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FOSTERING PROTECTION OF THE MARINE ENVIRONMENT AND ECONOMIC DEVELOPMENT: ARTICLE 121(3) OF THE THIRD LAW OF THE SEA CONVENTION

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INTRODUCTION

A coastal State is considering whether to adopt a proposal to establish a marine preserve around one of its small islands located outside the State's twelve-mile territorial sea,[1] twenty-five miles from its shore. The marine preserve would prohibit all development, commercial or otherwise, within a three-mile radius around that island. This proposal is presented by environmentalists concerned about overfishing, traffic of oil tankers, and tourist-based diving on a fragile coral reef located 500 meters from the island.

Opponents of the marine preserve argue that it defends the environment at too great an economic cost. Instead, they propose constructing an offshore saline refinery, which they claim would bring economic development without damaging the environment. Fur-

1. *See* United Nations Convention on the Law of the Sea, art. 3, *opened for signature* Dec. 20, 1982, U.N. Doc. A/CONF. 62/122, *reprinted in* 21 I.L.M. 1261 [hereinafter Law of the Sea Convention] (providing that every state has a right to establish the breadth of its territorial sea up to a limit not exceeding 12 nautical miles, measured from baselines determined in accordance with the Convention). A coastal state is sovereign over its territorial sea. *Id.* art. 2; *see also* MALCOLM N. SHAW, INTERNATIONAL LAW 391 (4th ed. 1997) (observing the "gradual shift" in the law of the sea towards enlargement of the territorial sea from 3 to 12 miles).

thermore, opponents of the preserve indicate that only their proposal will expand the State's maritime jurisdiction under Article 121(3) of the Third United Nations Convention on the Law of Sea ("UNCLOS III" or "Third UNCLOS"). Article 121(3) states that "[r]ocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf."[2] Adversaries of the marine preserve conclude that unless the island is developed economically in a manner akin to their proposal, it will be treated as a "rock" under Article 121(3).[3] As a result, the State's jurisdiction would be extended only for the twelve-mile territorial sea around the rock, rather than the potential additional two hundred-mile exclusive economic zone ("EEZ")[4] and continental shelf[5] generated by islands.

In response, advocates of the marine preserve present evidence that the proposed refinery will cause significant environmental damage. Moreover, the advocates contend that the preserve in fact represents an economic use and creates, for the small island, an "economic life of its own" within the meaning of Article 121(3). Quantitative studies show that the optimal use of the island is to leave it undeveloped. Thus, supporters of the preserve argue that the preserve will yield economic benefits, not only through increased sustainable yield in fishing, but also in the preservation of biological diversity, which itself will lead both to new pharmaceuticals and to consumer products such as cosmetics.

This hypothetical policy debate raises a fundamental and previ-

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2. Law of the Sea Convention, *supra* note 1, art. 121, para. 3.

3. In fact, if a "rock" is only a low-tide elevation, it will not even have a territorial sea. To generate a territorial sea, an island must be formed naturally and must emerge from the sea at high tide. *See* DEREK W. BOWETT, THE LEGAL REGIME OF ISLANDS IN INTERNATIONAL LAW 1 (1979) (defining "island" for the purpose of generating a territorial sea). In other words, a high-tide elevation may be a "rock" for purposes of exclusive economic zone ("EEZ") and continental shelf rights, but an island for purposes of the territorial sea.

4. *See* Law of the Sea Convention, *supra* note 1, arts. 55, 57 (stating that the EEZ is an area outside the territorial sea, and extends up to 200 miles from the baseline of the territorial sea).

5. UNCLOS III defines the limit of the continental shelf as the "outer edge of the continental margin, ... or a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured," whichever is further seaward. *See* Law of the Sea Convention, *supra* note 1, art. 76, para. 1.

ously unexplored question about Article 121(3) of UNCLOS III—whether measures primarily intended to protect the marine environment by establishing marine preserves around rocks but which also have positive economic effects satisfy the "economic life of their own" requirement.[6] The manner in which Article 121(3) ultimately is construed will affect thousands of small islands with significant consequences for the maritime boundaries of coastal and island States. Furthermore, it will reveal much about UNCLOS III's ability to protect the marine environment and the international legal status of marine environmental protection.

This Article argues that marine preserves can have an "economic life of their own" within the meaning of Article 121(3) when a State uses them both to protect the marine environment and to gain a net economic benefit. Part I of this Article discusses the status of islands under international law prior to and following the Third Law of the Sea Convention. In addition, Part I demonstrates why, under prevailing canons of treaty interpretation as well as from the standpoint of public policy, Article 121(3) should be interpreted, where possible, to foster economic development that protects the environment in a sustainable manner.

Part II highlights the important place of marine environmental protection in the Third UNCLOS. Furthermore, Part II describes the development of international environmental law and the concept of sustainable development since the signing of UNCLOS III. Next, Part III provides an overview of methods applied to value the environment and their normative implications. The discussion then focuses on studies generally demonstrating the economic value of the environment, particularly of the marine environment. Finally, Part IV discusses the practical use of the proposed interpretation of Article 121(3) and how potential problems in its application may be overcome.

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6. Article 121(3)'s other prong, which sets forth the "human habitation" requirement, provides an alternative and independent basis of attaining the legal status of an island, and is therefore not addressed in this Article. *See* Law of the Sea Convention, *supra* note 1, art. 121(3).

I. ARTICLE 121(3) AND THE TREATMENT OF ISLANDS UNDER INTERNATIONAL LAW

A. ISLANDS UNDER INTERNATIONAL LAW BEFORE THE THIRD UNCLOS

Prior to the development of the territorial sea doctrine and sovereign rights over the continental shelf, there was no perceived need to define the geographical concept of an "island" in international legal terms.[7] By the late nineteenth century, however, disputes over fishery jurisdiction triggered a debate over whether the exclusive rights of a State within a three-mile zone of its shores also should apply to its "dependent islands and banks."[8] State practice of maritime nations in the nineteenth century increasingly demonstrated "the approximation in status of the territorial waters of even small and uninhabited insular features to those of the mainland and continental features."[9]

This practice continued through most of the twentieth century. The First United Nations Convention on the Law of the Sea at Geneva in 1958 ("First UNCLOS")[10] recognized the prevailing assumption that in creating maritime zones there was no substantive difference between continental and all other types of insular formations. Aside from the unresolved issue involving the impact of is-

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7. *See* CLIVE RALPH SYMMONS, THE MARITIME ZONES OF ISLANDS IN INTERNATIONAL LAW 1 (1979) (explaining that during the nineteenth century, the concept of "territorial seas" still was developing, and the concept of sovereign rights on a continental shelf had not yet developed).

8. *See id.* at 2-3 (describing how fishery jurisdiction disputes arose off the east coast of America and in the West Indies during the latter half of the nineteenth century).

9. *Id.* at 3.

10. The first United Nations Convention on the Law of the Sea convened in 1958 in Geneva, Switzerland. This Convention resulted in the following four conventions: (i) the Convention on the Territorial Sea and the Contiguous Zone; (ii) the Convention on the High Seas; (iii) the Convention on Fishing and Conservation of the Living Resources of the High Seas; and (iv) the Convention on the Continental Shelf ("1958 Conventions").

lands on the median line or the equidistance rule[11] in the delimitation of the continental shelves of opposite or adjacent States,[12] the maritime zones of islands—except for Archipelagos—were not thought to present any particular difficulties.[13] Article 10(2) of the 1958 Convention on the Territorial Sea and Contiguous Zone states that "[t]he territorial sea, the contiguous zone, the exclusive economic zone and the continental shelf of an island are determined in accordance with the provisions of this Convention applicable to other land territory."[14] Indeed, at the First UNCLOS in 1958, some States urged that, where vital economic interests of the coastal population are at stake, islands should be treated even more generously than continents with respect to claims to maritime zones.[15]

In short, prior to the Third UNCLOS, international practice was unambiguous in placing islands and the mainlands "on the same footing in attributing to the State sovereign over each single island the surrounding territorial waters and relative continental shelf."[16]

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11. The rule, in its present form, provides in relevant part that:

> Where the coasts of two States are opposite or adjacent to each other, neither of the two States is entitled, failing agreement between them to the contrary, to extend its territorial sea beyond the median line every point of which is equidistant from the nearest points on the baselines from which the breadth of the territorial seas of each of the two States is measured ....

Law of the Sea Convention, *supra* note 1, art. 15.

12. *See generally* SHAW, *supra* note 1, at 436-44 (noting the considerable debate over delimitation of continental shelves as well as the general principle that such disputes be settled by agreement in accordance with equitable principles, as set forth by the International Court of Justice ("ICJ") in the *North Sea Continental Shelf* and *Anglo-French Continental Shelf* cases).

13. *See* SYMMONS, *supra* note 7, at 4 (describing the assumption, borne out by the First UNCLOS at Geneva in 1958, that no substantive difference exists between continental and other types of insular territories in generating maritime zones).

14. Convention on the Territorial Sea and Contiguous Zone, art. 10(2), Apr. 29, 1958, 15 U.S.T. 1606, 516 U.N.T.S. 205 (1958) [hereinafter Convention on the Territorial Sea].

15. *See* SYMMONS, *supra* note 7, at 4 (quoting the comments of Denmark as expressed at the First UNCLOS).

16. Maria Silvana Fusillo, *The Legal Regime of Uninhabited "Rocks" Lacking An Economic Life of Their Own*, *in* IV THE ITAL. Y.B. INT'L L. 47 (1978-79); *see also id.* at 57 (expressing that the only case known of an island's being denied its right to an exclusive jurisdiction area of its own is that of the small unin-

Neither the size nor economic utility of an island was relevant in determining its effect on a State's maritime jurisdiction. Even small and barren rocks met the definition of an island, entitling them to their own territorial sea and continental shelf.[17] UNCLOS III, however, brought both continuity and significant change to the international regime of islands.

B. ARTICLE 121 AND THE STATUS OF ISLANDS AFTER UNCLOS III

1. Origins of Article 121(3)

In two respects, the treatment of islands under Article 121 of the Third UNCLOS is consistent with their treatment under the 1958 Conventions. Article 121(1) repeats verbatim Article 10 of the 1958 Convention on the Territorial Sea, which excludes artificial islands and low-tide elevations from island status and thus prevents them from obtaining a territorial sea of their own.[18] Similarly, Article 121(2) affirms that the maritime zones of islands are to be determined according to the Convention and in a manner similar to that of other land territory.[19]

Article 121(3), however, marks an important break with the previous international regime of islands. This provision provides that "[r]ocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf."[20] Article 121(3)'s distinction between "islands" and "rocks" may be traced to the concern of some States that islets or small un-

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habited islets of Rockall, in the Atlantic Ocean).

17. *See* E.D. Brown, *Rockall and the Limits of National Jurisdiction of the U.K.*, 1 MARINE POL'Y 181, 205 (1978).

18. *See* Convention on the Territorial Sea, *supra* note 14, art. 10(1) (explaining that an island is a naturally formed area of land surrounded by water and is above water at high tide).

19. Law of the Sea Convention, *supra* note 1, art. 121, para. 2 ("Except as provided [in paragraph three governing "rocks"], the territorial sea, the contiguous zone, the exclusive economic zone and the continental shelf of an island are determined in accordance with the provisions of this Convention applicable to other land territory.").

20. *Id.* art. 121, para. 3.

inhabited islands located outside the territorial sea would be used in delimiting ocean space between neighboring States.[21] Islands that receive an EEZ or a continental shelf can extend a State's maritime jurisdiction for up to 200 miles, whereas rocks, which receive only a territorial sea, can extend a State's jurisdiction for only up to twelve miles.[22]

This distinction between islands and rocks begs the following question: what are these "second-class islands?"[23] The 1958 Convention on the Territorial Sea defines an island as "a naturally-formed area of land, surrounded by water, which is above water at high-tide."[24] This definition excludes both artificial islands and rocks that remain dry at low tide, "even if they seat lighthouses or other permanently visible installations."[25] The preparatory works of the Conference suggest that the "rocks" referred to in Article 121(3) should be considered small-sized islands.[26] Proposed guidelines based on size,[27] however, were never adopted, and the text of

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21. *See generally* 3 UNITED NATIONS CONVENTION ON THE LAW OF THE SEA 1982: A COMMENTARY 330 (Satya N. Nandan & Shabtai Rosenne eds., 1995) [hereinafter A COMMENTARY] (detailing the proposals submitted by various states concerning the language to be used by the Convention in defining islands, islets, and other similar geographic features as well as in the delimitation of maritime spaces surrounding these land areas).

22. Article 121(3) appears to have been adapted from the proposal of Romania regarding islets and similar features. *See id.* at 335 (attributing the language of paragraph three to the Romanian proposal). Islands "[also] may be used in drawing the baseline from which other maritime zones are measured." *Id.* at 338.

23. *See* Fusillo, *supra* note 16, at 49 (posing the same question in reference to Article 121(3)'s express rejection of the traditional equation of islands with the mainland in favor of a distinction between islands with the same legal standing as the mainland and "rocks," which are solely entitled to territorial waters).

24. Convention on the Territorial Sea, *supra* note 14, art. 10(1).

25. Fusillo, *supra* note 16, at 50. The distinction between islands and low-tide elevations, however, is only relevant beyond the limits of the territorial sea since a coastal state may utilize such elevations to draw its baselines, likening them to islands. *See id.* (explaining the distinction between islands and semi-submerged rocks).

26. *See* A COMMENTARY, *supra* note 21, at 51 (citing the 1974 Informal Text).

27. *See id.* at 328 (describing the proposal of Malta at the 1973 session of the Sea-Bed Committee). Those who opposed this change argued that basing the legal definition of islands on size, or other criteria such as location or population,

Article 121(3) neither explicitly mentions size nor provides any guidelines to that effect. The only explicit means that Article 121(3) provides for differentiating islands from rocks is the criteria of "human habitation" and/or "economic life of their own." However, these criteria—which may possibly have been meant to limit the "distorting effect" in maritime delimitation between States[28]—were never defined but rather remained ambiguous so as to be inoffensive to all States.[29] How "economic life" ultimately is interpreted will reveal much about the Convention's potential to protect the marine environment and to advance emerging, less orthodox concepts of economic utility rooted in environmental economics.

