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INTEGRATED COASTAL ZONE MANAGEMENT IN THE CARIBBEAN REGION

DANIEL SUMAN*

I.	INTRODUCTION	32
II.	THE WIDER CARIBBEAN REGION	32
	A. <i>The Region</i>	32
	B. <i>The Region's Coastal Problems</i>	33
III.	INTEGRATED COASTAL ZONE MANAGEMENT	35
	A. <i>What Is It?</i>	35
	B. <i>Integrated Coastal Zone Management in the International Regime</i>	36
	C. <i>The Legal Basis of Integrated Coastal Zone Management in the Caribbean Region</i>	39
	1. The Cartagena Convention	39
	2. Protocols to the Cartagena Convention	40
	3. The International Convention for Prevention of Pollution from Ships (MARPOL 73/78), Annex V	45
IV.	REGIONAL INTEGRATED COASTAL ZONE MANAGEMENT EFFORTS: CARIBBEAN ENVIRONMENT PROGRAMME	46
V.	COUNTRY EFFORTS AND SUCCESS STORIES	48
VI.	CONCLUSION: OBSTACLES AND CHALLENGES TO ADOPTION OF INTEGRATED COASTAL ZONE MANAGEMENT IN THE CARIBBEAN	49

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I. INTRODUCTION

Over the last decade, nations and international organizations have stepped up their efforts to assess and manage coastal systems and resources. This paper reviews those efforts with special reference to the Wider Caribbean Region. As such, the paper both notes success stories and proposes actions that the region should take in order to preserve and develop the environmental quality of the Caribbean Region.

II. THE WIDER CARIBBEAN REGION

A. *The Region*

The Wider Caribbean region occupies an area of 4.31 million square kilometers and includes two major ocean basins: the Caribbean Sea and the Gulf of Mexico.¹ The insular Caribbean accounts for only 5% of the world's lands, but for over 50% of the world's coastlines.² Political divisions characterize the region, which includes twenty-four island states and territories and twelve mainland nations.³ Over two hundred million persons inhabit the Caribbean islands and the coastal regions of the continental countries.⁴ In addition to these permanent residents, over one hundred million tourists visit the area each year attracted by the sun, sea, beaches, and a high quality natural environment.⁵ Consequently, tourism is the principal source of foreign exchange earning in much of the Wider Caribbean.⁶ Tourism activities account for 23% of Jamaican foreign exchange earnings and 70% of those of the Cayman Islands.⁷ Total 1996 tourism expenditures exceeded twenty-five billion dollars.

1. Arsenio Rodriguez, *Marine and Coastal Environmental Stress in the Wider Caribbean Region*, 10 AMBIO 283 (1981).

2. United Nations Environment Programme/Caribbean Environment Programme (UNEP/CEP), *Status of Protected Area Systems in the Wider Caribbean*, 36 CEP TECHNICAL REP. 5 (1996) [hereinafter *Status of Protected Areas*].

3. DON HINRICHSSEN, *COASTAL WATERS OF THE WORLD: TRENDS, THREATS, AND STRATEGIES* 103 (1998); see Map *infra* at p. 52.

4. *Id.* at 104.

5. *Id.*

6. UNEP/CEP, *Regional Overview of Environmental Problems and Priorities Affecting the Coastal and Marine Resources of the Wider Caribbean*, 2 CEP TECHNICAL REP. 19 (1989) [hereinafter *Regional Overview*].

7. *Id.* at 19.

While the tourism industry is important throughout the region, other economic activities, such as oil and gas production, fisheries, and monocrop agriculture, are regionally important.⁸ For example, petroleum exploitation in the Gulf of Mexico (United States and Mexico) and the Caribbean Sea (Trinidad and Tobago and Venezuela) surpasses three million barrels per day.⁹

*B. The Region's Coastal Problems*¹⁰

Despite the wealth and abundance of the Wider Caribbean, many of the region's inhabitants live in severe poverty. A scarcity of jobs, skills, resources, and investments marks the region.¹¹ Consequently, economic growth is a priority for the developing countries of the Caribbean region. Unfortunately, however, the region's expansion of its tourism, agriculture, and natural resource extraction industries all produce adverse environmental impacts. Sustaining these sectors requires minimizing or preventing such adverse impacts through careful environmental assessment and planning. Caribbean ecosystems, which include mangroves, sea grass beds, 14% of the world's coral reefs, and numerous estuaries, are under threat from marine-based and land-based pollution, uncontrolled coastal development, and overexploitation of natural resources.¹²

Degradation of water quality and land-based source pollution are perhaps the most serious problems in the Caribbean coastal waters. Marine pollution is generally localized, but it is increasing as a result of population growth, industrialization, and construction of tourist hotels that lack adequate sewage treatment facilities. Only about 10% of the domestic wastes from the region's two hundred million inhabitants receive any treatment.¹³ In metropolitan Kingston, Jamaica, only 36% of households are connected to municipal sewer systems, and only 15% of urban households in the Dominican Republic are connected to sewage infrastructures.¹⁴ Additionally, high

8. Rodriguez, *supra* note 1, at 289.

9. See Rodriguez, *supra* note 1.

10. See *id.*

11. HINRICHSSEN, *supra* note 3, at 103.

12. *Id.* at 106-13.

13. *Id.* at 106; see also Rodriguez, *supra* note 1, at 289.

14. *Regional Overview*, *supra* note 6, at 17.

fertilizer loads entering coastal waters from the region's sugar cane fields create localized eutrophication or nutrient-enrichment events.¹⁵

Pollution sources also include industrial effluents from sugar refining and alcohol distillation, mining, and petroleum refineries.¹⁶ These industrial wastes enter coastal waters with essentially no treatment before release. Major ports, such as Havana, Cuba; Kingston, Jamaica; San Juan, Puerto Rico; and Cartagena, Colombia are known for their serious pollution problems.

