a functional equivalent to the above process in the Espoo Convention. If a potentially affected party has not yet received notification but has a reasonable concern about the potential transboundary effects of the proposed project, that party may request

471. *Id.* art. 204 (providing for the duty to monitor the risks and effects of marine pollution).
472. UNCLOS, *supra* note 10, pt. XV, 21 I.L.M at 1322–26.
473. Espoo Convention, *supra* note 338, art. 3(7), 30 I.L.M. at 805.
474. *Id.* app. IV, ¶ 2, 30 I.L.M. at 815.
475. *Id.* app. IV, ¶ 11, 30 I.L.M. at 816.
476. *Id.* app. IV, ¶ 13, 30 I.L.M. at 816.

information on the proposed project.[477] The originating party must promptly reply to such a request "to the extent possible."[478] Currently, it is unclear whether non-notified parties can resort to the consultation procedure in a similar situation under the Draft Agreement.[479]

The ILC Draft Articles incorporate the essence of the above information request procedure in the consultation process for non-notified states. When a state has reasonable grounds to believe that the proposed activity may likely cause significant transboundary harm to it but was not notified by the originating state, the non-notified state may request the originating state to give a notification. The request must enclose a documented explanation outlining its grounds.[480] If the originating state nevertheless determines that the notification requirement is inapplicable, it must inform the requesting state, within a reasonable period in a documented explanation outlining its grounds. If the requesting state is unsatisfied, upon its request the two states must enter into consultations.[481]

For a draft protocol to UNCLOS, mechanisms to settle scientific and technical disputes are essential because degradation of the marine environment involves the cumulative effects of multiple and complex sources, which may cause factual disagreements between the originating state and potentially affected coastal states. In particular, the inquiry commission similar to the Espoo Convention may be suited to resolve disputes concerning the precise technical and scientific issues, as in the MOX plant dispute. In addition, such mechanisms enable parties to settle disputes at the early stage of decision-making processes when the originating state can make modifications in the proposed activity much more easily. In the MOX plant case, the United Kingdom did not notify Ireland of the proposed construction of the MOX plant or BNFL's preparation of the 1993 Environmental Statement, believing that MOX production would not involve significant environmental effects. After years of unsuccessful diplomatic efforts, Ireland initiated the legal proceedings well after BNFL completed the construction of the MOX plant and just before BNFL commenced the plutonium commissioning of the disputed plant. This raised the United Kingdom's stakes in the MOX project and made dispute resolution much more difficult.[482]

---

477. NACEC, *supra* note 341, art. 8.1.

478. *Id.* art. 8.3.

479. *See id.* art. 18.1. The consultation procedure appears to deal with materialized disputes between the parties concerning the interpretation and application of its provisions. *See supra* note 463 and accompanying text.

480. *ILC Draft Articles*, *supra* note 342, art. 11.1.

481. *Id.* art. 11.2.

482. *See supra* notes 237–41 and accompanying text.

However, the parties to the dispute should use the inquiry commission only after they fail to settle the dispute through negotiations. Article 283 of UNCLOS requires the parties to exchange their views before they use a tribunal designated under Article 287.[483] Similarly, the draft protocol should adopt a preference for negotiated settlements, which are better suited to deal with generalized factual concerns arising from lack of communication, like en-route states' objections to the marine transports of INF Code materials.[484] In addition, prior information exchange and consultation should help the parties better shape the terms of reference for the inquiry commission. As outlined in the Draft North American Agreement and the ILC Draft Articles, the non-notified state should request notification and information regarding the proposed project, and the originating state should reply to such request as soon as possible in good faith. If the non-notified state is not satisfied with the originating state's response, it may request consultation. If the parties fail to resolve the factual dispute, either of them may resort to the inquiry commission, which issues a binding factual determination as to whether the proposed activity is likely to cause significant harm to the marine environment of the non-notified state.

Had the proposed protocol applied to the MOX plant dispute, Ireland could have requested notification and information exchange in 1993, when it voluntarily initiated communication regarding the MOX plant.[485] With an unsatisfactory response from the United Kingdom, Ireland could have demanded immediate consultation and ultimately could have resorted to the inquiry commission under the proposed protocol before BNFL completed construction of the disputed plant.

