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Comments

OFFSHORE PETROLEUM EXPLOITATION AND ENVIRONMENTAL PROTECTION: THE INTERNATIONAL AND NORWEGIAN RESPONSE

Degradation of the marine environment inevitably accompanies the pursuit of offshore hydrocarbons. This Comment first examines the international legal regime which establishes both jurisdictional rights of exploitation and the coastal States' obligation to mitigate concomitant environmental harms. The writer then focuses on a single coastal State, Norway, to study a domestic response to the conflicting needs of offshore exploitation and environmental protection.

Issues attending offshore petroleum exploitation confront the world community as it progresses toward a new international law of the sea.¹ Alternative energy sources must be developed,² yet

1. By the end of the century, offshore oil could account for nearly half of the annual world production of some seventy billion barrels. R. HALLMAN, TOWARDS AN ENVIRONMENTALLY SOUND LAW OF THE SEA 3 (1974). Therefore, according to one author,

the value of offshore petroleum and gas production will exceed that of the world's fish catch to become the most important marine resource.

That being so, one of the problems which arises is to determine how the different interests which States, and the international community as a whole, have in the marine environment, are to be accommodated in a legal order.

Hardy, *Offshore Development and Marine Pollution*, 1 OCEAN DEV. & INT'L L. 239, 240 (1973). See generally, NATIONAL PETROLEUM COUNCIL, LAW OF THE SEA (1973). See Finlay & McKnight, *Law of the Sea: Its Impact on the International Energy Crisis*, 6 INT'L L. & POL'Y BUS. 639 (1974).

2. "It is estimated that by 1990 the free world will use as much as 100 million barrels of oil . . . per day Regardless of whose data are used or what as-

during the transitional period oil-consuming nations pursue new sources of hydrocarbons in offshore areas of national jurisdiction.³ Thus, the question of sovereignty over resources and activities on the continental shelf acquires new dimensions.⁴ Degradation of the marine environment, which cuts through theoretical zones of jurisdiction, inevitably accompanies exploitation.⁵ In response, current international law supplements jurisdictional rights of exploitation by imposing upon States the *obligation* to preserve and protect the marine environment.⁶ Therefore, within the law of the sea two opposing forces emerge: the need to exploit energy resources and the need to protect the environment. The brunt of the confrontation is borne by the affected littoral States.⁷ Part I of this Comment examines the public international law relevant to offshore petroleum exploitation and mitigation of concomitant environmental harms. Part II focuses on the "microlevel" of a single coastal State, Norway, to study an exemplary legal and political response to these conflicting goals.

INTERNATIONAL FRAMEWORK

Exploitation

The modern history of coastal State sovereignty over the continental shelf can be dated from the 1945 Truman Proclamation⁸ and the 1958 Geneva Convention on the Continental Shelf.⁹ The

assumptions are made, . . . [t]he supply of oil and gas cannot keep pace with present and future rates of consumption." D. ROSS, INTRODUCTION TO OCEANOGRAPHY 3 (2d ed. 1977). See B. COMMONER, THE POLITICS OF ENERGY (1979); Lovins, *Energy Strategy: The Road Not Taken*, 55 FOREIGN AFF. 65 (1976).

3. Horigan, *Orientation and Overview*, in ROCKY MTN. MINERAL LAW FOUNDATION, OFFSHORE EXPLORATION, DRILLING AND DEVELOPMENT INSTITUTE 1-1, 1-3 (1975); Hardy, *supra* note 1, at 240.

4. See Finlay & McKnight, *supra* note 1, at 652-61.

5. See generally P. BALDWIN & M. BALDWIN, ONSHORE PLANNING FOR OFFSHORE OIL: LESSONS FROM SCOTLAND (1975); COUNCIL ON ENVIRONMENTAL QUALITY, OCS OIL AND GAS—AN ENVIRONMENTAL ASSESSMENT (1974); Hildreth, *The Coast: Where Energy Meets the Environment*, 13 SAN DIEGO L. REV. 253 (1976).

6. See notes 38-115 and accompanying text *infra*.

7. *Accord*, Hildreth, *supra* note 5, at 254.

8. Presidential Proclamation No. 2667, 3 C.F.R. 67 (1943-1948 Compilation), extended U.S. sovereignty over the natural resources of the continental shelf contiguous to its coast. The principle purpose of the proclamation was to protect U.S. oil rights and to facilitate the development of offshore petroleum reserves. Presidential Proclamation No. 2667, 3 C.F.R. 67, 68 (1943-1948 Compilation). See Hollick, *U.S. Oceans Policy: The Truman Proclamations*, 17 VA. J. INT'L L. 23, 23-29 (1976).