The Caribbean region is particularly susceptible to oil pollution. Some five million barrels of oil pass through the Caribbean's major shipping lanes each day.¹⁷ Each year about seven million barrels are dumped into the sea through tanker discharges and offshore oil rigs.¹⁸ Major petroleum and gas extraction also increases the risk of oil spills.

An additional source of pollution to Caribbean coastal waters is plastic trash. The sources are principally ship-based activities, not just terrestrial activities. Plastics potentially threaten marine mammals and fish and also pose aesthetic problems for tourism. Ships make sixty-three thousand calls per year in the Wider Caribbean Region, bringing eighty-two thousand tons of garbage, most of which is dumped at sea.

Coastal habitat losses and the resulting reduction of species diversity are additional environmental problems that are fueled by urbanization and the development of coastal tourist infrastructure. Coral reefs are over-fished, exploited for building materials, blasted to create vessel channels, and degraded by poor water quality. In the Caribbean, about 75% of coral reefs are in serious decline or under threat.¹⁹ Oil pollution in Puerto Rico and Mexico has also damaged corals, and poor water quality is causing adverse impacts on coral communities in Jamaica, Florida, and Colombia.

Despite their importance as fishery-nursery areas, mangrove forests are experiencing systematic destruction throughout the

15. Rodriguez, *supra* note 1, at 290.

16. *See id.*

17. *Id.* at 291.

18. HINRICHSSEN, *supra* note 3, at 109.

19. *Id.* at 111.

Caribbean due to urbanization, tourist development, and agricultural expansion. For example, the Portmore area of Kingston, once a marine wetland surrounded by mangroves, has been filled to house eighty thousand people. Recent expansion of the Colon Free Zone in Panama has also destroyed large areas of coastal wetlands. Losses also occur in beach and dune habitats because of sand mining and poorly sited coastal construction. This problem is critical in Florida, Mississippi, the north coasts of Puerto Rico and Jamaica, and the east coasts of Trinidad.

Overexploitation of the marine resource base is an additional Caribbean coastal reality. Over 35% of fish stocks in the Wider Caribbean are regarded as over-fished.²⁰ Inshore reef fish stocks are also in poor condition due to heavy overexploitation and habitat degradation.

Institutional deficiencies exacerbate these coastal pollution problems in many Caribbean states. These limitations include ineffective public management, failed land use planning, weak or non-existent measures to address pollution problems, scarce institutional resources, and little or no consideration of carrying capacity. A program of Integrated Coastal Zone Management could reduce these institutional deficiencies.

III. INTEGRATED COASTAL ZONE MANAGEMENT

A. *What is it?*

The World Coast Conference 1993 Conference Statement defines Integrated Coastal Zone Management (ICZM) as "the comprehensive assessment, setting of objectives, planning and management of coastal systems and resources, taking into account traditional, cultural and historical perspectives and conflicting interests and uses" of coastal areas.²¹ Coastal area management is a dynamic and continuous process of adaptive management of coastal areas to achieve the goals of sustainable development and coastal resource protection.²²

20. WORLD CONSERVATION MONITORING CENTRE, *THE DIVERSITY OF THE SEAS: A REGIONAL APPROACH* 54 (1996).

21. Intergovernmental Panel on Climate Change, *Preparing to Meet the Coastal Challenges of the 21st Century* 25 (1994) [hereinafter IPCC].

22. *Id.*; see also Biliانا Cicin-Sain, *Sustainable Development and Integrated Coastal*

The term "integrated" has multiple implications in the management of coastal space.²³ It recognizes the spatial interdependence of upland areas, coastal ecosystems, and the marine environment. It assumes that coordinated planning and management must involve all coastal economic sectors, such as fishing, tourism, urbanization, ports and maritime transportation, pollution control, oil production, and protected area management. Integration also implies that all coastal resource users and all levels of government will be involved in decision-making. ICZM also utilizes analytical tools from various social and natural sciences. Finally, it assumes that the institutional arrangement will adopt management strategies that implement the ICZM program. Implementation of ICZM considers the impact of one economic sector upon others and results in planning which may minimize negative impacts by reducing spatial conflicts and promoting an orderly development of coastal space. Effective ICZM could be used to maximize the social, economic, and ecological indicators of sustainable development in coastal areas.

The concept of the coastal zone was developed in continental systems. However, in the case of small islands, the coastal zone may incorporate the entire island and, therefore, might be called "integrated island management."

B. Integrated Coastal Zone Management in the International Regime

In recent years, the international legal regime has recognized the importance of the ICZM concept. The 1992 United Nations Conference on Environment and Development (Earth Summit), through Chapter 17 (dealing with oceans and coasts) of the Agenda 21 Action Program, stressed the importance of ICZM and urged all coastal nations to adopt this process and develop ICZM national plans as soon as possible.²⁴

Management, 21 OCEAN & COASTAL MGMT. 11, 15 (1993); BILIANA CICIN-SAIN & ROBERT KNECHT, INTEGRATED COASTAL AND OCEAN MANAGEMENT: CONCEPTS AND PRACTICES 39 (1998) [hereinafter INTEGRATED COASTAL & OCEAN MGM'T]. The terms "coastal zone" and "coastal area" are often interchanged in the literature.

23. See Jens Sorensen, *The International Proliferation of Integrated Coastal Zone Management Efforts*, 21 OCEAN & COASTAL MGMT. 45 (1993); see also Cicin-Sain *supra* note 22, at 15; INTEGRATED COASTAL & OCEAN MGM'T, *supra* note 22, at 43-46, 150-57.

24. Adoption of Agreements on Environment and Development, Agenda 21, United

Agenda 21 set forth a new paradigm that linked ICZM, land-based source pollution, and sustainable development.²⁵ ICZM plays a critical role in addressing three coastal needs: sustainable development and use of coastal resources, protection of coastal and marine ecosystems and biological diversity, and rational response to changes in climate and sea levels.²⁶ Agenda 21, agreed to by all nations participating in the 1992 Earth Summit, stimulated a number of international agreements and declarations of policy that promoted ICZM.