2. Interpreting Article 121(3)

Article 121(3)'s ambiguity has led to several interpretations by commentators. Some commentators propose that a definition of "rocks" based on size should inform any interpretation of Article 121(3),[30] and essentially avoid discussion of the meaning of "economic life." Others argue that the interpretation of Article 121(3) should be "in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose."[31] According to the latter interpretation, UNCLOS III was prompted by the expansive claims of coastal States in Latin America over their coastal waters, but ultimately coalesced around

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"jeopardiz[ed] the principles of sovereign equality and the integrity of territorial sovereignty." *Id.* at 329 (quoting the representative of Greece in Sub-Committee II).

28. *See id.* at 330 (highlighting the effect on delimitation of maritime spaces brought about by the existence of islands and the status given to them).

29. *See* Jon M. Van Dyke & Robert A. Brooks, *Uninhabited Islands: Their Impact on the Ownership of the Oceans' Resources*, 12 OCEAN DEV. & INT'L L. 265, 282 (1983) (blaming the ambiguity and brevity of the provisions on attempts by the drafting committee to formulate articles that would respect areas of consensus without prejudicing the position of any delegation).

30. *See, e.g.*, R.D. Hodgson, *Islands: Normal and Special Circumstances*, *in* LAW OF THE SEA: THE EMERGING REGIME OF THE OCEANS 137, 150-51 (J. Gamble ed., 1973) (explaining how islands may be classified as rocks less than .001 square mile in area, small in size, and unfit for human habitation).

31. *See, e.g.*, Van Dyke & Brooks, *supra* note 29, at 285-86 (quoting the Vienna Convention on Law of Treaties, art. 31(1), May 23, 1969, 25 I.L.M. 543 (1986)).

a series of compromises.[32] The central goal of UNCLOS III is to "retain a substantial portion of the oceans as the 'common heritage' of humankind."[33] Construed in this light, the test under Article 121(3) becomes a functional one, asking whether an island can support a stable population,[34] extract enough of its owner's resources,[35] or a combination of the two.

Interpreting Article 121(3) in light of the Convention's overall objectives and aims does not, however, inexorably yield to such a conclusion.[36] An exclusive focus on the goal of preserving the ocean as the "common heritage of mankind" obscures the Convention's emphasis on protecting and preserving the marine environment.[37] UNCLOS III is recognized as "the most comprehensive and progressive international environmental law of any modern international agreement."[38] Construing Article 121(3) in light not only of the Convention's environmental objectives but also the principle of

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32. *See id.* at 286 (stating that the compromises do not apply to remote uninhabited islands that are claimed by distant nations). These commentators claim that such compromises do not serve the central purposes of the Treaty to "grant ocean space to barren atolls that have only slight links to some distant nation." *Id.*

33. *Id.* at 288. Whether the final treaty achieved this goal is less certain. *See id.* at 266 (stating while the negotiations for UNCLOS III "began idealistically under the theme that the wealth of the oceans was the 'common heritage' of humankind[,] .... the treaty that has emerged gives the vast majority of these resources to the nearest coastal nations" at the expense of that "common heritage"). *Id.* at 266.

34. *See id.* at 286 (describing the authors' proposal); *see* Fusillo, *supra* note 16, at 53-54 ("Insofar as Art. 121 para 3 of said Convention aims at curtailing States' expansionist claims, it justifies such claims only in the event of there being a coastal community on the island.").

35. *See* Van Dyke & Brooks, *supra* note 29, at 285 (describing the views of Northcutt Ely and Ambassador Prado).

36. *See id.* at 285-88 (providing an alternative interpretation of Article 121(3)).

37. *See id.* at 288 (stating that Article 121 should be interpreted to "grant an exclusive economic zone and a continental shelf only to those islands that can truly sustain 'stable' communities of organized groups of human beings").

38. *See* Jonathan I. Charney, *The Marine Environment and the 1982 United Nations Convention on the Law of the Sea*, 28 INT'L LAW. 879, 882 (1994) (stating that the Convention successfully addresses marine environment issues and is a prototype for environmental agreements in other fields).

maximum effectiveness,[39] implies that "economic life of their own" should include, where possible, policies that advance *both* marine environmental protection and economic development.

Additionally, other canons of interpretation suggest that Article 121(3) should be construed in light of subsequent developments in international law[40] and, arguably, the overall "aims" and "objects" of the Convention itself.[41] Indeed, the Convention itself explicitly dictates reference to other rules of international law when interpreting its provisions. Article 293 of the Convention states that "[a] court or tribunal having jurisdiction under [UNCLOS III] shall apply this Convention and other rules of international law not incompatible with this Convention,"[42] while the preamble provides that

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39. Under the "principle of maximum effectiveness," the text should be construed to have its fullest value and effect plausibly consistent with its wording. *See* LOUIS HENKIN ET AL., INTERNATIONAL LAW: CASES AND MATERIALS 480 (3d ed. 1993). It follows that if a text may be interpreted in two ways, both consistent with its wording, the interpretation that fulfills both, and not merely one, of the text's purposes should be adopted.

40. *See* Vienna Convention on the Law of Treaties between States and International Organizations or Between International Organizations, art. 31(3)(a)-(b), Mar. 21, 1985, 25 I.L.M. 543 (1986) ("There shall be taken into account, together with the context . . . any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation . . . [and] any relevant rules of international law applicable in relations between the parties."); HENKIN ET AL., *supra* note 39, at 477 (describing the use of "subsequent agreements, subsequent practice, and relevant rules of international law"); *see also id.* at 479 (noting that United States courts have often relied on subsequent conduct as evidence of intent where provisions were ambiguous).

41. *See generally* G.G. Fitzmaurice, *The Law and Procedure of the International Court of Justice: Treaty Interpretation and Certain Other Points*, BRIT. Y.B. INT'L L. 1-62 (1951) (describing the teleological approach to interpreting treaties). This approach examines "the general purpose, and construe[s] the particular clauses in light of it," focusing on "the general tenor and atmosphere of the treaty, the circumstances in which it was made, *the place it has come to have in international law*." *See id.* (emphasis added); *see also* HENKIN ET AL., *supra* note 39, at 478 (arguing that it is not necessary to resort to extrinsic sources, such as preparatory works, where the text is sufficiently clear). Strict textual approaches are not binding where, as in the case of Article 121(3), the text is ambiguous. *See id.* Furthermore, the teleological, or "aims and objects" approach, is most applicable in the sphere of general multilateral conventions of social, humanitarian, and law-making type, such as the Third UNCLOS. *See* Fitzmaurice, *supra*, at 2.

42. *See* Law of the Sea Convention, *supra* note 1, art. 293 (stating the appli-

"matters not regulated by th[e] Convention continue to be governed by the rules and principles of general international law."[43] Furthermore, the Convention requires State cooperation on a global and, where appropriate, regional basis, "to formulate and elaborate international rules, standards, and practices to protect and preserve the marine environment."[44] The Convention thus incorporates by reference the more detailed international rules and standards established in other global and regional agreements.[45] Since UNCLOS III was signed and opened for ratification in 1982, numerous other treaties that seek to protect and promote the environment have been signed.[46] To the extent they are consistent with UNCLOS III, these treaties constitute an "integral and necessary part of UNCLOS III's environmental umbrella,"[47] and should influence any interpretation of it.

Finally, important policy objectives bear on the interpretation of Article 121(3).[48] UNCLOS III's attempt to protect the marine environment is undercut when any State is encouraged to select a particular development program that brings economic gain at the expense of the environment in instances where that State could have chosen another measure that creates economic gain without harming the environment. Those developing countries facing internal

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cable law); *see also id.* art. 311, para. 2 ("This Convention shall not alter the rights and obligations of States Parties which arise from other agreements compatible with this Convention and which do not affect the enjoyment by other States Parties of their rights or the performance of their obligations under this Convention").

43. *See id.* preamble.

44. *See id.* art. 197 (stating that cooperation should be on a global and regional basis).

45. *See* Lee A. Kimball, Symposium, *The Law of the Sea Convention and Marine Environmental Protection*, 7 GEO. INT'L ENVTL. L. REV. 745, 747 (1995) (explaining that the standards include "doing environmental impact assessments and monitoring and notification of marine pollution emergencies").

46. *See infra* Part II.B.1.

47. Lakshman D. Guruswamy, *Should UNCLOS or GATT/WTO Decide Trade and Environment Disputes?*, 7 MINN. J. GLOBAL TRADE 287, 292-93 (1998) (finding that Article 197 is an example of how UNCLOS III is intertwining with other existing treaties).

48. *See* Law of the Sea Convention, *supra* note 1, art. 121 (detailing the regime of islands).

pressure to sacrifice environmental protection for development are further hindered by an interpretation of Article 121(3) that narrowly defines "economic life of their own" in terms of short-term profits.[49] Therefore, general canons of construction, specific provisions of UNCLOS III, and overall policy objectives all dictate that subsequent agreements, to the extent that they do not conflict with the Convention, should inform an interpretation of UNCLOS III's more ambiguous provisions, such as Article 121(3).

II. UNCLOS III AND THE PROTECTION OF THE MARINE ENVIRONMENT

The Law of the Sea Convention represents an important development in the environmental law of the sea.[50] Negotiations for the Convention began at the Third United Nations Conference on the Law of the Sea in 1972, the same year in which the Stockholm Conference on the Human Environment was held.[51] As the first United Nations conference to address environmental issues,[52] the Stockholm Conference considered many global environment problems. Although the Stockholm Conference ultimately opted for a non-binding declaration of principles, the Stockholm Declaration, particularly Principle 121's establishment of State responsibility for transboundary international harm, is generally regarded as customary international law.[53] The Conference's results were immediately

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49. *See id.* art. 121(3).

50. *See* Moira L. McConnell & Edgar Gold, *The Modern Law of the Sea: Framework for the Protection and Preservation of the Marine Environment*, 23 CASE W. RES. J. INT'L L. 83, 99 (1991) (stating that the "history of the modern law of the sea also reflects, to a great extent, the development of the environmental law of the sea"); *see also* Rachel Zajacek, *The Development of Measures to Protect the Marine Environment from Land-based Pollution: The Effectiveness of the Great Barrier Reef Marine Park Authority in Managing the Effects of Tourism on the Marine Environment*, 3 JCULR 64, 65 (1996) (stressing that that the health of the sea is critical to the health of the earth).

51. *See* Report of the United Nations Conference on the Human Environment, U.N. Doc. A/Conf 48/PC 13, *reprinted in* 11 I.L.M. 1416 (1971) [hereinafter Stockholm Declaration] (outlining the United Nations Conference on the Human Environment held in Stockholm).

52. *See* Zajacek, *supra* note 50, at 71.

53. *See* Marc Pallemaerts, *International Environmental Law from Stockholm to Rio: Back to the Future?*, *in* GREENING INT'L L. 1-19, at 2-5 (Philippe Sands

placed before the Third United Nations Conference on the Law of the Sea when it met in 1971, assuring the Conference's focus on environmental issues.[54]

In the end, UNCLOS III went beyond the Stockholm Conference by providing a comprehensive framework for protecting and preserving the marine environment. Its environmental focus, evident in numerous provisions and in the treaty's overall structure, supports an interpretation of Article 121(3) that simultaneously protects the environment and brings an economic benefit to the nations or people involved.

A. THE ENVIRONMENTAL PURPOSE OF THE THIRD UNCLOS

1. Requiring States to Protect the Marine Environment

Among the primary objectives of the 1982 Convention is the "study, protection and preservation of the marine environment."[55] The Convention contains the "highest-level global directives for the protection and preservation of the marine environment presently available."[56] In addition, it provides "the first comprehensive state-

ed., 1993) (describing the legal significance of the Stockholm Declaration).

54. *See* Charney, *supra* note 38, at 883 (finding that the marine environment was already the subject of particular concern, as expressed by the establishment of several conventions in the early 1970s). These conventions included the Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Feb. 2, 1971, 11 I.L.M. 969 (1972) [hereinafter Ramsar Convention] and the United Nations Educational, Scientific, and Cultural Organization ("UNESCO") Convention for Protection of the World Cultural and National Heritage, Nov. 23, 1972, 27 U.S.T. 37 [hereinafter World Heritage Convention]. The United Nations Environmental Program ("UNEP") established its Regional Seas Program to address problems on a regional basis through the creation of Action Plans with particular emphasis on the protection of marine living resources from pollution and overexploitation. *See* GRAEME KELLEHER & RICHARD KENCHINGTON, GUIDELINES FOR ESTABLISHING MARINE PROTECTED AREAS (1991) (describing ways to help nations and states establish national representative systems of marine protected areas).

55. Law of the Sea Convention, *supra* note 1, pmbl.

56. *See* McConnell & Gold, *supra* note 50, at 83 (explaining that these protections are intrinsically part of international environmental law); *see also* Martin H. Belsky, *The Ecosystem Model Mandate for a Comprehensive United States Ocean Policy and Law of the Sea*, 26 SAN DIEGO L. REV. 417, 461 (1989) (noting that UNCLOS III provides "[p]erhaps . . . the strongest support for a new in-

ment of international law on the issue . . . a movement toward regulation based upon a more holistic conception of the ocean as a resource that is exhaustible and finite, and ocean usage as a resource management question."[57] The international legal obligation, set forth largely in Part XII of the Convention, has become part of customary international law.[58]

Furthermore, the Third UNCLOS creates a binding system of obligations and dispute resolutions, which confers on a forum international jurisdiction, authority, and implementing powers that exceed those of other international environmental law forums and rival those conferred on the World Trade Organization by the General Agreement on Tariff and Trade in the area of trade and environmental disputes.[59] The International Court of Justice ("ICJ") also may apply UNCLOS III's rules to cases involving a nonsignatory on the ground that the Convention encapsulates customary international law, assuming of course that both States have consented to the ICJ's jurisdiction.[60]

The Articles of UNCLOS III dealing with the marine environment are primarily contained in Part XII, which includes Articles 192 through 237 and which is divided into eleven sections.[61] In ad-

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ternational law mandate and of comprehensive ocean ecosystem management").

57. *See* McConnell & Gold, *supra* note 50, at 84-85 (explaining that one State's use or abuse of resources negatively affects another State's use of resources).