7. The Role of International and Regional Institutions in the Marine Environmental Impact Assessment Process

While each state bears the principal responsibility to administer its own environmental impact assessment process, international and regional institutions play an important role in facilitating cooperation and coordination among states in the conduct of transboundary environmental impact assessment. The ILC Draft Articles provide a general duty

483. UNCLOS, *supra* note 10, art. 283, 21 I.L.M at 1322; *see also id.* art. 286, 21 I.L.M at 1322 (making available compulsory dispute settlements before a chosen tribunal "where no settlement has been reached by recourse to section 1 [of Part XV]," which includes Article 283), art. 287, 21 I.L.M. at 1323 (allowing states to choose one or more of the following tribunals: (a) ITLOS; (b) the International Court of Justice; (c) Annex VII tribunal; and (d) a special arbitral tribunal under Annex VIII).

484. *See supra* note 166 and accompanying text.

485. *See supra* note 173 and accompanying text.

for states to bilaterally cooperate, and if necessary through international organizations to prevent significant transboundary harm.[486] The UNEP Guidelines reduce this general duty to more specific ones for the transboundary environmental impact assessment process. Under the UNEP Guidelines, states should endeavor to create bilateral, regional, or multilateral arrangements for notification, information exchange, and consultations regarding the potential transboundary effects of proposed activities.[487]

The Espoo Convention further elaborates on the above provision and encourages parties to cooperate through bilateral and multilateral agreements to devise additional environmental assessment requirements, to establish institutional, administrative, and other arrangements, and to harmonize methods and standards used in domestic environmental impact assessment processes.[488] Pursuant to this provision, the EU member states entered into the process of harmonization. Under the 1997 EC Directive, member states are required to make their domestic environmental impact assessment procedures consistent with the requirements in the EC directive.[489] The EU members must also adopt domestic rules to implement the interstate process.[490]

International financial institutions assist information exchange among interested states and the general public by serving as a depository of the environmental impact assessment documentation. Under the World Bank's procedure, the borrower must transmit environmental assessment reports for Categories A and B projects to the Bank, which then makes the reports publicly available through its InfoShop, an information center and book store accessible physically or via the Internet.[491] Similarly, the ADB requires that the summaries of environmental impact assessment reports be disseminated worldwide through the depository library system and on its website.[492] EBRD also makes environmental impact assessment reports and their summaries accessible via its Business Information Center.[493]

In addition, these multilateral development banks attempt to coordinate their environmental impact assessment processes with other similar regional and international assessment procedures. For example, the

---

486. *ILC Draft Articles*, *supra* note 342, art. 4.

487. UNEP Guidelines, *supra* note 84, princ. 11.

488. Espoo Convention, *supra* note 338, app. VI, 30 I.L.M. at 817.

489. *See* 1997 EC Directive, *supra* note 220, arts. 2.2, 2.2a.

490. *See id.* art. 2.2; *see also* Gray, *supra* note 85, at 118–24.

491. World Bank, *supra* note 84, ¶ 19; *see also* World Bank, *The InfoShop*, *at* http://www.worldbank.org/infoshop/ (last visited Nov. 6, 2003).

492. ADB, *supra* note 343, ¶ 10. An interested party must make a request to the ADB in order to obtain the entire environmental impact assessment documentation. *Id.*

493. EBD *Policy*, *supra* note 343, Annex 2, ¶ 6, at 19–20.

World Bank requires the borrower to comply with the environmental assessment requirements of applicable international agreements.[494] EBRD specifically indicates that the Bank will "support the spirit, purpose and ultimate goals" of the Espoo Convention and encourage borrowers to incorporate rights and obligations under the Convention (and other relevant international agreements) through project finance.[495]

UNCLOS requires that states cooperate internationally and regionally in formulating and elaborating marine environmental protection measures.[496] As discussed, the regional seas regimes embody regional cooperation in Part XII of UNCLOS.[497] Accordingly, a draft protocol to UNCLOS should promote cooperation among states in the environmental impact assessment process through the regional seas regimes. As in the Espoo Convention, the regional seas regimes should offer administrative support and assist states in developing additional environmental assessment standards, if necessary, and assist harmonization of domestic environmental impact assessment procedures if possible. Pursuant to Article 202 of UNCLOS, the regional seas regimes, in cooperation with multilateral development banks and donor states, should offer technical assistance to developing countries in the implementation of the proposed marine environmental impact assessment protocol.[498] In addition, the regional seas regimes, together with UNEP, should facilitate dissemination of environmental impact assessment reports. Under Article 206, the originating state must either publish the marine environmental impact assessment documentation or circulate it through the competent international organizations at appropriate intervals.[499] Because UNEP, the coordinator of regional seas regimes, has played a central role in promoting environmental impact assessment through its Guidelines, it should be qualified as the competent international organization to receive marine environmental impact assessment reports. Like the multilateral development banks, UNEP should publish the reports through its website and transfer them to the commission of each regional sea regime, which should serve as a local depository of marine environmental impact assessment reports.[500]