The first global conference to consider all aspects of ICZM was the 1993 World Coast Conference, held in Noordwijk, the Netherlands. The World Bank, in consultation with the United Nations Environment Programme (UNEP) and the Food and Agriculture Organization (FAO) compiled the often-cited technical *Noordwijk Guidelines* for development of ICZM programs for distribution at the World Coast Conference.²⁷ The conference goal was to consider national studies and techniques for coastal management and establish a work plan to assist countries in their ICZM planning.²⁸ The Conference Statement identified elements of an ICZM program and obstacles to their effective implementation.²⁹ International action must be coordinated with national responses to avoid duplication of resources, and to facilitate implementation of national ICZM programs through information networks, training activities, ICZM methodologies and guidelines, and research and monitoring programs.³⁰

The Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities adopted in Washington, D.C., in 1995, also called for national actions that embrace the ICZM. These activities should provide for identification of problems, establishment of priorities, adoption of management objectives to address the priority problems, selec-

Nations Conference on Environment and Development, 134-73, U.N. Doc. A/CONF.151/4 (Part II) (1992) [hereinafter Agenda 21].

25. *Id.* at 140-43.

26. *See generally id.*

27. NOORDWIJK GUIDELINES FOR INTEGRATED COASTAL ZONE MANAGEMENT (1993) (on file with the *Inter-American Law Review*) [hereinafter NOORDWIJK GUIDELINES].

28. *Id.* at 2.

29. *Id.* at 6-7.

30. *Id.* at 7-8.

tion of management strategies, and evaluation of program effectiveness.³¹

As called for by Chapter 17 (paragraph 17.131) of Agenda 21 and the United Nations General Assembly Resolution 47/189, the Global Conference on Sustainable Development of Small Island Developing States (SIDS) met in 1994 in Barbados (Barbados Conference).³² Many Caribbean nations were active participants in the Barbados Conference.³³ The Conference documents recognized that many SIDS are entirely or predominantly coastal in nature and that their sustainable development required an effective and integrated management of coastal resources. The non-binding Programme of Action recommended national efforts in fourteen priority areas, including changes in climate and sea levels, waste management, coastal and marine resources, tourism resources, and biodiversity.³⁴ These topics represent interests that are important in coastal areas. Conference participants viewed ICZM as the principal tool that could coordinate implementation of the action plan.

Several conventions support adoption of the ICZM concept. The United Nations Framework Convention on Climate Change calls on coastal states to develop programs for coastal management to address the impacts of global climate change and reduce their vulnerability to rising sea levels.³⁵ The action plan for the Convention on Biological Diversity calls on Parties to address coastal and marine biological diversity.³⁶ The Convention's Subsidiary Body for Scientific, Technical, and Technological Advice (SBSTTA) recommended the promotion of

31. Daniel Suman & Lynette Cardoch, *Coastal Zone Management*, 6 Y.B. INT'L ENV'T L. 322, 324 (1995); see André Nollkaemper, *Protection of the Marine Environment from Land-Based Activities*, 6 Y.B. INT'L ENV'T L. 244, 244-45 (1995).

32. Agenda 21, *supra* note 24, at 169; see also Mark D. Griffith, *Reflections on the Implementation of the Programme of Action on the Sustainable Development of Small Island Developing States (SIDS)*, 29 OCEAN & COASTAL MGMT. 139, 142 (1995). In February, 1995, the U.N. General Assembly adopted the Earth Summit's SIDS recommendation. United Nations Global Conference on the Sustainable Development of SIDS Resolution, GAOR, U.N. Doc. A/RES/49/122 (1995).

33. Griffith, *supra* note 32, at 140-42.

34. *Id.* at 143.

35. NOORDWIJK GUIDELINES, *supra* note 27, at 2; United Nations Framework Convention on Climate Change, art. 4(e), May 9, 1992, 31 I.L.M. 849, 855 (1992).

36. Daniel Suman & Lynette Cardoch, *Coastal Zone Management*, 5 Y.B. INT'L ENV'T L. 251, 253 (1994); see United Nations Convention on Biological Diversity, June 5, 1992, 20 S. TREATY DOC. (1993) reprinted in 31 I.L.M. 818, 823 (entered into force Dec. 29, 1993) [hereinafter CBD].

ICZM as a framework for regulating land-based activities and introducing principles of ecosystem management.³⁷ The Second Session of the Conference of the Parties to the Convention on Biological Diversity adopted the SBSTTA recommendation.³⁸

*C. The Legal Basis of Integrated Coastal Zone
Management in the Caribbean Region*

1. The Cartagena Convention

The Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (Cartagena Convention) was adopted in 1983 in Cartagena, Colombia, and entered into force in 1986.³⁹ This agreement was the first Caribbean environmental treaty, and it established the framework for further environmental protection/management efforts that are still unfolding today. The Convention Area, that is, the Wider Caribbean Region, includes the Caribbean Sea, Gulf of Mexico and adjacent areas of the Atlantic Ocean to 30° N within two hundred nautical miles of Contracting Parties' coastlines.⁴⁰ The twenty ratifying and acceding Parties are Antigua and Barbuda, Barbados, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, France, Grenada, Guatemala, Jamaica, Mexico, Netherlands Antilles, Panama, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, the United Kingdom, the United States, and Venezuela.⁴¹

The Cartagena Convention is a framework agreement with broad and general obligations that need to be further specified in protocols. Specifically, Contracting Parties agreed to take all appropriate measures to prevent, reduce, and control pollution

37. Daniel Suman & Lynette Cardoch, *Coastal Zone Management*, 6 Y.B. INT'L ENV'T'L L. 322, 323 (1995); see CBD, *supra* note 36, art. 25, 31 I.L.M. 833.