58. *See id.* at 85; Belsky, *supra* note 56, at 463-64 (provisions of UNCLOS III calling for ecosystem management represent new "state practice" and thus are binding law); McConnell & Gold, *supra* note 50, at 89 (arguing that the Convention's use of the terms "duty" and "obligation" underscores that States acting in violation of articles 192 and 193 will be in breach of international law); *see also* Case Concerning the Delimitation of the Maritime Boundary of the Gulf of Maine (Canada v. United States), 1984 I.C.J. 246 (Oct. 12) (commenting that the Convention's provisions relating to the EEZ and continental shelf "were adopted without any objections," and thus "may be regarded as consonant at present with general international law").

59. *See* Guruswamy, *supra* note 47, at 288-89 (explaining the powers of the United Nations Convention on the laws of the sea).

60. *See id.* (stating that the ICJ might be in a "position to adjudicate trade and environmental disputes").

61. Law of the Sea Convention, *supra* note 1, pt. XII, sec. 1 (general provisions); *id.* sec. 2 (global and regional cooperation); *id.* sec. 3 (technical assistance and preferential treatment for developing States); *id.* sec. 4 (monitoring and envi-

dition to establishing a wide range of obligations, Part XII provides a comprehensive system for enforcing those obligations.[62] Individual States may exceed the minimum standards set forth in the Convention so long as such additional standards would not unreasonably interfere with other legitimate maritime interests.[63]

Article 192 sets forth the central obligation of States with respect to the marine environment: "[s]tates have the obligation to protect and preserve the marine environment."[64] While Article 193 acknowledges the "sovereign right [of States] to exploit their natural resources pursuant to their environmental policies," it subjects this right to States' "duty to protect and preserve the marine environment."[65] Articles 192 and 193 are not only binding on the States party to the 1982 Convention[66] but are also generally considered statements of customary international law, and, therefore, binding on all States.[67]

The scope of a State's duty to the marine environment turns in part on the definition of marine pollution provided in the Convention's first Article:

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ronmental assessment); *id.* sec. 5 (adoption of necessary rules and regulations by national states to address pollution from various sources); *id.* sec. 6 (enforcement); *id.* sec. 7 (safeguards for States); *id.* sec. 8 (ice-covered areas); *id.* sec. 9 (responsibility and liability); *id.* sec. 10 (sovereign immunity); *id.* sec. 11 (obligations under other international agreements).

62. Enforcement is detailed in Section Six, which includes articles 213 to 222. These articles are the "strongest of any multilateral environmental treaty to date." Charney, *supra* note 38, at 737. Strict enforcement measures are, nonetheless, balanced against the interests of States in freedom of navigation. *Compare* Law of the Sea Convention, *supra* note 1, art. 218 (authorizing enforcement action by a coastal State with a foreign vessel in its port against that vessel provided that the foreign vessel has been accused of illegally polluting the high seas or waters within the jurisdiction of another coastal state), *with id.* art. 220(1) (varying the unilateral enforcement power of a coastal State based upon the degree of actual or potential environmental damage and the distance from the shore). *See id.* at pt. XII, sec. 6 (detailing enforcement).

63. *See* Charney, *supra* note 38, at 889.

64. Law of the Sea Convention, *supra* note 1, art. 193.

65. *Id.* art. 193.

66. *See id.* art. 235(1) ("States are responsible for the fulfillment of their international obligations concerning the protection and preservation of the marine environment. They shall be liable in accordance with international law").

67. *See supra* note 58 and accompanying text.

> [T]he introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to the living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate use of the sea, impairment of quality for use of sea water and reduction of amenities.[68]

Article 194 reinforces this broad definition of marine pollution:

> States shall take, individually or jointly as appropriate, all measures consistent with this Convention that are necessary to prevent, reduce, and control pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal and in accordance with their capabilities, and they shall endeavor to harmonize their policies in this connection.[69]

Such sweeping language also is used in Article 126, which extends States' obligations to pollution arising from the use of new technologies.[70] In addition to focusing on the source of pollution, the Convention examines the effects of pollution, emphasizing the need to "protect and preserve rare or fragile ecosystems, as well as the habitat of depleted, threatened or endangered species and other forms of marine life."[71]

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68. Law of the Sea Convention, *supra* note 1, art. 1(4) (emphasis added). The Convention's first Article also positively defines "dumping" in the following two provisions: *id.* art. 1(5)(a)(i) ("Any deliberate disposal of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea."); and *id.* art. 1(5)(a)(ii) ("any deliberate disposal of vessels, aircraft, platforms or other man-made structures at sea."). The Convention's definition of marine pollution, which includes harm to water quality and fisheries, broadened the previous definition provided in the 1974 Paris Convention. *See* Zajacek, *supra* note 50, at 74.

69. Law of the Sea Convention, *supra* note 1, art. 194(1). Article 194 also addresses the risk of externalities, requiring States to "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. . . ." *Id.* art. 194(2).

70. *See id.* art. 196 ("States shall take all measures necessary to prevent, reduce and control pollution of the marine environment resulting from the use of technologies under their jurisdiction or control . . . ").

71. *Id.* art. 194(5). The International Maritime Organization ("IMO") has designated certain areas as "particularly sensitive areas" that "need special protection . . . because of their significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable by maritime activi-

The Convention places particular attention on the needs of developing States. It requires that States, directly or through competent international organizations, assist developing States to protect and preserve the marine environment by promoting programs of scientific, educational, technical, and other assistance,[72] providing appropriate assistance to minimize the damage caused by major environmental incidents,[73] and helping prepare environmental assessments.[74] Furthermore, the Convention provides that developing States be granted preference by international organizations in "the allocation of appropriate funds and technical assistance"[75] and "the utilization of their specialized services."[76]

2. *Balancing Marine Environmental Protection and Economic Development*

Ironically, other parts of the Convention in which the primary focus is not the protection of the marine environment further underscore the link between environmental protection and economic development. For example, Part V, which establishes the regime for the EEZ, contains the articles that apply directly to the exploitation of the living resources of the seas. The EEZ is a 200-mile area wherein the coastal State has sovereign rights to explore and exploit, as well as to conserve and manage, marine resources.[77] While the Convention recognizes a coastal State's authority over the exploitation of living resources in its EEZ,[78] it limits these EEZ rights, requiring that State to "act in a manner compatible with the provi-

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ties." Petter Ottesen et al., *Shipping Threats and the Protection of the Great Barrier Reef Marine Park—The Role of the Particularly Sensitive Sea Area Concept*, 9 INT'L J. MARINE & COASTAL L. 507, 519 (1994) (describing the protection provided to Australia's Great Barrier Reef).

72. Law of the Sea Convention, *supra* note 1, art. 202(a).

73. *Id.* art. 202(b).

74. *Id.* art. 202(c).

75. *Id.* art. 203(a).

76. *Id.* art. 203(b).

77. *Id.* art. 56(1)(a). The provisions governing the EEZ are contained in Articles 55 through 75. The EEZ, including exclusive fishing rights within the zone, is firmly established as a rule of customary international law. *See* Case Concerning the Continental Shelf (Libya v. Malta), 1985 I.C.J. 13, 33 (June 3).

78. Law of the Sea Convention, *supra* note 1, art. 56(1).

sions of this Convention"[79] (i.e., to protect and to preserve the marine environment).

While a coastal State "shall determine the allowable catch of the living resources in its exclusive economic zone,"[80] that State "shall ensure through proper conservation and management measures that the maintenance of the living resources in the [EEZ] is not endangered by over-exploitation."[81] The Convention also requires that coastal States design measures that "maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield."[82] In addition, the Convention directs coastal States to "promote the objective of optimum utilization of the living resources in the EEZ without prejudice" to the above-mentioned requirements.[83]

The freedom of all States to fish on the high seas outside the 200-nautical mile limit is qualified not only by the obligation to respect the interests of other States but also by the duty of conservation. States must determine the maximum allowable catch by calculating the "maximum sustainable yield"[84]—a judgment to be

79. Law of the Sea Convention, *supra* note 1, art. 56(2). However, the Convention's balance between a coastal State's right to protect its marine environment and a maritime State's right to freedom of navigation still weighs more heavily in favor of the latter in the EEZ, as opposed to in the territorial sea. *See* Daniel Bodansky, *Protecting the Marine Environment from Vessel-Source Pollution: UNCLOS III and Beyond*, 18 ECOLOGY L.Q. 719, 767 (1991) (describing how UNCLOS III's dispute resolution mechanism would help resolve disputes between coastal and maritime States over vessel-source pollution).

80. Law of the Sea Convention, *supra* note 1, art. 61(1).

81. *Id.* art. 61(2).

82. *Id.* art. 61(3). The Convention further states that the maximum sustainable yield is qualified by "relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing States. . . ." *Id.* Similarly, restrictions govern a State's actions on the high seas. *See id.* art. 119(1)(a) (requiring that States determine the maximum allowable catch by calculating the maximum sustainable yield); *see also id.* art. 119(1)(b) (requiring that States "take into consideration the effects on species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened").

83. Law of the Sea Convention, *supra* note 1, art. 62(1).

84. *Id.* art. 119(1)(a).

based "upon the best available scientific evidence taking into consideration a broad range of facts that look to the entire ecosystem, as well as to relevant economic and management considerations."[85] Here, the Convention places particular attention on the damaging effects of such fishing on the reproductive levels of species associated with, or dependent upon, harvested species.[86]

These provisions, which restrict the actions of States both within their respective jurisdictions and on the high seas, reflect UNCLOS III's attempt to balance the protection of the marine environment and the economic interests of States.[87] The Convention not only bolsters the preexisting principle of general international law that States refrain from actions that cause damage to the environment of the world's common spaces[88] but also extends this principle to the EEZ.

There is, however, an alternative reading of the Convention, one which is suggested by its text and by subsequent developments in international law. This interpretation rejects that environmental protection and economic development are polar opposites or competing values that necessarily require balancing, but rather views them as complementary, mutually reinforcing goals.[89] Indeed, envi-

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85. Charney, *supra* note 38, at 898. The Convention requires, however, that "conservation measures and their implementation do not discriminate in form or in fact against the fishermen of any State." Law of the Sea Convention, *supra* note 1, art. 119(3).

86. *See* Law of the Sea Convention, *supra* note 1, art. 119(1)(b) (recognizing the need to maintain or restore such species to avoid threat against reproduction levels).

87. The Preamble reflects this balance of interests, envisioning "a legal order for the seas and oceans which will facilitate international communication, and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment." *Id.* pmbl.

88. *See* Charney, *supra* note 38, at 898 (citing Principle 21 of the Stockholm Declaration for the proposition that "[s]tates have . . . the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction'").

89. *See* John C. Dernbach, *Sustainable Development as a Framework for National Governance*, 49 CASE W. RES. L. REV. 1, 53 (1998) (suggesting that environmental resources "be incorporated into economic values and allocated efficiently").

ronmental protection is increasingly discussed in terms of sustainable development, which may be defined as the maximization of "the net benefits of economic development, subject to maintaining the services and quality of natural resources over time."[90] While sustainable development implicitly rejects putting a country's short-term economic gain over the preservation of its natural resources, it also recognizes that these resources must be given an economic value.[91] Such economic value may be quantified by the techniques of environmental economics.[92]

UNCLOS III supports the application of the principle of sustainable development to the marine environment. For example, UNCLOS III enables States to apply conservation principles to augment the availability and return from both renewable and nonrenewable marine resources through the creation of EEZs.[93] Similarly, the Convention incorporates the principles of sustainable development and the expanding field of environmental economics by requiring that States conform their conduct to achieve the "maxi-

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90. *See* DAVID W. PEARCE & R. KERRY TURNER, ECONOMICS OF NATURAL RESOURCES AND THE ENVIRONMENT 24 (1990); *see also* Richard Bilder, *Introduction*, *in* THE MARINE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT: LAW, POLICY, AND SCIENCE 17 (Alastair Couper & Edgar Gold eds., 1993) [hereinafter MARINE ENVIRONMENT] (defining sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs") (quoting WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT: OUR COMMON FUTURE 43 (1987)). Sustainable development has come to dominate the environmental-economic debate. *See* STEPHAN SCHMIDHEINY, CHANGING COURSE: A GLOBAL BUSINESS PERSPECTIVE ON DEVELOPMENT AND THE ENVIRONMENT 5 (1992).

91. *See* Dernbach, *supra* note 89, at 53 (suggesting that environmental protection measures that also have economic benefit should implemented because "contribution of environmental economics to environmental protection is indisputable").

92. *See id.* at 53 (finding that environmental economics has been utilized to analyze the "economic, environmental and social costs and benefits of environmental and health" legislation, and of proposed projects such as hydroelectric dams). *See generally* WILLIAM J. BAUMOL & WALLACE E. OATES, THE THEORY OF ENVIRONMENTAL POLICY (1988) (discussing the growing field of environmental law).

93. In practice, however, many, if not most, "marine resource exploitation activities are undertaken without any real guarantee of sustainability." *See* Arthur J. Hanson, *Sustainable Development and the Oceans*, *in* THE ROLE OF OCEANS IN THE TWENTY-FIRST CENTURY 649 (Seoung-Young Hong et al. eds. 1993).

mum sustainable yield"[94] and the "optimum utilization" of marine resources.[95] These principles counsel reading "economic of life of their own" so as to encourage those environmental protection measures that also have a demonstrable economic benefit. Subsequent developments in international law reinforce why Article 121(3), where possible, should be interpreted to support a marriage between marine environmental protection and economic development, rather than to treat the two as wholly irreconcilable goals.[96]

B. SUBSEQUENT DEVELOPMENTS IN INTERNATIONAL ENVIRONMENTAL LAW

1. The Growth of International Environmental Law of the Sea

Subsequent agreements have both reaffirmed and expanded upon UNCLOS III's regime for the marine environment.[97] In June 1992, on the twentieth anniversary of the Stockholm Convention,[98] 170 countries met in Rio de Janeiro for the United Nations Conference on Environment and Development ("Rio Conference").[99] The Rio Conference, whose purpose was to shift the environment to the center of the development process and economic policymaking de-

94. *See supra* note 82 and accompanying text.

95. *See supra* note 83 and accompanying text.