---

494. World Bank, *supra* note 84, ¶ 3, Annex B, ¶ 2(b).

495. EBD *Policy*, *supra* note 343, ¶¶ 8, 11 at 4, ¶ 42 at 13.

496. UNCLOS, *supra* note 10, arts. 197, 207, 21 I.L.M at 1308, 1310; *see also supra* notes 80–81 and accompanying text.

497. *See supra* notes 81–83 and accompanying text.

498. UNCLOS, *supra* note 10, art. 202, 21 I.L.M at 1309 ("States shall, directly or through competent international organizations . . . (c) provide appropriate assistance, especially to developing States, concerning the preparation of environmental assessment.").

499. *Id.* art. 206, 21 I.L.M at 1309.

500. For languages to be used in the environmental impact assessment documentation, see notes 422, 434.

In addition, there should be coordination between the draft procedure and existing procedures for transboundary environmental impact assessment. The originating state should fully take into account affected coastal states' concerns on the marine environment in the environmental assessment documentation and the interstate process under existing instruments including, *inter alia*, the Espoo Convention, the 1997 EC Directive, and the Antarctic Treaty regime, if they are applicable.[501] Then, the originating state need not have a separate environmental assessment process for the purpose of satisfying obligations under UNCLOS. In addition, international financial institutions should heed the requirements in the proposed protocol and protect marine environments by administering their own environmental impact assessment procedures.

CONCLUSION

The Sellafield MOX plant has been a matter of controversy between the opposite sides of the Irish Sea since the early 1990s. Substantively, the controversy involves the potential environmental effects of direct and cumulative radioactive discharges from MOX production and the potential hazards of frequent marine shipments of radioactive materials. Almost a decade later, however, Irish concerns were crystallized into a procedural dispute concerning the adequacy of environmental impact assessments and associated interstate processes. Unfortunately, the dispute between Ireland and the United Kingdom has been protracted and aggravated due to ambiguities in the relevant procedural provisions of UNCLOS. Although the competent tribunals have attempted to resolve the dispute through flexible interpretations of the applicable instruments and general international law, the tribunals are incapable of filling the gap in the existing instruments.

To avoid repeating similar incidents in the future, an environmental impact assessment protocol to UNCLOS must be developed to ensure that the originating state prepares an environmental impact assessment that takes into account the potential significant impacts of the proposed activity on the marine environment within the territorial sea or the EEZ

501. *See supra* notes 220–21 and accompanying text (stating that after the construction of the MOX plant, the 1997 EC Directive entered into force for both Ireland and the United Kingdom). The Espoo Convention took effect for both parties on October 2002. *See* Annex VII Ir.'s Memorial, *supra* note 5, at 104, ¶ 6.19 & n.28 (noting that the United Kingdom ratified the Espoo Convention in 1997; Annex VII U.K.'s Counter-Memorial, *supra* note 102, at 119, ¶ 5.29(4) (pointing out that only on July 2002, Ireland did ratify the Convention, which then entered into force for it on October 2002). *See generally supra* note 161 and accompanying text (discussing the potentially harmful effects of INF shipments via Cape Horn and the Cape of Good Hope on the terrestrial and marine environments of the Antarctica).

of a coastal state. To make it operational, such a protocol should include: (1) the list of covered activities and a set of criteria for non-listed activities concerning the likelihood of potential significant impacts on the marine environment; (2) provisions for notification and information exchange before the commencement of the originating state's domestic assessment process; (3) a procedure for public participation; (4) a list of items to be included in the environmental impact assessment documentation; (5) interstate consultations to achieve mutually agreeable solutions in mitigation measures, monitoring schemes, and contingency plans; (6) settlement of factual disputes between a non-notified state and the originating state through interstate processes and an inquiry commission; and (7) international and regional cooperation in marine environmental impact assessment through UNEP and the regional seas regimes and coordination with the environmental assessment requirements in the existing instruments. The proposed protocol should accommodate the competing interests of the states involved, as well as the distinct concerns of affected persons, and help them cooperate in protecting the marine environment.