38. *Report of the Second Meeting of the Conference of the Parties to the Convention on Biological Diversity*, available in 6 Y.B. INT'L ENV'T'L L. 805, 821-24 (1995).

39. Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, Mar. 24, 1983, 22 I.L.M. 227 (1983) [hereinafter *Cartagena Convention*]; see also Mary Schumacher et al., *Land-based Marine Pollution in the Caribbean*, 20 MARINE POLICY 99, 100 (1996).

40. Cartagena Convention, *supra* note 39, art. 2, 22 I.L.M. 227.

41. See David Freestone, *Specially Protected Areas and Wildlife in the Caribbean—The 1990 Kingston Protocol in the Cartagena Convention*, 5 INT'L J. OF ESTUARINE & COASTAL L. 362 (1990).

from ships,⁴² ocean dumping activities,⁴³ land-based sources,⁴⁴ seabed activities,⁴⁵ and atmospheric activities.⁴⁶ Contracting Parties also agreed to take appropriate measures to protect and preserve rare and fragile ecosystems and endangered/threatened species, as well as to establish protected areas.⁴⁷ Article 11 contains the obligation to develop pollution (oil spill) contingency plans.⁴⁸ The agreement also calls on Contracting Parties to develop guidelines to assist in the planning of major development projects so as to minimize impacts on the Convention area.⁴⁹ This environmental impact assessment process would allow States to evaluate the potential impacts of development projects on their marine environments and coastal zones.

The Cartagena Convention does not specifically mention coastal zone management. In fact, the Convention area is defined as the "marine environment," rather than the "coastal and marine environment."⁵⁰ Nevertheless, the Convention's areas of concern include pollution control and prevention, protected areas, endangered species,⁵¹ and environmental assessment, which all require actions in terrestrial sectors of coastal areas.⁵²

2. Protocols to the Cartagena Convention

The Protocol Concerning Cooperation in Combating Oil Spills was adopted in 1983 and entered into force in 1986.⁵³ As a result of the Protocol, countries in the Eastern Caribbean, in collaboration with the International Maritime Organization, have prepared an oil spill contingency plan. Protocol obligations include development of rapid procedures to notify other Contracting Parties and to report information regarding oil

42. Cartagena Convention, *supra* note 39, art. 5, 22 I.L.M. 229.

43. *Id.* art. 6, 22 I.L.M. 229.

44. *Id.* art. 7, 22 I.L.M. 229.

45. *Id.* art. 8, 22 I.L.M. 229.

46. *Id.* art. 9, 22 I.L.M. 229.

47. *Id.* art. 10, 22 I.L.M. 229.

48. *Id.* art. 11, 22 I.L.M. 230.

49. *Id.* art. 12, 22 I.L.M. 230.

50. *Id.* art. 2, 22 I.L.M. 227.

51. *Id.* art. 10, 22 I.L.M. 229.

52. *Id.* art. 4, 22 I.L.M. 228.

53. Freestone, *supra* note 41, at 363; *see also* Protocol Concerning Co-operation in Combating Oil Spills in the Wider Caribbean Region, Mar. 24, 1983, 22 I.L.M. 240 (1983).

spills, as well as the obligation to provide mutual assistance in the event of oil spills.

The Protocol Concerning Specially Protected Areas and Wildlife (SPAW Protocol), possibly one of the most comprehensive regional wildlife treaties,⁵⁴ was signed by thirteen parties in 1990 but as of this writing, has yet to enter into force. By December 1998, only seven states (Colombia, Cuba, Dominican Republic, Panama, Venezuela, Saint Vincent and the Grenadines, and the Netherlands) had ratified the SPAW Protocol. France and the United States have yet to sign, although they were instrumental in the development of the SPAW Protocol. The SPAW Protocol lists common guidelines for identification, selection, and management of protected species.⁵⁵ Article 11 provides for cooperative measures that Parties must adopt to ensure protection and recovery of endangered and threatened species.⁵⁶ Three Annexes list marine and coastal species that require international cooperation for their protection. Annexes I and II contain 57 plant and 109 animal species, respectively, that require the greatest protection because of their endangered or threatened status. The Parties agreed to prohibit all forms of destruction, disturbance, or commercial trade of Annex I species, and to prohibit the taking, possessing, killing, or commercial trading of Annex II species. Contracting Parties are obligated to develop management measures for the Annex III species (forty species of flora and thirty species of fauna), which do not require total protection. Listing of species occurs by consensus or, in the alternative, by three-fourths vote of the Parties. Once the Parties add a species to an Annex, all agree to undertake "total protection" within their jurisdiction unless they file a reservation within ninety days. Protection measures, however, remain national activities that are subject to the political will of the national authorities.

The Wider Caribbean Region, as defined by the SPAW Protocol, is greater than the Convention Area and includes the

54. See Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, Jan. 18, 1990, available in 1 Y.B. INT'L ENV'TL L. 441 (1990) [hereinafter SPAW Protocol]; see also David Freestone, *Protection of Marine Species and Ecosystems in the Wider Caribbean: The Protocol on Specially Protected Areas and Wildlife*, 22 MARINE POLLUTION BULL. 579 (1991).

55. SPAW Protocol, *supra* note 54, art. 10, 1 Y.B. INT'L ENV'TL L. at 458.

56. *Id.* art. 11, 1 Y.B. INT'L ENV'TL L. at 459.

Convention Area, internal waters up to the fresh water limit and related terrestrial areas, if designated by the Party with sovereignty over the lands.⁵⁷ This flexible definition gives Parties the option to subject important coastal ecosystems to the SPAW Protocol's obligations.

The SPAW Protocol's objective is to create a network of national parks and protected areas in the Wider Caribbean Region.⁵⁸ The Protocol requires that states set common criteria for identification, selection, and management of protected areas.⁵⁹ Listed areas are of particular importance to the Wider Caribbean Region. This effort at the ecosystem level attempts to manage resources across political boundaries and recognizes that the regional effort has the potential to be greater than the sum of national conservation efforts.