96. *Cf.* Alicia Barcena, *Some Reflections on a New Approach to Ocean and Coastal Management*, *in* MARINE ENVIRONMENT, *supra* note 90, at 29 ("The maintenance and proper valuation of marine and coastal environmental quality and ecological integrity is a prerequisite for ensuring the provision of environmental benefits, the sustainable use of renewable resources, and the provision of the economic basis for a long-term and sustainable socio-economic development.").

97. At the time of the Stockholm Convention in 1972, there were relatively few international agreements concerning the environment. Since 1972, almost every country has adopted at least one piece of environmental legislation, and there are more than 870 legal instruments that contain at least some provisions focusing on the environment. *See* Edith Brown Weiss, *Introductory Note* to UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT, 31 I.L.M. 814 (1992).

98. *See supra* notes 51-54 and accompanying text.

99. *See* Weiss, *supra* note 97, at 814.

cisions,[100] resulted in a series of far-reaching, agenda-setting documents: Agenda 21, a complex 800-page document outlining actions that must be taken in various sectors;[101] the Rio Declaration on Environment and Development;[102] the Framework Convention on Climate Change;[103] the Convention on Biological Diversity;[104] and a Statement of Principles on Forests.[105]

These agreements all contain provisions that seek to protect the marine environment. Chapter 17 of Agenda 21, which is dedicated to marine resources, acknowledges that UNCLOS III lays the foundation for the environmental law of the sea.[106] Furthermore, Agenda 21 of the Rio Convention calls for the convening of a United Nations intergovernmental conference to promote the implementation of UNCLOS III's provisions on straddling fish stocks and highly migratory fish stocks.[107] The resulting Agreement on Straddling

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100. *See* Alicia Barcena, *Some Reflections on a New Approach to Ocean and Coastal Management*, *in* MARINE ENVIRONMENT, *supra* note 90, at 21 (stating that focusing on development does not detract from environmental issues because environmental protection is central to the development process).

101. *See* Agenda 21, United Nations Conference on Environment and Development, U.N. Doc. A/CONF. 151/26 (1992), *reprinted in* THE EARTH SUMMIT: THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT 125-508 (Stanley P. Johnson ed., 1993).

102. *See* Rio Declaration on Environment and Development, 31 I.L.M. 874 (1992) [hereinafter Rio Declaration]. While such international declarations are not binding on States, they nonetheless reflect a United Nations practice of formalizing significant principles and manifesting a commitment to creating basic rules of international environmental law. *See* P.W. BIRNIE & A.E. BOYLE, BASIC DOCUMENTS ON INTERNATIONAL LAW AND THE ENVIRONMENT 1 (1995).

103. *See generally* Framework Convention on Climate Change, May 9, 1992, 31 I.L.M. 849 [hereinafter Climate Change Convention].

104. *See generally* Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 818.

105. *See* Statement of Principles for a Global Consensus on the Management, Conservation, and Sustainable Development of All Types of Forests, June 13, 1992, 31 I.L.M. 881 [hereinafter Statement of Principles on Forests].

106. *See* AGENDA 21: THE EARTH SUMMIT STRATEGY TO SAVE OUR PLANET 156 (Daniel Sitarz ed., 1993) [hereinafter AGENDA 21] (asserting that the central focus of UNCLOS III is preserving the vital biological diversity and ecological integrity of marine ecosystems by setting forth the rights and obligations of nations regarding the conservation and utilization of resources).

107. *See I.L.M. Background/Content Summary* to UNITED NATIONS

Fish Stocks and Highly Migratory Fish Stocks contains numerous provisions dedicated to protecting the marine environment.[108]

Likewise, the Biological Diversity and Climate Change Conventions seek to preserve the marine environment.[109] The Convention on Biological Diversity attempts to "place marine biodiversity issues, especially for rich ecosystems such as coral reefs, on the same footing as more widely understood terrestrial problems."[110] The Climate Change Convention includes an expanded understanding of the critical role that the oceans play in creating and mediating climate effects.[111] In addition, the 1985 Montreal Guidelines[112] and the 1995 Washington Declaration,[113] which was adopted pursuant to

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CONFERENCE ON STRADDLING FISH STOCKS AND HIGHLY MIGRATORY FISH STOCKS: AGREEMENT FOR THE IMPLEMENTATION OF THE PROVISIONS OF THE UNITED NATIONS CONVENTION OF THE LAW OF THE SEA of December 10, 1982, Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, 34 I.L.M. 1542 (1995) [hereinafter AGREEMENT ON STRADDLING FISH STOCKS].

108. *See, e.g., id.* pmbl., 34 I.L.M. at 1548 (seeking to "avoid adverse impacts on the marine environment, preserve biodiversity, maintain the integrity of marine ecosystems and minimize the risk of long-term or irreversible effects of fishing operations").

109. In certain respects, the Third UNCLOS anticipated the Biological Diversity and Climate Change conventions by recognizing the limitations of relying on minimum standards for land-based sources. *See* Kimball, *supra* note 45, at 748.

110. Hanson, *supra* note 93, at 637. The Convention explicitly includes within the definition of biological diversity the "marine and other aquatic ecosystems and the ecological complexes of which they are part." Convention on Biological Diversity, *supra* note 104, art. 2, 31 I.L.M. at 823. The Convention also states that "[c]ontracting Parties shall implement th[e] Convention with respect to the marine environment consistently with the rights and obligations of States under the law of the sea." *Id.* art. 22, para. 2, 31 I.L.M. at 832.

111. *See* Hanson, *supra* note 93, at 637; *see also* Climate Change Convention, *supra* note 103, resolution, 31 I.L.M. at 851 (noting that the parties to the Convention stated they were "[a]ware of the role and importance in terrestrial and marine ecosystems of sinks and reservoirs of greenhouse gases").

112. *See* Montreal Guidelines for the Protection of the Marine Environment Against Pollution from Land-Based Sources, May 24, 1985, UNEP/GC. 13/9/Add.3, *reprinted in* ENVIRONMENTAL LAW AND POLICY 77 (1985) [hereinafter Montreal Guidelines].

113. *See* Washington Declaration on Protection of the Marine Environment from Land-Based Activities, adopted Nov. 1, 1995 in Washington, D.C., UNEP (OCA)/LBA/IG.2/7 (last modified Oct. 13, 1996) [hereinafter Washington Declaration].

Agenda 21 of the Rio Conference,[114] built on UNCLOS III by further articulating standards to combat marine pollution from land-based sources.[115]

The Third UNCLOS also initiated efforts of international and nongovernmental organizations to protect and preserve the marine environment. In 1980, the World Wildlife Federation ("WWF"), the United Nations Environmental Program ("UNEP"), and the International Union for the Conservation of Nature and National Resources ("IUNC") (now the World Conservation Union) published the World Conservation Strategy, which emphasized the marine environment's importance in providing for conservation and sustainable development.[116] In 1983, UNESCO organized the First World Biosphere Reserve Congress, where nations recognized the link between the concept of the biosphere reserve and the marine environment.[117] Finally, the Third Law of the Sea Convention provides the legal framework for the development of Marine and Coastal Protected Areas ("MACPAs"), also known as Marine Protected Areas ("MPAs").[118] MACPAs are areas of the coastal zone or open ocean that are made the target of management for the broad purpose of conservation and sustainable use.[119] These post-UNCLOS agreements and trends underscore why, as some commentators have remarked, the "history of the modern law of the sea also reflects, to a great extent, the development of the environ-

114. *See* Zajacek, *supra* note 50, at 78.

115. The 1974 conference in Paris on Marine Pollution from Land-based Sources was the first convention to address specifically land-based marine pollution. *See id.* at 72. The Third UNCLOS established specific obligations with respect to land-based sources. *See* Law of the Sea Convention, *supra* note 1, art. 207 (requiring States to adopt laws and regulations to "prevent, reduce and control pollution of the marine environment from land-based sources"). *See generally* Zajacek, *supra* note 50, at 67-70 (discussing land-based pollution).

116. *See* KELLEHER & KENCHINGTON, *supra* note 54, at 4.

117. *See id.*

118. *See id.* at 3.

119. *See* W.M. Eichbaum et al., *The Role of Marine and Coastal Protected Areas in the Conservation and Sustainable Use of Biological Diversity*, 9 OCEANOGRAPHY 60, 62 (1996); *see also infra* notes 208-211 and accompanying text (discussing MACPAs).

mental law of the sea."[120]

2. The Role of Sustainable Development in International Law

The numerous international agreements that embrace sustainable development underscore that principle's increasing importance and relevance to Article 121(3). Various parts of the Rio Declaration on Environment and Development stress sustainable development.[121] Moreover, Agenda 21 represents a "plan of action" for sustainable development by urging that "[t]he carrying capacity of the Earth. . .be valued as an economic resource" and that environmental protection "be intimately incorporated into the process of resource development."[122] Likewise, the concept of sustainable development pervades the Convention on Biological Diversity,[123] the Framework Convention on Climate Change,[124] and the Statement of Principles on Forests.[125] The concept is critical to the Agreement on

120. McConnell & Gold, *supra* note 50, at 99.

121. Sustainable development, the central principle of the declaration, is explicitly referred to in principles 4, 5, 7, 8, 9, 20, 21, 22, 24, and 27. *See* Rio Declaration, *supra* note 102, 31 I.L.M. at 877, 879-80. *But see* Pallemaerts, *supra* note 53, at 16-18 (arguing that the original concept of sustainable development had evolved prior to the Rio Conference to be defined as the subordination of the environment to economic growth).

122. AGENDA 21, *supra* note 106, at 11.

123. *See, e.g.*, Convention on Biological Diversity, *supra* note 104, art. 6(a), 31 I.L.M. at 825 (requiring that parties "[d]evelop national strategies, plans or programs for the conservation and sustainable use of biological diversity"); *see also id.* art. 8(a), 31 I.L.M. at 825 (requiring parties to "[e]stablish a system of protected areas or areas where special measures need to be taken to conserve biological diversity").

124. *See* Climate Change Convention, *supra* note 103, art. 2, 31 I.L.M. at 854 (stating that the ultimate objective of stabilizing greenhouse gas concentrations in the atmosphere is to enable economic development to proceed in a sustainable manner); *id.* art. 4, 31 I.L.M. at 855 ("The Parties have a right to, and should, promote sustainable development.").

125. *See* Statement of Principles on Forests, *supra* note 105, pmbl. (c), 31 I.L.M. at 882.

> Forestry issues and opportunities should be examined in a holistic and balanced manner within the overall context of environment and development, taking into consideration the multiple functions and uses of forests, including traditional uses, and the likely economic and social stress when these uses are constrained or restricted, as well as the potential for development

Straddling Fish Stocks and Highly Migratory Fish Stocks, which aims "to ensure the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks."[126] Indeed, a basic goal of the Convention on Biological Diversity was to focus attention on the great value of genetic resources in the environment and to provide financial incentives to conserve them.[127]

The concept of sustainable development has received wide recognition from various other sources as well: the foundation documents of international organizations;[128] the practices of international financial institutions;[129] regional declarations and planning documents;[130] ICJ decisions;[131] and State practice.[132] Furthermore, sus-

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that sustainable forest management can offer.

Id.

126. AGREEMENT ON STRADDLING FISH STOCKS, supra note 107, art. 2, 34 I.L.M. at 1549.

127. *See* Andrew Pollack, *Biological Products Raise Questions of Genetic Ownership*, N.Y. TIMES, Nov. 26, 1999, at A1, C12. "'If you can't get farmers to recognize that there is a value in a forest other than for cattle, the outlook is really very grim for the tropics.'" *Id.* (quoting statement by Joshua P. Rosenthal, biodiversity director at the Fogarty International Center of the National Institutes of Health).

128. *See, e.g.*, Gabcikovo-Nagymaros Project (Hung. v. Slovk.), 1997 I.C.J. 7, at 93 n.11 (Sept. 25) (separate opinion of Vice-President Weeramantry) (citing the foundation documents of The North American Free Trade Agreement, the World Trade Organization, and the European Union).

129. *See id.* at 93 n.12 (noting that the World Bank Group, the Asian Development Bank, the African Development Bank, the Inter-American Development Bank, and the European Bank for Reconstruction and Development all adhere to the principle of sustainable development); SCHMIDHEINY, *supra* note 90, at 10-11 (noting the recognition by businesses that their long-term success depends on whether they participate in solving sustainability issues).

130. *See* Gabcikovo-Nagymaros Project, 1997 I.C.J. 7, at 93 n.13 (separate opinion of Vice-President Weeramantry) (citing, for example, the Langkawi Declaration on the Environment, which was adopted in 1989 by the "Heads of Government of the Commonwealth representing a quarter of the world's population," and which made sustainable development its main theme). Some action plans directly relate to the marine and coastal environment. *See id.* (citing the Action Plan for the Protection and Management of the Marine and Coastal Environment of the South Asian Seas Region, 1983, para. 10, which discusses "sustainable, environmentally sound development").

131. *See* Gabcikovo-Nagymaros Project, 1997 I.C.J. 7, at 89 (separate opinion

tainable development underlies the growth of MACPAs, which have become an increasingly important means of advancing the protection of fragile marine ecosystems and biological diversity.[133] Sustainable development arguably has replaced the freedom of the seas, which had equated the right of any number of users to exploit a given resource so long as some users comply with existing rules, as the central paradigm for marine resources.[134]

Sustainable development particularly is critical in the developing world, where a close dependence on natural resources and the fragility of the interconnections between them highlights the economic importance of resource management.[135] Because developing countries are situated at the "crossroads of social choices regarding economic development, natural-resource use, and environmental qual-

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of Vice-President Weeramantry) (noting that sustainable development has become "an integral part of modern international law"). Justice Weeramantry traced sustainable development's origins to several ancient civilizations, calling it "one of the most ancient of ideas in the human heritage." *Id.* at 110. In a subsequent matter, the Court emphasized that:

> the environment is not an abstraction but represents the living space, the quality of life and the very health of human beings, including generations unborn. The existence of the general obligation of states to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment.

Legality of the Threat or Use of Nuclear Weapons, 1996 I.C.J. 226, 241 (July 8).

132. *See* Gabcikovo-Nagymaros Project, 1997 I.C.J. 7, at 93-94 n.14 (citing the 1990 Dublin Declaration by the European Council on the Environmental Imperative, which urged the European Community and Member States to achieve "long-term sustainable development"). The Dublin Declaration stated that remedial measures must be taken to "ensure that [the] future economic development" of Central and Eastern European states is "sustainable." *See id.*; *see also* Coastal Zone Management Act, 16 U.S.C. sec. 1451(a) ("There is a national interest in the effective management, beneficial use, protection, and development of the coastal zone.").

133. *See* Eichbaum, *supra* note 119, at 60 (introducing the reader to the variety of services provided by MACPAs, including public education, outreach, and the maintenance of communications between law and policy). *See also infra* notes 208-211 and accompanying text (providing the historical developments and benefits of MACPAs).

134. *See* Danny L. Elder, *International Union for Conservation of Nature and Natural Resources*, *in* MARINE ENVIRONMENT, *supra* note 90, at 17.

135. *See* PEARCE & TURNER, *supra* note 90, at 349-50.

ity management," they can avoid the costly mistakes often made in industrialized countries and reduce the total costs of environmental degradation by anticipatory rather than remedial polices.[136] In developing countries, current standards and norms should be taken into consideration when evaluating the environmental risks not only of new activities, but also of activities begun in the past.[137]

In the context of Article 121(3), promoting sustainable development means that a coastal State should not be penalized for taking steps to protect the marine environment in a way that also enhances economic value. If, for example, a State establishes a marine sanctuary around a "rock" to protect a coral reef while also demonstrating the economic value of maintaining the reef in a pristine State, that "rock" should be considered to have an "economic life of [its] own" within the meaning of Article 121(3), and should therefore be accorded island status. Consequently, that State should not be penalized, but rather should receive the benefit of expanded maritime jurisdiction, just as if it had pursued more "traditional" avenues of economic development, such as exploiting the marine resources around the "rock."

3. *Article 121(3) and the "Tragedy of the Commons"*

The interpretation of Article 121(3) presented here not only raises questions about the traditional notion of the high seas as the

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136. MAYNARD M. HUFSCHMIDT ET AL., ECONOMIC NATURAL SYSTEMS AND DEVELOPMENT, AN ECONOMIC VALUATION GUIDE 5-6 (1983) (arguing that while extensive developments in North America and Western Europe offer hope that there can be equal progress in the developing world, the application of techniques must take into account differences between the developed and developing world, including differences in income level and types of economies).

137. *See* Gabcikovo-Nagymaros Project, 1997 I.C.J. 7, at 78 (expressing the Court's support for sustainable development as a means for reconciling economic development and environmental protection).

> Owing to new scientific insights and to a growing awareness of the risks for mankind—for present and future generations—of pursuit of such interventions at an unconsidered and unabated pace, new norms and standards have been developed, set forth in a great number of instruments during the last two decades. Such new norms have to be taken into consideration, and such new standards given proper weight, not only when States contemplate new activities but also when continuing with activities begun in the past.

Id.

common heritage of mankind but also offers a window into another instance of the "tragedy of the commons." As one commentator has noted:

> Prior to this century, people correctly assumed that human beings could not harm the oceans because they are so vast, and therefore that the principle of freedom of the seas posed no danger to the continued availability of resources. This century has seen a dramatic increase in the number of people exploiting the ocean and in the advancement of technologies to do so, rendering that assumption invalid. No longer, therefore, is the principle of freedom of the seas without environmental consequences.[138]

The plight of the oceans may be analogized to the grazing lands of Garrett Hardin's seminal essay,[139] whose overuse by herdsman, each pursuing his own individual interest, brought ruin to this common natural resource.[140] For a State today, the positive component of developing additional areas of the world's oceans outweighs the negative component of overuse of this common resource because the former accrues only to the using State, whereas the latter is shared by all States. Thus, with respect to the world's oceans, a "tragedy of the commons" results when environmentally-sensitive marine areas fall prey to the overuse, plunder, and/or destruction by governments or private interests.

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138. *See* Danny L. Elder, *International Union for Conservation of Nature and Natural Resources*, *in* MARINE ENVIRONMENT, *supra* note 90, at 57.

139. *See* Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968), *reprinted in* PERSPECTIVES ON PROPERTY LAW 132 (Bruce Ackerman et al. eds., 1995) (arguing that economic ideas, such as Adam Smith's "invisible hand," where individuals working to benefit themselves benefit the public as a whole, have led to the ruin of common areas around the world). In fact, overfishing was the initial metaphor for the tragedy of the commons. *See* Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 U. CHI. L. REV. 711, 747-48 (1986) (describing the difficulties surrounding the conservation of fish under American public policy doctrine).

140. *See* Hardin, *supra* note 139, at 133, *reprinted in* PERSPECTIVES ON PROPERTY LAW 132 (Bruce Ackerman et al. eds., 1995) (describing how, once social stability is reached and the populations of both herdsmen and cattle increase, each herdsman will act rationally to increase his herd and, in the process, deplete the commons of its resources). Hardin, an ecologist, urged international cooperation to reduce world population growth, comparing environmental problems to the inevitable failure of peasants to prevent overgrazing on common lands. *See generally id.*

Here, the tragedy of the commons is not necessarily best averted through "coercive" regulatory measures,[141] which may be difficult to enforce under the current international legal regime,[142] but rather may more effectively be avoided through private ownership by a single State. Such a State would henceforth be committed to protecting the marine preserve because of the economic value of the preserve's resources and because of the incentive of expanded maritime jurisdiction pursuant to Article 121(3). That State's ownership of the preserve would not, however, be absolute; rather the State would hold the marine preserve as a "public trust" since its rights would ultimately be subordinate to those of the public.[143] Any failure by that State to preserve the marine environment would lead to a loss of its expanded maritime jurisdiction.

Article 121(3) thus exposes the possible flaws in a strict public-private dichotomy, suggesting instead that the best method of preserving the oceans may, in some instances, be to make small portions of them private.[144] Ironically, therefore, the preservation of an

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141. *See id.* at 137-39 (presenting the utility of the concept of mutual coercion in protecting the commons). Hardin proposed "coercive" measures to avoid the ruin resulting from "each pursuing his best interest in a society that believes in the freedom of the commons." *Id.* Hardin's conclusion has, however, been challenged by studies resting on classical economic theory, which state that privatization is the best away to avoid the "tragedy" he envisioned. *See* Rose, *supra* note 139, at 712 (stating that since the 18th century, many individuals, including proponents of neoclassical economies such as Richard Posner, have argued that the world is best managed through private ownership).

142. *Cf.* Michelle Cuttler, Note, *Incentives for Reducing Oil Pollution from Ships: The Case for Enhanced Port States Control*, 8 GEO. INT'L ENVTL. L. REV. 175, 190 (1995) (discussing various "preventive laws" governing vessel source pollution). *See generally* W. Michael Reisman, Essay, *Though or Despite Governments: Differentiated Responsibilities in Human Rights Programs*, 72 IOWA L. REV. 391, 394 (1987) (stating that "[w]e have libraries full of international law, but it is very difficult to implement or enforce it").

143. *Cf.* Rose, *supra* note 139, at 714 (noting the acceptance of the view that waterfront property is "inherently public" and that present owners hold it in trust for the public who continue to have limited access to it).

144. The interpretation proposed in this Article borrows from, without wholly endorsing, the neoclassical theory—espoused by Judge Richard Posner and others—that property will be best used and conserved when divided among private owners. *See id.* at 711-12. Here, the controlling State has the incentive of expanded maritime jurisdiction to create and maintain a marine preserve. The State's control, however, would not be absolute because it could not exploit the

island as a privately controlled marine park under Article 121(3) may be the most concrete manifestation of that particular area's value as part of our common heritage of the high seas. Furthermore, it provides an alternative to straightforward regulation, which, as public choice theory has shown, may lead to the dominance of the relevant regulatory agency by those very nations most eager to exploit the particular marine resource.[145]

The "economic life" criterion of Article 121(3) requires more, however, than the mere assertion by a State that a particular environmental protection measure advances economic development. That State must also demonstrate that the economic benefit is real. To this end, that State may rely on environmental economics, which provides a means of quantifying the value of environmental protection as well as its potential costs.

III. ENVIRONMENTAL ECONOMICS, SUSTAINABLE DEVELOPMENT, AND ARTICLE 121(3)

A. DEVELOPMENT OF ENVIRONMENTAL ECONOMICS

In the early stages of the "Environmental Revolution" of the late 1960s and early 1970s, many environmentalists viewed the use of economic analysis in policymaking with suspicion.[146] Over the past two decades, however, environmentalists have accepted a more constructive role for the economic analysis of environmental problems.[147] Conversely, economists are increasingly recognizing the

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natural resource as it wished, but would instead need to preserve it for future generations. *See infra* Part IV.C (discussing the application of the principles of the conservation easement to Article 121(3)).

145. *See* David A. Dana, *Overcoming the Political Tragedy of the Commons: Lessons from the Reauthorization of the Magnuson Act*, 24 ECOLOGY L.Q. 833, 834 (1997) (discussing the "political tragedy of the commons" exposed by public choice theory).

146. *See* THE ECONOMICS OF THE ENVIRONMENT, at xiii (Wallace E. Oates ed., 1992) (noting, for example, that the Clean Air Act of 1970 forbade the use of a benefit-cost analysis in determining standards for environmental quality in the United States).

147. *See id.* (discussing the various reasons for this shift in perspective, including a lack of progress and a realization that past methods often were ineffec-

need to incorporate externalities, like environmental impact, into their economic analysis of development,[148] particularly given the failure of markets to reflect environmental degradation's true cost.[149]

Underlying the reconciliation between environmentalists and economists is the concept that environmental protection and economic development are not mutually exclusive but, at least in some instances, are two sides of the same coin.

> [E]xperience in both the developed and developing world demonstrates that on many occasions economic development activities have not shown sufficient concern for maintaining natural systems and environmental quality. This is due in part to the view that economic growth and environmental quality are alternatives—deterioration in environmental quality is viewed as a necessary cost of rapid economic growth. This view is misleading. Deforestation and the resulting soil erosion undermine the agricultural base of an economy and reduce long-term growth prospects. Pollution of coastal waters can destroy commercial fisheries and can also check economic growth. Air pollution affects human health with a resultant loss in productive effort as well as direct welfare losses to individuals. . . .For these reasons, it is of utmost importance that the effects on natural systems of development projects and programs be carefully analyzed. Such analysis is not a luxury, but must become an

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tive).

148. *See, e.g.*, Robert U. Ayres & Allen V. Kneese, *Production, Consumption, and Externalities*, *in* THE ECONOMICS OF THE ENVIRONMENT, *supra* note 146, at 282-83 (emphasizing the economic significance of externalities associated with the disposal of residuals resulting from the consumption and production process due to the varying ability of the ambient environment to receive and assimilate them).

149. *See, e.g.*, SCHMIDHEINY, *supra* note 90, at 15-16 (finding that markets often fail to reflect the costs of environmental degradation because markets fail to "integrate environmental costs into economic decisions"). Some economists have rejected a single measure of economic growth, such as the Gross National Product ("GNP"). *See, e.g.*, Herman E. Daly, *On Sustainable Development and National Accounts*, *in* ECONOMICS, GROWTH AND SUSTAINABLE ENVIRONMENTS: ESSAYS IN MEMORY OF RICHARD LECOMBER 52-53 (David Collard et al. eds., 1988) (rejecting the reliance on a single account of GNP in favor of reliance on a benefit account, cost account, and capital account, which, collectively, more accurately reflect the importance of sustainability); Daniel H. Cole, *Accounting for Sustainable Development*, 8 FORDHAM ENVTL. L.J. 123, 123 (1996) ("The problem, simply put, is that GNP and other standard measures of economic production fail to adequately reflect the actual economic-welfare impacts of environmental policies.").

> essential part of project formulation and evaluation if protection is to be provided to the natural-resource base that sustains human welfare. . . .
>
> [A] collection of already existing analytical approaches and techniques, including benefit-cost analysis, can be used to incorporate environmental quality concerns into the economic analysis of projects, programs, and development strategies. . . . Now the time has come to pull the strands together and show how these techniques can assist in incorporating the dimension of environmental quality into development planning.[150]

The practical implications of this reconciliation are two-fold: using the tools of economic analysis to achieve environmental ends;[151] and incorporating environmental costs, particularly over the long-term, into development planning.[152] Valuation methods developed by economists may thus be used to determine a development project's cost to the environment or, conversely, to measure an environmental improvement's economic benefit, if any.

The development of these valuation methods has made possible the application of cost-benefit analysis to decisions affecting the environment. Cost-benefit analysis is a systematic method of iden-

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150. HUFSCHMIDT ET AL., *supra* note 136, at 1-2 (introducing the author's argument that analysis of the environmental impact of development plans is critical for both the environment and human welfare).

151. *See* ECONOMICS AND THE ENVIRONMENT: A RECONCILIATION, at vii (Walter E. Block ed., 1990) ("By using such economic building blocks as free market prices, private property rights, and, most important, a legal system that carefully defines, delineates, and protects such rights, the goals of environmentalists can be achieved.").

152. *See* HUFSCHMIDT ET AL., *supra* note 136, at 44 ("Incorporating the true social costs of natural resource exploitation in development planning is one way of ensuring that economically efficient resource allocation decisions will be made."); THEODORE PANAYOTOU, GREEN MARKETS: THE ECONOMICS OF SUSTAINABLE DEVELOPMENT 26 (1993) (linking environmental degradation to the "disassociation of scarcity and price, benefits and costs, rights and responsibilities, actions and consequences"); *see also id.* at 5 (describing how the short-term benefits of forest conversation obscure its long-term costs). Some have gone further by pressing the view that environmental use is itself a prerequisite of a "truly economic contribution." *See* Comment of Philomène A. Verlaan, Rockefeller Foundation, *in* THE ROLE OF THE OCEANS IN THE TWENTY-FIRST CENTURY, *supra* note 93, at 664 (arguing that nations should acknowledge the economic costs of disregarding environmental factors in creating ocean development plans).

tifying and measuring the economic benefits and costs of a particular project or program.[153] In economic terms, a development project is desirable only if total project benefits, including those arising from any environmental improvement, exceed total project costs, including those arising from any damage to the environment.[154] Likewise, an environmental improvement is only desirable if its total benefits exceed its total costs, including the opportunity cost or foregone income of a particular economic development.[155] Thus, cost-benefit analysis is central to sustainable development because it incorporates the long- and short-term costs of development to the environment. Similarly, it is the best way of quantifying the economic value, if any, of a given environmental protection measure. While some claim that risk to the environment cannot be quantified,[156] others maintain that money remains the best indicator of preference and measure of gains and losses in welfare, environ-

153. *See* HUFSCHMIDT ET AL., *supra* note 136, at 2. Cost-benefit analysis, which is rooted in neoclassical economic theory, is based on the concept of a potential Pareto improvement: a change is economically desirable if the winners can compensate the losers, that is, if benefits exceed costs, regardless of income distribution. *See id.* at 25-26.