Like the Cartagena Convention, the SPAW Protocol requires that Parties evaluate and consider the potential environmental impacts of development projects.⁶⁰ Parties would adopt this environmental impact assessment process to evaluate the impacts that projects might have on protected areas or on species that are protected under the Protocol.⁶¹

The Protocol on Land-Based Source Pollution (LBS Protocol) has been evolving over the last decade, and a final version may be adopted toward the middle of 1999. The Second Draft of the LBS Protocol⁶² aims to meet the requirements of Article 7 of the Cartagena Convention, which mandates that Contracting Parties "take all appropriate measures to prevent, reduce, and control pollution of the Convention area caused by coastal disposal or by discharges emanating from rivers, estuaries, coastal establish-

57. *Id.* art. 1(c), 1 Y.B. INT'L ENV'T'L L. at 451.

58. *Id.* art. 7, 1 Y.B. INT'L ENV'T'L L. at 456.

59. *Id.* art. 21, 1 Y.B. INT'L ENV'T'L L. at 466.

60. *Id.* art. 13, 1 Y.B. INT'L ENV'T'L L. at 461.

61. *Id.*

62. Revised Second Draft Protocol Concerning Pollution from Land-Based Sources and Activities to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, available as Annex IV to the Report of the Second Meeting of the Legal/Technical/Policy Experts for the Development of a Protocol Concerning Pollution from Land-Based Sources and Activities to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, UNEP, U.N. Doc. UNEP(WATER)/CAR WG.21/6 (1997) [hereinafter Revised Second Draft of LBS Protocol].

ments, outfall structures, or any other sources on their territories."⁶³

The Revised Second Draft LBS Protocol contains general obligations of the Contracting Parties. Under Article III of the proposed protocol, Contracting Parties must take appropriate national, sub-regional, and regional measures to prevent, reduce, and control pollution to the Convention Area from land-based activities and sources using the "best practicable means at [their] disposal in accordance with [their] capabilities."⁶⁴ Contracting Parties are obligated to develop national plans to prevent, reduce, and control LBS pollution using the most appropriate technology that takes into account the social, economic, technological, financial, and environmental conditions of the Contracting Party.⁶⁵ This draft article suggests that integrated coastal area management may be an appropriate approach to include in these national plans.⁶⁶

The draft Annexes specify the proposed details of the LBS Protocol. Contracting Parties will address source categories and contaminants listed in Annex I through the development of additional annexes, and will take measures to prevent, reduce, and control pollution from the source categories listed in the annexes.⁶⁷ These additional annexes will potentially establish effluent limitations and/or management practices, and reduction timetables. Proposed Annex I specifies source categories to include domestic sewage, agricultural non-point sources, chemical industry, oil refineries, sugar factories, and extractive industries and mining, among others.⁶⁸

63. Cartagena Convention, *supra* note 39, art. 7, 22 I.L.M. 227.

64. Revised Second Draft of LBS Protocol, *supra* note 62, art. III.

65. *Id.*

66. *Id.*

67. *Id.* art. IV.

68. Revised Annexes to the Protocol Concerning Pollution from Land-Based Sources and Activities to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, Annex I(P), *available as* Annex IV to the *Report of the Meeting of the Contracting Parties to the Cartagena Convention to Negotiate a Final Protocol Concerning Pollution from Land-Based Sources and Activities in the Wider Caribbean Region*, UNEP, U.N. Doc. UNEP(WATER)/CAR IG.15/7 (1998). According to the Draft Annex I of the LBS Protocol, point sources are "sources where the discharges and releases are introduced into the environment from any discernable, confined and discrete conveyance, including, but not limited to, pipes, channels, ditches, tunnels, conduits, or wells from which pollutants are or may be discharged;" non-point sources are those "from which substances enter the environment as a result of land runoff, precipitation, atmospheric deposition, drainage, seepage, or by hydrologic

Presently, two source category annexes are under discussion: Annex III for Domestic Wastewater and Annex IV for Agricultural Non-Point Sources. Annex III proposes Uniform Effluent Standards (UES) for Wastewater discharges to Class II waters (not particularly sensitive to impacts of domestic wastewater), and stricter UES standards for discharges to Class I waters (particularly sensitive to impacts of domestic wastewater).⁶⁹ Class I waters include coral reefs, seagrass beds, mangroves, feeding and breeding areas, habitats for SPAW Protocol species, SPAW Protocol protected areas, and public recreation areas. The timetable for implementation of Annex III varies between zero and fifteen years after Entry-Into-Force for the Contracting Party, depending on the category of effluent source.⁷⁰ For example, all new domestic wastewater systems and new commercial establishments must be in compliance at Entry-Into-Force, while large urban communities not possessing wastewater collection systems have twelve years to attain compliance.⁷¹

Several uncertainties may affect the success of the LBS Protocol. The geographical scope of the Protocol remains vague. The State Party will decide whether the land-based source discharge affects the Cartagena Convention Area, defined as the marine environment. While discharge pipes emptying directly into the marine environment clearly fall under the purview of Annex III, Contracting Parties may have varying interpretations regarding how far up the watershed they will apply Annex III requirements. Additionally, lack of financial support may limit implementation of the Protocol, as it will require costly secondary treatment in many nearshore areas.

Proposed Annex IV obligates Contracting Parties to develop national plans, policies, and legal mechanisms for the prevention, reduction, and control of agricultural non-point sources of pollution within five years after Entry-Into-Force for the Contracting Party.⁷² Use of Agricultural Best Management Practices is a requirement of the Annex. The draft annex, however, currently contains no targets and timetables for

modification, and is not a point source." *Id.*

69. *See id.*, Annex III.

70. *Id.*

71. *Id.*

72. *See id.*, Annex IV.

reduction of nitrogen and phosphorus loadings by specific percentages.