154. *See id.* at 49 (discussing the problem of how to incorporate environmental costs and benefits in to project design); *see also* PANAYOTOU, *supra* note 152, at 151 (arguing that projects should be supported if they protect, restore, and enhance the environment, and are based on an extended economic analysis that fully internalizes benefits as well as costs).

155. *See* HUFSCHMIDT ET AL., *supra* note 136, at 191 (noting that the concept underlying the opportunity cost approach is that the opportunity cost of unpriced uses—for example, of preserving land for a national park instead of cutting down the trees for timber—can be estimated from the foregone income from other uses, such as agriculture or forestry). The opportunity cost approach thus measures the financial sacrifice, not benefits, of preservation, and is useful where such benefits are difficult to estimate. *See id.* at 191-94 (describing the successful use of the opportunity cost approach by environmental groups in New Zealand to save indigenous forests from clear-cutting).

156. *See* Lisa Heinzerling, *Regulatory Costs of Mythic Proportions*, 107 YALE L.J. 1981, 2069 (1998) (arguing that attempts to find precise numbers in determining numbers of lives saved by regulation distorts the issue); *see also* Antonio Herman Benjamin & Charles Weiss, Jr., *Economic and Market Incentives as Instruments of Environmental Policy in Brazil and the United States*, 32 TEX. INT'L L.J. 67, 72 (1997) (observing that Brazilian environmental law specialists describe the environment as a set of "values that cannot be measured economically").

mental or otherwise.[157]

Cost-benefit analysis has spawned a variety of methods and taxonomy that address the challenging task[158] of placing a monetary value on the environment.[159] For example, environmental valuation distinguishes "user" values, which derive from the actual use of the environment, from "intrinsic" values, which are in the real nature of the thing and unrelated to actual use.[160] User values include not only actual, present uses, but also potential uses, which are expressed in terms of option values.[161] Intrinsic values, also called existence values, are difficult to define, but incorporate people's concern for, sympathy with, and respect for the rights and welfare of non-human beings.[162]

Environmental benefits may be assessed through direct (market) or indirect (nonmarket) techniques.[163] Market value or productivity approaches involve observing and measuring how changes in environmental quality lead to changes in prices and levels of output.[164]

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157. *See* PEARCE & TURNER, *supra* note 90, at 121 (explaining that money is a means to measure gains or losses in utility on welfare, and not an objective).

158. *See id.* at 22 ("Economic research into monetary valuation of environmental commodities is still in a state of flux, although considerable progress has been made."); *see also* Cole, *supra* note 149, at 127-28 (stating that economists have been working since at least the mid-1940s to assess more accurately "the real environmental costs of pollution and resource consumption and corresponding benefits from pollution prevention and resource conservation").

159. *See generally* PEARCE & TURNER, *supra* note 90, at 129-58 (presenting the taxonomy and formulas by which environmental economists measure and evaluate environmental damage).

160. *See id.* at 129-30 (citing anglers and ornithologists, as well as those who simply like to view the countryside, as examples of those who might derive "user values" from a natural resource, such as a lake).

161. *See id.* at 130 (listing potential uses, or "option values," along with present uses, as examples of user values); *see also id.* at 131 (distinguishing "bequest values" from "existence values").

162. *See id.* at 130 (noting, for example, the intrinsic value of the remaining stocks of certain whales).

163. *See* HUFSCHMIDT ET AL., *supra* note 136, at 170-72 (listing various market and non-market techniques for evaluating changes in environmental quality).

164. *See id.* at 172 (describing the authors' theoretical basis by characterizing environmental quality as a factor of production in a traditional production/market analysis).

The increased productivity from a reduction in soil erosion or from the increased quality of water used for irrigation are examples of this approach.[165] In addition, direct valuation approaches attempt to measure the monetary value of environmental gains, either by looking for a surrogate market or by employing an "experimental approach."[166]

> The surrogate market approach looks for a market in which goods or factors of production (especially labor services) are bought and sold, and observes that environmental benefits or costs are frequently attributes of those goods or factors. Thus a fine view or the level of the air quality is an attribute or feature of a house; risky environments may be features of certain jobs, and so on. The experimental approach stimulates a market by placing respondents in a position in which they can express their hypothetical valuations of real improvements in specific environments. In this second case, the aim is to make the hypothetical valuation as real as possible.[167]

The hedonistic price approach,[168] contingent valuation method,[169] the travel cost approach,[170] and the wage differential approach[171] are

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165. *See id.* at 172-73 (listing various examples of how changes in environmental quality can lead to changes in productivity or productivity costs).

166. *See* PEARCE & TURNER, *supra* note 90, at 142 (noting that there are "direct" and "indirect" approaches to the valuation of environmental benefits and explaining the implications of each approach).

167. *Id.* at 142. A surrogate market approach might be employed where an environmental service is a perfect substitute for a private marketable good, for example, private pools as substitutes for clean lakes or streams. *See* HUFSCHMIDT ET AL., *supra* note 136, at 195-96 (offering various examples of environmental services that may substitute for private marketable goods). "If such substitutions are made, then the benefit of an increase in the supply of an environmental good, such as a [clean lake or stream], may be deduced from observing the reduction in the purchase of the private good [such as the private pool]." *Id.* at 196.

168. *See* PEARCE & TURNER, *supra* note 90, at 143 (describing the "hedonic approach" as one that identifies how much of a property value differential is attributable to a particular environmental difference between properties, and then infers how many people are willing to pay for an improvement in environmental quality and the social value of that improvement).

169. *See id.* at 148 (defining "contingent valuation method" as "basically ask[ing] people what they are willing to pay for a benefit, and/or what they are willing to receive by way of compensation to tolerate a cost").

170. *See id.* at 152-56 (describing the "travel cost approach" as one that esti-

all examples of the experimental approach. In contrast, indirect valuation does not measure direct revealed preference for the environmental good at issue. Rather indirect valuation calculates a "dose-response" relationship between pollution and some effect, and, only at that point, applies some measure for preferences for that effect, such as the effect of pollution on health.[172]

Insofar as a cost-benefit calculation involves the environment in a significant way, it should be made against the background norm of the precautionary principle. This widely accepted principle[173] holds that because environmental measures must anticipate the causes of environmental degradation, lack of full scientific certainty does not provide a basis for postponing such measures where there exists the risk of serious environmental damage.[174] In addition, evidence suggests that where development is irreversible, as in the frontier, because the optimal level of development will be less than an analysis based on current valuations would indicate, such development should cease when its marginal benefit exceeds that of preservation.[175]

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mates the value of natural resources according to the value consumers place on time, for example, by deriving a demand curve for a recreational site).

171. *See* HUFSCHMIDT ET AL., *supra* note 136, at 213-14 (noting that under this theory the price of wages would vary with respect to the working and living conditions of an area, such as the "risk[s] to life and health and urban amenities or disamenities").

172. *See* PEARCE & TURNER, *supra* note 90, at 142.

173. *See* SCHMIDHEINY, *supra* note 90, at 4-5 (noting that the precautionary principle was embraced at the World Industry Conference on Environmental Management in 1984, at the 1989 Paris Summit of the leaders of the G7, and in the Ministerial Declaration of the 1990 U.N. Economic Commission for Europe); *see also* AGREEMENT ON STRADDLING FISH STOCKS, *supra* note 107, art. 6, 34 I.L.M. at 1551 (outlining how States shall apply the precautionary approach to guard marine life).

174. *See* SCHMIDHEINY, *supra* note 90, at 4-5; *see also* Zajacek, *supra* note 50, at 82 (noting that Australia's establishment of the Great Barrier Reef Marine Park of 1975, which was inspired by concerns about the potentially harmful effects of petroleum exploration and mining, was an early example of the application of the precautionary principle).

175. *See* Scott Barrett, *Optimal Economic Growth and the Conservation of Biological Diversity*, *in* ECONOMICS AND ECOLOGY: NEW FRONTIERS AND SUSTAINABLE DEVELOPMENT 130, 132 (Edward B. Barbier ed., 1993) (describing important lessons to be learned from an analysis of the economics of envi-

In short, cost-benefit analysis has spawned various techniques to make valuation of the environment feasible. These techniques make it possible to determine whether an island has "an economic life of [its] own" under Article 121(3). How these techniques have been applied to the environment in the past provides insight into how they may continue to be applied to the marine environment in the future.

B. CASE STUDIES DEMONSTRATING THE ECONOMIC VALUE OF THE ENVIRONMENT

Numerous studies demonstrate the economic value of preserving, as opposed to exploiting, the environment. For example, a cost-benefit analysis in Nepal demonstrated various economic gains of a land management policy focused on soil conservation.[176] Another study, aimed at reducing poaching, showed the opportunity cost, or economic loss, associated with declines in elephant populations by measuring the viewing value of elephants as expressed through tourist spending.[177] An experimental approach based on bidding demonstrated the monetary value of a lake's aesthetic beauty, as people were willing to pay more to prevent a power plant that reduced visibility than to prevent a power plant without reduced visibility.[178]

Case studies of wetlands powerfully show why in some instances conservation, rather than development, is the most economically

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ronmental preservation).

176. *See* HUFSCHMIDT ET AL., *supra* note 136, at 175-79 (observing, *inter alia*, the economic benefits of increased grass yield supporting more cows per acre, a greater output of fuelwood and leaves that can be used as fodder, and a decrease in the eutrophication rate of the lake that increases the life of the hydroelectric power plant and lake fishery as well as the number of tourists to the area).

177. *See* Gardner Brown, Jr., *The Viewing Value of Elephants*, *in* ECONOMICS AND ECOLOGY: NEW FRONTIERS AND SUSTAINABLE DEVELOPMENT 146 (Edward B. Barbier ed., 1993) (noting that viewing elephants creates two types of benefits: tourist revenue and "consumers' surplus, meaning that [consumers] . . . value their safari more than it costs"). This technique is known as the travel cost approach. *See supra* note 170.

178. *See* HUFSCHMIDT ET AL., *supra* note 136, at 238-43 (illustrating how one type of survey-based evaluation can be used to determine a value for unpriced goods, such as an unobstructed view and clean air).

beneficial option.[179] There is a "growing awareness that most wetlands are more valuable economic resources in their natural, or only slightly modified state, than if radically altered and intensively managed."[180] Among important wetland uses are life-supporting services, pollution assimilation, the cycling of nutrients, and the maintenance of the balance of gases in the air.[181] Although indirect and non-use values of wetlands have not yet been quantified,[182] a range of direct use techniques have demonstrated wetlands' monetary value, including their value as a habitat for commercially harvested fish and animal species,[183] their wildlife and visual-cultural benefits,[184] their use as recreational areas,[185] and their indirect benefits as municipal water sources.[186] The precautionary principle[187] further supports the economic value of conserving wetlands in light of their continuing loss and their potential, but uncertain, significance to the environment.[188]

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179. *See* R. Kerry Turner, *Wetland Conservation: Economics and Ethics*, *in* ECONOMICS, GROWTH AND SUSTAINABLE ENVIRONMENTS 121, 122 (D. Collard et al. eds., 1988).

180. PEARCE & TURNER, *supra* note 90, at 321.

181. *See id.* at 323 (listing various important wetland uses according to the four wetland types: floodplains, coastal wetlands, wet meadows, and peatland). The benefits of wetlands often extend beyond the utility of the wetlands themselves and have global importance. *See id.*; *see also* Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Feb. 2, 1971, 11 I.L.M. 963 [hereinafter Ramsar Convention] (describing the Ramsar Convention as "an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources").

182. *See* PEARCE & TURNER, *supra* note 90, at 324 (noting the difficulty in quantifying such values). Studies of other environmental resources suggest, however, that the existence values of wetlands are positive. *See id.*

183. *See id.* at 327-28 (citing a study on shellfish and fish output).

184. *See id.* at 328 (estimating the value of these benefits through the use of market land prices).

185. *See id.* at 329 (noting a study using the travel cost method).

186. *See id.* at 331-33 (noting that several locations used an alternative/substitute cost approach).

187. *See supra* notes 173-175 and accompanying text.

188. *See* PEARCE & TURNER, *supra* note 90, at 335.

The Kyoto Protocol to the Convention on Climate Change[189] suggests the growing international acceptance of the view that environmental damage is monetizable. The Kyoto Protocol, which seeks to limit the emission of greenhouse gases into the environment, will impose emission reduction obligations on developed country Parties and Parties that are undergoing the transition to a market economy.[190] After considerable debate,[191] the Parties ultimately agreed to authorize "emissions trading," whereby a Party with an emission reduction commitment may "buy" part of the emissions budget of another Party where it would be more cost-effective to do so, rather than undertake the reduction domestically.[192] That the Protocol places a monetary value on emissions reduction, and that it authorizes a State Party to buy the reduction obligations of another State party, suggests international acceptance of the basic premises of environmental valuation techniques.

C. THE ECONOMIC VALUE OF THE MARINE ENVIRONMENT

The invaluable nature of the world's oceans makes them particularly appropriate for the application of environmental economics and its various methodologies. Oceans cover seventy percent of the surface of the globe and play a central role in the biochemical processes of the planet at local, regional, and global levels.[193] The oceans' profound economic importance is expressed through a range of activities, including fishing, aquatic and semi-aquatic farming, transportation of goods, tourism, recreation, oil produc-

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189. *See* Conference of the Parties to the Framework Convention on Climate Change: Kyoto Protocol, Dec. 10, 1997, 37 I.L.M. 22 (1998) [hereinafter Kyoto Protocol].

190. *See* Brendan P. McGivern, *Introductory Note*, *in id.*, 37 I.L.M. at 22-29 (describing the specific articles in the agreement that outline the responsibilities of "developed countries, economies in transition, and developing countries").

191. *See, e.g.*, *Remember Global Warming?*, N.Y. TIMES, Nov. 11, 1998, at A26 (describing the insistence by the United States that the Protocol contain an emissions trading provision).

192. *See* Brendan P. McGivern, *Introductory Note*, *in* Kyoto Protocol, *supra* note 189, 37 I.L.M. at 22.

193. *See* Alicia Barcena, *Some Reflections on a New Approach to Ocean and Coastal Management*, *in* MARINE ENVIRONMENT, *supra* note 90, at 23.

tion, and use as a repository for wastes.[194] For example, the world's oceans yield a total of 80-90 million tons of fish per year, providing a livelihood to millions of people living in coastal areas.[195] In addition, the environment of the coastal zone, which consists of continental shelves and continental plains,[196] supports much of the world's population[197] and possesses great economic value.[198]

As a result of the Third Law of the Sea Convention, existing models of regional programs and cooperation, and the experience in ocean issues of several United Nation agencies, such as the IMO and UNEP, oceans and coastal areas present an opportunity to put sustainable development into action.[199] Several studies demonstrate the feasibility of applying cost-benefit analysis to the marine environment.[200] A number of studies also demonstrate both the economic benefits of improvements in the marine environment[201] and

194. *See id.* at 23-24.

195. *See id.* at 33 (explaining that ninety-five percent of the fish are caught within the 200-mile boundary of the EEZ).

196. *See* Danny L. Elder, *International Union for Conservation of Nature and Natural Resources*, *in* MARINE ENVIRONMENT, *supra* note 90, at 56 (finding that numerous special characteristics of the coastal zone include the presence of diverse ecosystems such as inter-tidal mud-flats, rocky shores, sandy beaches, mangroves, salt marshes, estuaries and other wetlands, seagrass and seaweed beds, and coral reefs). These various ecosystems are vital for coastal protection and productivity. *See id.* at 53.

197. *See id.* at 56 (estimating that six out of ten people live within 50 kilometers of coastal waters and that two-thirds of the world's cities containing populations of 2.5 million or more are located near tidal estuaries).

198. *See* Alicia Barcena, *Some Reflections on a New Approach to Ocean and Coastal Management*, *in* MARINE ENVIRONMENT, *supra* note 90, at 26-30 (noting that the economic value of coastal areas includes their use for fishing, human settlement, aquaculture, port development, shipping, marine and coastal transport, tourism, recreation, erosion control, and protection against storms and episodic damages).

199. *See id.* at 2.

200. *See* Hanson, *supra* note 93, at 642-44.

201. *See, e.g.*, John E. Bardach, *Economic Contributions of Environmental Uses of the Oceans: Aquaculture, Energy Pollution, and Ocean Minerals*, *in* ROLE OF OCEANS IN THE TWENTY-FIRST CENTURY, *supra* note 93, at 621-25 (noting how the addition of iron to trace-element-poor but nutrient-rich areas of oceans that increases the production of microalgae may lead to the establishment of new food webs, the alteration of existing ones, and, possibly, to the availabil-

the cost of marine development.[202] Land-based measures that lead to improvements in the marine environment may also have economic benefits. For example, afforestation, or tree planting, can augment the catching of fish, thus raising income among fisherman.[203]

Biological diversity represents another important economic value of the marine environment.[204] Economic uses include food and cosmetics, industrial chemicals and dyes, and a host of other commercial products.[205] Coral reefs, one of the most biologically diverse and productive natural ecosystems in the marine environment, provide not only the basis for significant economic and cultural activities through fisheries and tourism, but also the sheltered waters that attract human settlement.[206] More generally, the development of commercial products made possible by biological diversity has become a multi-billion dollar industry.[207]

MACPAs, or MPAs, represent an increasingly important mecha-

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ity of more harvestable products).

202. *See, e.g.*, ECONOMIC VALUATION TECHNIQUES FOR THE ENVIRONMENT: A CASE STUDY WORKBOOK 102 (John A. Dixon & Maynard M. Hufschmidt eds., 1986) (discussing a study focused on the valuation of marine production lost when fishermen sold their fishing rights to the government in order for the land to be reclaimed); *see also* Hanson, *supra* note 93, at 655-56 (arguing that the idea of environmental accounting needs to treat the sustainable development of the ocean as an investment theme, recognizing the "fundamental links between poverty and environmental degradation").

203. *See* Teruji Sakamaya, *A System of Sustainable Coast Fisheries in Japan*, *in* THE ROLE OF OCEANS IN THE TWENTY-FIRST CENTURY, *supra* note 93, at 598-601.

204. *See, e.g.*, A. Charlotte de Fontaubert et al., *Implementing the Convention on Biological Diversity in Marine and Coastal Habitats*, 10 GEO. INT'L ENVTL. L. REV. 753, 755, 776 (1982). Major threats to marine biological diversity include physical and chemical alteration, toxic pollution, marine debris, incidental take, and over-harvesting. *See* Alicia Barcena, *Some Reflections on a New Approach to Ocean and Coastal Management*, *in* MARINE ENVIRONMENT, *supra* note 90, at 37. Although it is not yet possible to determine exactly the losses, there has been significant damage to coastal areas, such as wetlands, coral reefs, seagrass-beds, and mangroves, due to developmental activities. *See id.*

205. *See* Fontaubert et al., *supra* note 204, at 762.

206. *See* Eichbaum et al., *supra* note 119, at 61; *see also* Exec. Order No. 13,089, 3 C.F.R. 193 (1998) (discussing the "economic value of U.S. coral reef systems to the marine environment").

207. *See* Pollack, *supra* note 127, at A1, C12 (describing the overall growth of the industry and various commercial products that have been developed).

nism to advance the protection of biodiversity.[208] Once rigid, limited marine management tools, MACPAs now range from small, closed areas or harvest refugia that are established to protect a specific resource or habitat type to extensive, multi-use areas that integrate the management of many species under a single comprehensive plan.[209] MACPAs have proven economic value:

> Marine protected areas are important economically because they contribute to the creation of jobs and services that are important for tourism and recreation. They play an increasingly critical role in sustaining commercially or locally important marine resources such as fisheries. In addition, marine protected areas can be used for the preservation of cultural and archaeological sites. They can also serve as institutional frameworks for resolving user conflicts and can provide small-scale models of integrated coastal management.[210]

Preservation of the marine environment through devices like MACPAs can bring net economic benefits and sustainable development,[211] thus demonstrating why marine conservation can con-

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208. *See generally* Eichbaum et al., *supra* note 119, at 60, 63 (noting that MACPAs can protect marine biological diversity by protecting endangered species, critical habitats, seed banks, and sources of recruits through the creation of nonextractive zones or harvest refugia). For previous discussions of MACPAs, see *supra* notes 118-19 and 133-33 and accompanying text.

209. *See id.* at 63. One of the early such areas was Great Barrier Reef Marine Park, a multi-use protected area established by Australia in 1975. The Great Barrier Reef supports industries that contribute $1 billion (Australian) dollars to the Australian economy each year from tourism and commercial fishing. *See* Ottesen et al., *supra* note 71, at 507; Danny L. Elder, *International Union for Conservation of Nature and Natural Resources*, *in* MARINE ENVIRONMENT, *supra* note 90, at 69 (finding that the existing network of MPAs is less developed than their terrestrial counterparts).

210. Fontaubert et al., *supra* note 204, at 775; *see also* KELLEHER & KENCHINGTON, *supra* note 54, at 16 (stating that an MPA's economic importance may be defined as its "existing or potential contribution to economic value by virtue of its protection, *e.g.*, the protection of an area for recreation, subsistence, use by traditional inhabitants, appreciation by tourists and others or as a refuge nursery area or source of supply for economically important species"); Danny L. Elder, *International Union for Conservation of Nature and Natural Resources*, *in* MARINE ENVIRONMENT, *supra* note 90, at 70 (observing that MPAs can "serve as replenishment areas for marine resources and should be designed to maintain the genetic diversity of key species").

211. *See* Alicia Barcena, *Some Reflections on a New Approach to Ocean and Coastal Management*, *in* MARINE ENVIRONMENT, *supra* note 90, at 55.

stitute an economic use within the meaning of Article 121(3). For example, a State that establishes a marine park or protected area around a pristine coral reef should not be penalized by being forced to forego the expansion of its maritime jurisdiction that it would likely have gained from pursuing a more traditional form of economic development. Instead such States should be given an incentive to preserve the marine environment where such preservation is also economically beneficial and thus consistent with the "economic life" criterion of Article 121(3).

IV. POSSIBLE OBJECTIONS TO THE PROPOSED INTERPRETATION OF ARTICLE 121(3)

Returning to the hypothetical debate posed at the outset, it should now be evident that the proposal to establish a marine preserve around a small island can in fact represent an economically beneficial, if not optimal, use of this natural resource. Measures to protect the marine environment can yield economic benefits in various forms, including increased fishing stocks, tourist spending, products from coral reefs, and health benefits from reduced pollution. Such measures can and should satisfy the "economic life of their own" requirement of Article 121(3), thus enabling a "rock" to achieve the formal legal status of an "island," and thereby potentially extending a coastal State's continental shelf and EEZ rights. This interpretation of Article 121(3) is consistent with UNCLOS III's text, UNCLOS III's objects and aims, subsequent developments in international law, and the public policy of preserving the marine environment where it is economically beneficial to do so.

This approach could, however, face obstacles in practice. For example, there is continuing tension between the attempt by coastal States to protect their waters by adopting environmental controls and the desire of maritime States to preserve the traditional rights of innocent passage and freedom of navigation.[212] Indeed, in expanding the jurisdiction of coastal States to enforce marine environmental protection standards, such as those relating to vessel-source pollution, UNCLOS III may have increased this tension.[213]

212. *See* Bodansky, *supra* note 79, at 720-21.

213. *See id.*

Accordingly, by providing another way in which UNCLOS III expands the jurisdiction of coastal States, the proposal outlined in this Article could engender further opposition from maritime States determined to protect the freedom of the seas. However, since such expansion would interfere only with the right to develop the affected area, and would not otherwise pose a threat to high seas navigation rights, this tension would be limited.[214] The real risk of tension exists where one State's additional continental shelf and EEZ rights are extended into an area previously claimed by an opposite or adjacent coastal State.

A. POSSIBLE GUIDELINES FOR RESOLVING DISPUTES BETWEEN COASTAL STATES OVER ARTICLE 121(3)

Assume State A and State B are located across from each other, separated by fifty miles of sea. Determined to protect the marine environment, State A establishes a marine preserve on one of its "rocks" twenty miles off its coast and thus outside the twelve-mile limit of its territorial sea. State A then demonstrates the preserve's economic value: the protection of a pristine coral reef and rare species with the potential for commercial use in connection with health care products. The "rock" thus attains the legal status of an island under Article 121(3); consequently, State A's continental shelf and EEZ is henceforth measured from the island, as opposed to from State A's own coast, potentially extending its jurisdiction up to State B's territorial sea.

State B subsequently challenges State A's expansion of its maritime jurisdiction. State B claims that the preserve has no economic benefit but rather was established by State A solely for the purpose of expanding its maritime jurisdiction. State B further argues that even if the marine preserve has an economic benefit, it is nonetheless unfair to use this "rock" in establishing the maritime boundary between the two States. State B notes that were it not for this

214. *Cf.* Law of the Sea Convention, *supra* note 1, art. 58, para. 1 (stating that within the EEZ, states still enjoy the high seas "freedoms . . . of navigation and overflight and of the laying of submarine cables and pipelines, and other intentionally lawful uses of the seas related to these freedoms"); Bodansky, *supra* note 79, at 756 (noting that although "UNCLOS III's provisions on the EEZ represent a considerable expansion of coastal state jurisdiction, that jurisdiction remains highly circumscribed").

"rock," State A's jurisdiction would extend only to the midpoint between the two States, twenty-five miles from each State's coast.[215]

Several safeguards may be instituted to address State B's first concern, that State A has in effect made a self-serving marine preserve dedication solely for purpose of expanding its maritime boundaries, without any demonstration of the area's economic value. State A could be required to show that the marine preserve would deliver economic benefits through one of the various environmental valuation techniques.[216] Standards could be developed not only through adjudication, but also by the International Maritime Organization ("IMO"),[217] a specialized agency of the United Nations that increasingly supports coastal and broader environmental interests,[218] and under whose auspices UNCLOS III's requirements for vessel-source pollution have already been fulfilled through the adoption of various international conventions.[219] Furthermore, State A could be required to demonstrate that its proposed marine preserve is part of a concentrated and coherent environmental management plan. Finally, State A must commit to maintain the marine preserve in perpetuity, helping ensure that it will establish a marine preserve only if such preserve represents the area's highest and best use.

With respect to State B's concern about the fairness of the island's use in a maritime delimitation between the two States, any distorting effects may be avoided or mitigated by the application of

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215. *See supra* note 11 (describing the equidistance rule).

216. *See supra* notes 158-172 and accompanying text.

217. *See* Convention on the Intergovernmental Maritime Consultative Organization, Mar. 6, 1948, 9 U.S.T. 622, 289 U.N.T.S. 48.

218. *See* Bodansky, *supra* note 79, at 725-26 (discussing the changing role of the IMO).