3. The International Convention for Prevention of Pollution from Ships (MARPOL 73/78), Annex V

The International Convention for Prevention of Pollution from Ships, Annex V to MARPOL 73/78, regulates the ocean disposal of vessel-generated garbage and establishes zones in which vessels may dispose various types of garbage.⁷³ Antigua and Barbuda, Bahamas, Barbados, Belize, Colombia, France, Jamaica, the Netherlands, Panama, St. Vincent and the Grenadines, Suriname, the United Kingdom, the United States, and Venezuela are Contracting Parties to Annex V. The Annex contains provisions for "Special Area" status for regions that require "special mandatory methods for the prevention of sea pollution" because of their oceanographic and ecological conditions.⁷⁴ No discharge of unground food wastes, plastics, or non-plastic trash is allowed in Special Areas; however, ground food waste may be dumped more than three miles offshore.⁷⁵ Contracting Parties whose countries border a Special Area agree to provide adequate reception facilities for garbage at their ports.⁷⁶

Effective April 18, 1993, the IMO designated the Wider Caribbean Region as a "Special Area."⁷⁷ As a result of this designation, the Global Environment Facility awarded a \$5.5 million grant to undertake the Wider Caribbean Initiative for Ship-Generated Waste with the IMO, the executing agency.⁷⁸ Before Special Area rules can be enforced, Contracting Parties must notify the IMO that adequate port reception facilities are available for ship needs.⁷⁹ Upon notification and within twelve

73. See IMO, MARPOL 73/78 CONSOLIDATED EDITION 1991(1992) [hereinafter MARPOL 73/78]. For parties, reservations, and declarations, see IMO's *Status of Multilateral Conventions and Instruments in Respect of Which the IMO or its Secretary-General Performs Depositary of Other Functions* (1998).

74. MARPOL 73/78, *supra* note 73, Reg. 1(3).

75. *Id.* Reg. 3(1).

76. *Id.* Reg. 5(4)(a).

77. F.G. Barnett, *Shipping and Marine Debris in the Wider Caribbean: Answering a Difficult Challenge*, in MARINE DEBRIS: SOURCES, IMPACTS, SOLUTIONS 219, 222 (James M. Coe & Donald B. Rogers eds., 1996).

78. *Id.* at 223.

79. *Id.* at 222.

months, the IMO will inform Contracting Parties to MARPOL 73/78 of Special Area rules for the Caribbean.⁸⁰

IV. REGIONAL INTEGRATED COASTAL ZONE MANAGEMENT EFFORTS: CARIBBEAN ENVIRONMENT PROGRAMME

The Caribbean Environment Programme (CEP) was initiated in 1976 by the UNEP in collaboration with the Economic Commission for Latin America.⁸¹ The 1981 First Intergovernmental Meeting adopted a CEP Action Plan that established a framework for regional cooperation and activities.⁸² Subsequently, the Regional Coordinating Unit (RCU) of the CEP opened in 1986 in Kingston, Jamaica. The CEP's current goal is to achieve sustainable development through integrated management of marine and coastal resources that permits economic growth while protecting the resource base and equitably distributing the benefits from resource utilization.⁸³

The CEP and the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific, and Cultural Organization formed the Assessment and Control of Marine Pollution program in 1988-89.⁸⁴ Goals include the implementation of a regional marine pollution monitoring and research program that focuses on pollutants affecting the quality of the marine and coastal environments.⁸⁵ Projects include pollution prevention guidelines, specific investment plans for sewage treatment plants in coastal cities with more than 100,000 inhabitants, and specific plans for reception facilities for ballast water and ship-generated garbage.⁸⁶

In furtherance of the objectives of the SPAW Protocol, the CEP has developed regional and national management plans for endangered or threatened species.⁸⁷ The RCU of the CEP has also

80. *Id.*

81. UNEP/CEP, GUIDELINES FOR INTEGRATED PLANNING AND MANAGEMENT OF COASTAL AND MARINE AREAS IN THE WIDER CARIBBEAN REGION 2 (1996) [hereinafter GUIDELINES FOR INTEGRATED PLANNING].

82. *Id.* at 3; see also Schumacher, *supra* note 39, at 102.

83. UNEP/CEP, *The Strategy for the Development of the Caribbean Environment Programme*, 5 CEP TECHNICAL REP. 2, 4 (1990).

84. *Id.* at 8.

85. *Id.*

86. *Id.* at 9.

87. See, e.g., UNEP/CEP, *Regional Management Plan for the West Indian Manatee, Tricheus manatus*, 35 CEP TECHNICAL REP. 1 (1995).

prepared improved management strategies of protected areas in the region.⁸⁸

The CEP has also initiated a regional program on Integrated Planning and Institutional Development for the Management of Marine and Coastal Regions (IPID) as part of its 1990-91 workplan.⁸⁹ IPID goals center on the strengthening of institutions that might implement ICZM programs. The program's principal mechanisms include the development of coastal planning pilot projects and the preparation of a regional ICZM methodological framework document.⁹⁰ The RCU of UNEP's CEP has developed a regional framework for the application of ICZM principles in countries of the Wider Caribbean Region. The effort attempts to strengthen national institutions and to encourage implementation of ICZM in the region. To this end, CEP has prepared *Guidelines for Integrated Planning and Management of Coastal and Marine Areas in the Wider Caribbean Region*.⁹¹ The IPID publication presents the general steps and stages for a nation's development and the specific mechanisms and strategies that might be used in the implementation plans.

IPID has also undertaken the development of pilot integrated management plans for small islands and coastal areas. Its goals are to develop a regional methodological framework for integrated planning and management of coastal areas and to strengthen the competence of the region's relevant institutions. Pilot studies have been completed in Antigua and Barbuda, Colombia (Corales del Rosario Marine Park), the Dominican Republic (Integrated Management Plans of San Pedro de Macoris/Punta Caucedo), Guatemala (Integrated Tourism Management Plan of the Atlantic Coast), Honduras (Roatan, Bay Islands), Nicaragua, St. Vincent and the Grenadines (Local Area Development Plan at Union Island), Suriname, and Venezuela (Integrated Management Plan of the municipalities of Maneiro and Arizmendi on Margarita Island).⁹²

88. *Status of Protected Areas*, *supra* note 2, at 15; see also UNEP/CEP, *Common Guidelines and Criteria for Protected Areas in the Wider Caribbean Region: Identification, Selection, Establishment and Management*, 37 CEP TECHNICAL REP. (1996).

89. GUIDELINES FOR INTEGRATED PLANNING, *supra* note 81, at 3.

90. *Id.*

91. *See id.*

92. Daniel O. Suman & Lynette Cardoch, *Coastal Zone Management*, 5 Y.B. INT'L ENV'T'L. L. 251, 256 (1994).

An additional IPID activity focuses on the environmental management of heavily contaminated bays and coastal areas. Goals include the development of recommendations and guidelines for action to control and abate pollution and to restore and manage these areas. Plans for assistance have been implemented for Havana (Cuba), Kingston (Jamaica), the Santo Domingo Littoral (Dominican Republic), Cartagena (Colombia), Point Lisas (Trinidad and Tobago), and Bluefields (Nicaragua).⁹³

V. COUNTRY EFFORTS AND SUCCESS STORIES

Unrelated to multiple CEP efforts to promote ICZM, several Caribbean political units have also developed coastal management projects that include the entire coastal area of the nation or territory.⁹⁴

In Barbados, tourism income represents about 38% of the GDP.⁹⁵ Utilization of coastal space has resulted in conflicts between the tourism, fishing, ports, and petroleum refining sectors.⁹⁶ There, the Coast Conservation Unit has become a permanent national agency with broad authority to regulate all major activities in the coastal zone. New legal authorities exist in the form of the Coastal Zone Management Act and the Marine Pollution Control Act; ICZM planning is underway.⁹⁷

Belize's coral reef is the longest in the Western Hemisphere. Recent coastal development could, however, damage this important resource. Belize established a Coastal Zone Management Unit (CZMU) within its Fisheries Department in 1990. The CZMU, as the principal agency for the implementation of coastal management plans,⁹⁸ has prepared special area management plans for marine and coastal protected areas. Future developments will include a coastal zoning plan.⁹⁹

93. *Id.*

94. See Sorensen, *supra* note 23.

95. IPCC, *supra* note 21, app. II at 10.

96. See Kenneth A. Atherley, et al., *Facing Management Challenges on the Barbados Coastline*, in COASTLINES OF THE CARIBBEAN 17-31 (Gillian Cambers & Orville T. Magoon eds., 1991).

97. Leonard A. Nurse, *A Phased, Incremental Approach to Coastal Management: The Barbados Model*, in 1 COASTAL ZONE 97, 142 (Martin C. Miller & Jessica Cogan eds., 1997).

98. HINRICHSSEN, *supra* note 3, at 115.

99. IPCC, *supra* note 21, app. II at 11.

Costa Rica passed coastal zone legislation in 1978 that defines the coastal zone as the first two hundred meters from the sea.¹⁰⁰ New construction in the first fifty meters is forbidden, and developments in the next one hundred and fifty meters require a local permit that should be consistent with a local land use management plan. However, the narrow geographical limits of the program overlook problems, such as deforestation and pollution in adjacent watersheds. Moreover, most local governments have failed to prepare land use plans.

The U.S. Virgin Islands' Coastal Zone Management Program was approved by the U.S. National Oceanic and Atmospheric Administration in 1979 and is administered by the Division of Coastal Zone Management of the Department of Conservation and Cultural Affairs.¹⁰¹ The program established a CZM Permit System and a general land and water use plan.¹⁰² The neighboring British Virgin Islands passed the Coast Conservation and Management Act of 1991 that prohibits coastal development activities without a permit.¹⁰³ Permit evaluations must pass through an interdepartmental review process.

VI. CONCLUSION: OBSTACLES AND CHALLENGES TO ADOPTION OF INTEGRATED COASTAL ZONE MANAGEMENT IN THE CARIBBEAN

Since the 1992 Earth Summit, the ICZM concept has gained increasing acceptance in the Wider Caribbean Region as a result of the mandates and recommendations of international agreements and declarations of policy. The CEP has taken the lead in coordinating regional ICZM efforts and has been able to orient its efforts in oil pollution control, land-based source pollution control, wildlife protection, and protected area management to include an integrated coastal area focus.

100. See HINRICHSSEN, *supra* note 3, at 116-17. In 1995, Costa Rica's legislature passed another law regulating coastal zone areas. The *Ley Orgánica del Ambiente No. 755*, articles 42 and 44, empowers the Ministry of Environment and Energy to designate coastal zones as protected areas and proscribes any activity threatening the natural cycle of ecosystems in these areas.

101. Mervin Williams, *Coastal Zone Management Strategies: The Caribbean Experience*, in ENVIRONMENTALLY SOUND TOURISM DEVELOPMENT IN THE CARIBBEAN 23, 28 (Felicity Edwards ed., 1988).

102. *Id.* at 31.

103. Gillian Cambers, *Coastal Legislation in British Virgin Islands*, in COASTLINES OF THE CARIBBEAN 54 (Gillian Cambers & Orville T. Magoon eds., 1991).