219. *See* Patricia W. Birnie, *Small Cetaceans and the International Whaling Commission*, 10 GEO. INT'L ENVTL. L. REV. 1, 5 (1997) (stating that the approximately forty adopted IMO Conventions are significant in the marine environment protection arena); *see also* Tiffani Y. Lee, Note, *Environmental Liability Provisions Under the U.N. Compensation Commission: Remarkable Achievement with Room for Improved Deterrence*, 11 GEO. INT'L ENVTL. L. REV. 209, 228 (1998) (discussing the IMO's role in the clean-up of oil spills following the Gulf War).

some basic principles of maritime delimitation. One option would be to grant State A's island its own territorial sea, but to ignore the island in any maritime delimitation between the two States.[220] The foregoing may be completed through the creation of an enclave around the island in instances where that island fell on the "other side" of the median line—in other words, in instances where that island fell within State B's jurisdiction under the equidistance rule.[221] Another possibility would be to provide State A's island with "half-effect," as was done in the arbitration between the United Kingdom and France over the Scilly Islands[222] and by the ICJ in the Tunisian-Libyan Continental Shelf Case.[223] The method of giving half-effect consists in delimiting the line equidistant between the two coasts, first without the use of the off-shore island as a base-point, and second with its use as a base-point. A boundary giving half-effect to the island is the line drawn mid-way between those two equidistance lines.[224] The decision to give half-effect to islands provides a way to abate the inequitable effects of distorting geographical features.[225] A third option includes conceding only a territorial sea to State A's island, but then ignoring the islands nearer to State B's coast in calculating the median line between the two States.[226]

A slightly different problem could arise if both State A and State

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220. *See* HIRAN W. JAYEWARDENE, THE REGIME OF ISLANDS IN INTERNATIONAL LAW 354 (1990) (discussing the possibility of ignoring small, insignificant islands without human habitation for equidistant purposes, but nonetheless granting them their own belts of territorial waters).

221. *See* SYMMONS, *supra* note 7, at 193; Dubai/Sharjah Border Arbitration, 91 I.L.R. 543, 677 (Court of Arbitration 1981) (finding that this option was carried out in the Dubai/Sharjah Border Arbitration).

222. *See Arbitration between the United Kingdom of Great Britain and Northern Ireland and the French Republic on the Delimitation of the Continental Shelf* (June 30, 1977), para. 251, *reprinted in* 18 I.L.M 397, 455 (1979) [hereinafter *Arbitration between the United Kingdom and Northern Ireland*].

223. *See* Continental Shelf (Tunis v. Libya), 1982 I.C.J. 18, para. 129 (Feb. 24) (giving "half effect" to the Kerkennah Islands).

224. *See Arbitration between the United Kingdom and Northern Ireland, supra* note 222, para. 251, 18 I.L.M at 455.

225. *See id.* (applying this principle to the Scilly Islands).

226. *See* D.P. O'CONNELL, 2 THE INTERNATIONAL LAW OF THE SEA 720 (I.A. Shearer ed., 1984).

B simultaneously established a marine preserve on one of their small islands located outside their respective territorial seas. Each State could argue that its "rock" should be treated as an island because of the marine preserve, and thus claim the entire area between its coast and the other State's territorial sea.

This type of dispute may be resolved as follows.[227] First, the claims of each State would be evaluated rigorously in the manner proposed above to assure the validity of each State's Article 121(3) claim. Assuming both marine preserves had a demonstrable economic benefit, the focus would shift to previous cooperation, if any, between the States. The Third UNCLOS calls for States to cooperate, on a global or regional basis, to protect and preserve the marine environment.[228] Cooperation includes the immediate notification of imminent danger to the marine environment[229] and contingency plans to prevent or minimize the environmental damage,[230] the promotion of studies and the exchange of information about marine pollution,[231] and the establishment of scientific criteria to formulate rules, standards, and practices to protect the marine environment.[232] Each State would then be required to demonstrate that it had attempted to cooperate in these ways, but that it was unable to enlist the assistance of the other State, or that such assistance was not feasible, for example, because of the opposition of other, more powerful States in the region. A State's previous (and unjustifiable) refusal to cooperate would trigger the dismissal of its claim for extended jurisdiction under Article 121(3). This emphasis on coop-

227. This method would also provide for the resolution of disputes where only one State relies on the establishment of a marine preserve in a maritime delimitation and the other State's claim rests on other bases.

228. *See* Law of the Sea Convention, *supra* note 1, art. 197 (providing that States consider regional characteristics of the environment when deciding on international rules and standards for the protection of marine environment).

229. *See id.* art. 198 (requiring States to notify international organizations as well as its own neighbors who may be affected by the damage).

230. *See id.* art. 199 (requiring States to respond to pollution incidents through jointly-developed contingency plans).

231. *See id.* art. 200 (requiring States to research and share information on marine life and assessments of pollution in marine areas).

232. *See id.* art. 201 (furthering cooperation by creating measures to prevent, reduce, and control pollution of the marine environment).

eration would encourage States to reach bi- or multi-lateral solutions to environmental problems, rather than to advance their own interests unilaterally. If, nevertheless, both States had tried to cooperate or cooperation was not possible, the dispute could be resolved by applying one of the various principles of maritime delimitation previously described[233] or by applying the equidistance line and treating the islands as canceling out each other's effect.[234]

In sum, one State's expansion of its maritime jurisdiction through the establishment of a marine preserve on or around a small island need not come at the expense of an adjacent coastal State. It also need not dramatically alter the balance of power between the two States or among the States in the region as a whole. For example, the fact that a State establishes a marine preserve would neither automatically entitle it to oil rights over an area also claimed by and/or located in close proximity to another State, nor to the expansion of its maritime boundaries at the expense of the high seas, even though the preserve technically fell within the State's 200-mile EEZ. As discussed above, existing principles of maritime delimitation offer ways to mitigate, if not eliminate, any such dislocations caused by the expansion of one State's maritime jurisdiction.[235] However, ultimately such determinations of Article 121(3) claims are extremely fact intensive and may best be fleshed out on a case-by-case basis through UNCLOS III's dispute resolution process.[236]

B. DISPUTE RESOLUTION PROCEDURES UNDER UNCLOS III

Part XV of the Third UNCLOS sets forth a detailed scheme of dispute resolution[237] that may assist in resolving disputes engen-

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233. *See supra* notes 220-226 and accompanying text.

234. *See* O'CONNELL, supra note 226, at 720.

235. *See supra* notes 220-31 an accompanying text.

236. *Cf.* Bodansky, *supra* note 79, at 767 (describing how UNCLOS III's dispute resolution process would help resolve conflicts between coastal and maritime States over vessel-source pollution).

237. *See generally* John King Gamble, Jr., *The 1982 Convention on the Law of the Sea: Binding Dispute Settlement?*, 9 B.U. INT'L L.J. 39, 57 (1991) (stating that UNCLOS III's dispute settlement provisions "stand as an important accomplishment for international law").

dered by the interpretation of Article 121(3) proposed here. The Convention's dispute resolution scheme is divided into three sections. Section One authorizes State parties to choose a dispute procedure as long as a binding decision results.[238] Section Two, which operates only in the event that Section One fails, and which is subject to the narrow exceptions of Section Three, establishes a compulsory dispute settlement system for binding decisions.[239] In addition, Section Two allows States to choose among the International Tribunal for the Law of the Sea ("ITLOS"), the ICJ, and a special arbitral tribunal.[240] Section Three exempts a limited number of disputes from the compulsory dispute settlement system of Section Two, including a wide range of boundary determinations between opposite or adjacent States, such as those involving the territorial sea, EEZ, and Continental Shelf.[241]

So, while the Third UNCLOS cannot guarantee compulsory settlement of a wide range of disputes, it encourages States to seek resolution of such disputes[242] and, more importantly, provides a framework within which they may in fact do so. Moreover, over time, fora, such as the ITLOS, could develop rules to resolve disputes involving Article 121(3). In addition, were a non-party involved in such a dispute, the ICJ could exercise jurisdiction, wholly apart from UNCLOS III, under Section 36(2) of the Statute of the ICJ,[243] if both parties had consented to the ICJ's jurisdiction.

C. CONSERVATION EASEMENTS AND ENFORCING COMMITMENTS UNDER ARTICLE 121(3)

Finally, the proposal presented in this Article raises the concern that a State, despite its commitment to maintain a marine preserve

238. *See* Law of the Sea Convention, *supra* note 1, arts. 279-85.

239. *See id.* arts. 286-99 (delineating the dispute settlement process).

240. *See id.* art. 287, para. 1.

241. *See id.* art. 298, para. 1(a)(i).

242. *See id.* art. 298, para. 1(a)(i) (following the failure to resolve a dispute excepted from the procedures of Section Two, one State may require submission of the dispute to a non-binding conciliation commission).

243. *See* Statute of International Court of Justice, art. 36, para. 2, 59 Stat. 1055 (entered into force Oct. 24, 1945) (setting forth the types of disputes that may be reconciled between consenting States).

in perpetuity, might later decide to pursue economic development in that particular area. How can the international community guarantee that such commitment will continue to be honored into the future, and not merely serve as a convenient and costless predicate by which a State may expand maritime jurisdiction?

The conservation easement offers a promising means of ensuring a State's compliance with its commitment under Article 121(3). An increasingly popular alternative to State regulation among both conservationists and property owners,[244] conservation easements have been used for various purposes, including protecting wetlands and limiting land use.[245]

Easements are a property concept developed by common law systems. The creation of an easement traditionally meant that the owner of the burdened property was not the only person who possessed a right to that property since the easement holder also maintained limited property rights.[246] Conservation easements, a type of easement,[247] are created when the owner transfers some or all of his rights to develop the property to a government or non-government

244. *See, e.g.*, John L. Hollingshead, *Conservation Easements: A Flexible Tool for Land Preservation*, 3 ENVTL. LAW. 319, 323 (1997) (noting the appeal of conservation easements over traditional land-use measures, due to the fact they are voluntary, flexible, and self implementing).

245. *See id.* at 333 (recounting the earliest use of conservation easements in Massachusetts in the 1880s and their present day use in wetlands for the protection of migratory waterfowl); *see also id.* ("The primary impetus for the use of the modern conservation easements [in the United States] was the protection of scenic views along highways."). Conservation easements have become an increasingly widespread alternative to state regulation in common-law countries such as the United States and Canada. *See* Ian Bowles et al., *Economic Incentives and Legal Tools for Private Sector Conservation*, 8 DUKE ENVTL. L. & POL'Y F. 209, 213 (1998) (describing the formation of conservation easements). Their use is also increasing in civil law jurisdictions. *See id.* at 216 (noting that Costa Rica has used conservation easements to protect the cloud and rain forests).

246. *See* Bowles et al., *supra* note 245, at 212 (teaching that the utility of property cannot interfere with easement rights).

247. Originally, easements could exist only if they benefited one parcel of land, the "dominant tenement," by burdening another, the "servient tenement." *See id.* Conservation easements became possible only when common law jurisdictions started to eliminate the requirement of a dominant and servient tenement, thus allowing for easements not connected to another piece of land. *See id.* at 213.

agency.[248] A conservation easement provides its holder—who acts as a trustee for the public—with the right to prevent certain kinds of uses of the owner's property. The landowner's use of that property is thereafter restricted to the terms of the easement; otherwise, the holder of the easement may sue for enforcement.

In the case of Article 121(3), an international non-government organization, or another State in the region with a direct interest in ensuring that the coastal State's environmental commitment is enforced, would hold the easement. The easement holder would be given a supervisory role over the protected area and would have standing to assert conservation rights if the coastal State transgressed its commitment. The conservation easement thus offers a way to ensure a State's commitment to a marine preserve by effectively tying the hands not only of the administration that establishes the preserve but future governments as well.

Conversely, however, there is the possibility that a State's commitment under Article 121(3) might be made too inflexible, not allowing for significant and unforeseen changes. For example, what if the economic value of a marine preserve is lost because the unique species that provided its economic value becomes extinct?

The conservation easement may again offer a solution, as it provides for its own termination upon some specified event, such as changed circumstances affecting the environmental or economic value of the island.[249] Alternatively, a conservation easement may be reformed if its express purpose can no longer be satisfied by application of the *cy pres* doctrine.[250] Here, that doctrine would allow

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248. *See id.* Conservation easements may be either positive or negative. Whereas a positive conservation easement provides the public with the right to engage in a specified use of the property, such as fishing in adjacent streams, a negative conservation easement restricts the burdened landowner's right to use the land. *See* Jeffery A. Blackie, Note, *Conservation Easements and the Doctrine of Changed Conditions*, 40 HASTINGS L.J. 1187, 1193-94 (1989).

249. *See* Hollingshead, *supra* note 244, at 328-29 (discussing ways in which common law easements could terminate).

250. *See* RESTATEMENT (SECOND) OF TRUSTS, sec. 399 (1959).

> If property is given in trust to be applied to a particular charitable purpose, and it becomes impossible or impracticle ... to carry out the particular purpose, and if the settlor manifested a more general intention to devote the property to charitable purposes, the trust will not fail but the court will di-

the easement holder to request, and a tribunal to substitute, another plan of administration that is believed to mirror the original plan as closely as possible.[251] Thus, if the species that gave the marine preserve its principal economic value unforeseeably became extinct, the coastal State could pursue a limited form of economic development that did not harm the environment and that promoted that State's existing commitment under Article 121(3). In contrast, a State's sudden need for short-term revenue to address an economic downturn at home would not justify the application of *cy pres* since it would in no way invalidate the purpose of the marine preserve. Similarly, greater economic development in the region as a whole would not be a changed condition justifying the application of *cy pres* since the economic value of the preserved area, now an even scarcer resource, would actually be greater.

Conservation easements have proven to be an effective means of achieving sustainable development. Their increasing importance supports the premise outlined in this Article: that the "best use" of the sea may in some instances be to preserve it for posterity, rather than to develop it to attain the highest short-term economic gain.[252]

CONCLUSION

The ocean is an invaluable resource whose protection is a growing focus of international law. The Third UNCLOS plays a vital role in this process and should be interpreted, where possible, to protect the marine environment. A marine preserve that not only protects the marine environment but also advances a State's eco-

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rect the application of the property to some charitable purpose which falls within the general charitable intention of the settlor.

Id.

251. *See* RESTATEMENT (THIRD) OF PROPERTY (SERVITUDES), sec. 8.5 (discussing the application of *cy pres* to conservation easements); Blackie, *supra* note 248, at 1216-17 (same).

252. *See* Blackie, *supra* note 248, at 1203.

> The best use of a river may not be to dam it up and then distribute the water to irrigate farmland, but rather, allow it to run unfettered to the sea. . . . The best use of forestland may not be timber supply but rather support, in an undisturbed state, of the ecosystems that depend on it. In short, best use should not always be determined by the highest market price.

Id.

nomic interests should be considered to have an "economic life of [its] own" under Article 121(3). There is perhaps no better way to protect the marine environment than to reward those States that prove that environmental protection makes sense from the standpoint of economic development.