Nevertheless, significant difficulties remain for ICZM regional cooperation (and environmental cooperation in general) in the Caribbean region. The great diversity among the thirty-six Caribbean political units produces various types of fragmentation, which potentially make cooperation more problematic. These contrasts include some of the following:

1. legal systems (civil law vs. common law);
2. economic disparities (per capita income: United States: \$22,240; Haiti: \$370; Nicaragua: \$460), resulting in national economic concerns that often overshadow environmental concerns and solutions that are acceptable in one state while prohibitively costly in another;
3. geographical differences (continental vs. island states; large states vs. small states), where small island developing-states have their own special needs and concerns;
4. language and culture differences (English, Spanish, French), as well as difficulties in physical communication;
5. extreme political fragmentation (United States vs. Cuba);
6. diverse national and political organization (independent countries, colonies and territories);
7. strong economic interests (oil, tourism) in relation to relatively weak public sectors in many Caribbean states; and
8. the large number of political entities in the region (thirty-six).

Efforts of the CEP/RCU are additionally restricted by funding limitations. For example, contributions to the Caribbean Trust Fund have been and still are lower than pledges.¹⁰⁴ Additionally, prior to 1993, the United States refused to contribute financially to the Caribbean Trust Fund because of Cuba's participation in the CEP, and instead, provided in-kind services and experts to the RCU.

The Caribbean region lacks a regional implementation strategy for ICZM at the official level. The policy framework now exists in the form of the *Guidelines for Integrated Planning and*

104. UNEP, *The Action Plan for the Caribbean Environment Programme: Evaluation of its Development and Achievements*, 109 REGIONAL SEAS REP. & STUD. 11 (1989); see also Philomene A. Verlaan & Anbreen S. Khan, *Paying to Protect the Commons: Lessons from the Regional Seas Programme*, 31 OCEAN & COASTAL MGMT. 83, 98 (1996).

Management of Coastal and Marine Area in the Wider Caribbean Region, but an implementation strategy is absent. This may partially be explained by the Caribbean Convention's protocols (oil pollution prevention, protected areas and wildlife) that are relatively narrow in scope. Perhaps the vehicle for an ICZM regional strategy will be the future LBS Protocol. By its comprehensive nature, this protocol will guide a great variety of coastal activities from industry to agriculture to waste water treatment.

The CEP/RCU must publicize and widely circulate the ICZM pilot case studies that it has sponsored. The lessons learned from these experiences will assist other political units in the development of their own ICZM strategies. Additionally, the CEP must coordinate environmental linkages between more and less technologically advanced nations in the Wider Caribbean. Many political entities will require technical and financial support to (1) construct adequate port facilities for vessel-generated waste, (2) manage protected areas and wildlife, and (3) build wastewater treatment plants, for example. Wealthier states in the region must offer some of this support. Finally, the CEP must develop regional training centers for ICZM strategies, as well as an ICZM regional database that collects legislation, case studies, and information on ICZM activities.

Wider Caribbean states must ratify the Caribbean Convention and the existing protocols. Although substantial progress has occurred within the CEP even though the SPAW Protocol is not in force, ratification demonstrates a serious commitment to comply with the obligations of the agreement. States also must address the need for implementing domestic legislation that harmonizes international agreements with their national legislation.

The groundwork for ICZM in the Wider Caribbean Region exists in the form of existing and developing regional agreements, ICZM policy guidelines, and initial ICZM experiences. Environmental management in the Caribbean has begun to adopt an increasingly integrated and coordinated approach that will translate into improvements in environmental quality.

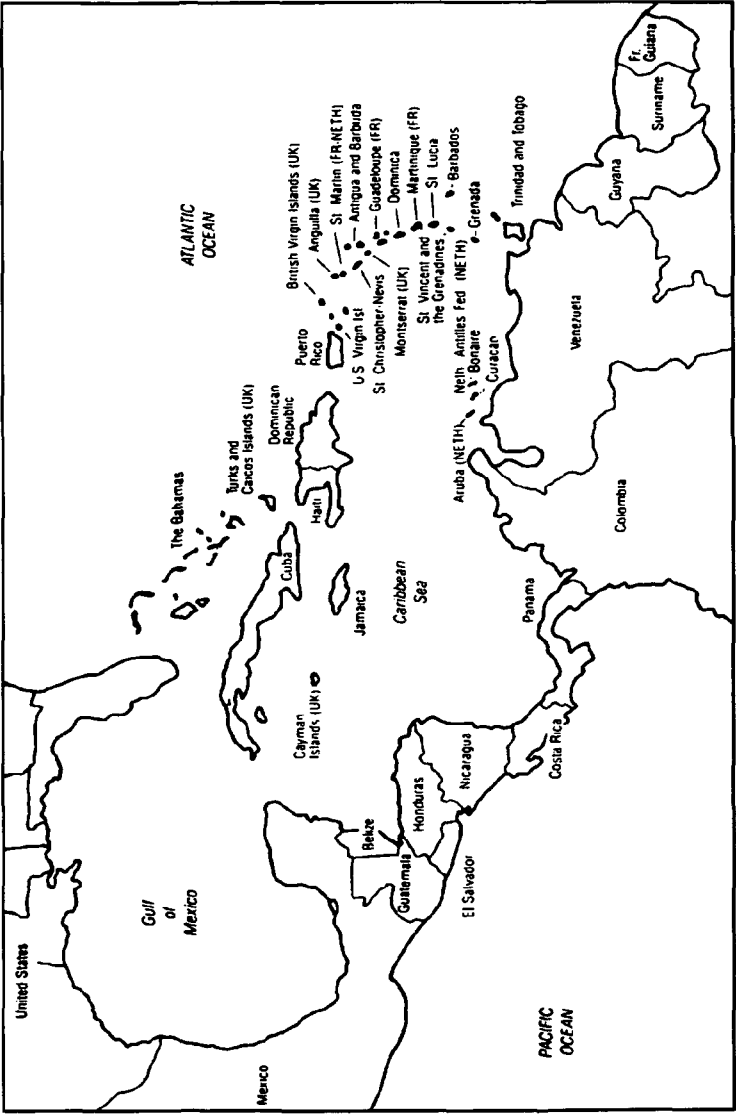


Figure 1. Map of the Wider Caribbean Region