9. April 29, 1958, 15 U.S.T. 471, T.I.A.S. No. 5578, 499 U.N.T.S. 311 (*in force* June 10, 1964). The Convention on the Continental Shelf was one of four conventions which emerged from the 1958 Geneva Conference on the Law of the Sea. See generally Dean, *The Geneva Conference on the Law of the Sea: What Was Accomplished*, 52 AM. J. INT'L L. 607 (1958). The adoption of the Continental Shelf Convention reflects the international community's acceptance of the view toward

latter represents the international community's affirmative response to the control over shelf resources asserted in the former.¹⁰ The Convention grants to the coastal State sovereign rights "over the continental shelf . . . for the purpose of exploring it and exploiting its natural resources."¹¹ In addition, the Convention defines the jurisdictional limits: the continental shelf extends to "a depth of 200 meters or, beyond that limit to where the depth of the superjacent waters admits of the exploitation of the natural resources . . ."¹² Thus, two concepts were developed to measure the continental shelf: a fixed isobath test and an amorphous exploitability test.

The currently revised Informal Composite Negotiating Text (ICNT/R)¹³ of the Third United Nations Conference on the Law of the Sea (UNCLOS III) delineates a standard which would replace both delimitation tests defined in the 1958 Convention. Article 76 of the ICNT/R defines the continental shelf as the seabed and subsoil extending "throughout the natural prolongation of [the coastal State's] land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles . . . where the outer edge of the continental margin does not extend up to that distance."¹⁴ Three aspects of the definition deserve note. First, the fixed 200-mile limit which replaces the 200-meter isobath conceptually conjoins with the 200-mile exclusive economic zone (EEZ) in which the coastal State would possess exclusive jurisdiction over economic activities.¹⁵ Second, the term "natural prolongation" characterizes the shelf as a seaward continuation of a State's land territory.¹⁶ But varied constructions of the term are

petroleum exploitation expressed in the Truman Proclamations. Hollick, *supra* note 8, at 24.

10. Dean, *supra* note 9, at 619.

11. Convention on the Continental Shelf, *supra* note 9, art. 2.

12. *Id.* art. 1.

13. U.N. Doc. A./CONF.62/WP.10/Rev. 1 (1979) [hereinafter cited as ICNT/R].

14. *Id.* art. 76.

15. See *id.* arts. 56-57; See generally Phillips, *The Exclusive Economic Zone as a Concept in International Law*, 26 INT'L & COMP. L.Q. 585 (1977); Alexander & Hodgson, *The Impact of the Exclusive Economic Zone on the Law of the Sea*, 12 SAN DIEGO L. REV. 569 (1975).

16. The negotiating text incorporates the language of the International Court of Justice in the *North Sea Continental Shelf Cases*, [1969] I.C.J. 3, which dealt with delimitation of shelf boundaries between opposite and adjacent States. The Court stated the "most fundamental" rule: "the rights of the coastal State in respect of the area of continental shelf that constitutes a *natural prolongation* of its

possible,¹⁷ and work continues in UNCLOS III to develop a more politically acceptable formula.¹⁸ Third, where exactly the "outer edge of the continental margin" lies continues to be debated;¹⁹ the negotiating text merely excludes the "deep ocean floor or the subsoil thereof."²⁰

Delimitation of the shelf can determine the ownership of vast quantities of oil.²¹ The 1958 Continental Shelf Convention provides for demarcation "by agreement";²² in the absence of agreement, unless special circumstances exist, Article 6 specifies the boundary shall be determined by the median line or equi-distance principles.²³ Many States failed to ratify the Convention,²⁴ how-

land territory . . . exist . . . by virtue of its sovereignty over the land" *Id.* at 23 (emphasis added).

17. As one author notes, if "natural prolongation" is interpreted "to include the 'last grain of sand' of the continental rise, then vast portions of the seabed could be subjected to national jurisdiction, leaving little of value to the international community [T]he Conference is struggling with several alternative formulae to achieve a more precise delimitation" Clingan, *Legal Problems Relating to the Extraction of Resources of the Deep Sea other than Manganese Nodules*, in *LAW OF THE SEA: NEGLECTED ISSUES* 69, 72 (1979).

18. *Id.* See also United Nations Dep't of Public Information, Press Release SEA/375 (Aug. 24, 1979). It should be noted that resolution of this issue will affect only the few States with continental shelves which extend beyond the 200-mile limit.

19. For an excellent discussion of the issues involved in determining proper political boundaries of the shelf margin, see Hedberg, *Relation of Political Boundaries on the Ocean Floor to the Continental Margin*, 17 VA. J. INT'L L. 57 (1976).

20. ICNT/R, *supra* note 13, art. 76. The text also defines the "Area" as "the sea-bed and ocean floor and subsoil thereof beyond the limits of national jurisdiction." *Id.* art. 1 (emphasis added).

21. For example, in 1965 the governments of Norway and the United Kingdom signed an agreement delimiting the shelf boundary between the two countries. Agreement relating to Delimitation of the Continental Shelf, Mar. 10, 1965, Great Britain-Norway, [1965] Gr. Brit. T.S. No. 71 (Cmd. 2757), 551 U.N.T.S. 213. In 1974, what was to become the largest North Sea oil field, Statfjord, was discovered on the Norwegian side of the common boundary. Subsequent drilling confirmed that the field is a part of a single geological structure which extends into the United Kingdom's territory. But fortuitously, the previous delimitation agreement places 89% of the reserves on the Norwegian side. ROYAL MINISTRY OF FOREIGN AFFAIRS (NORWAY), *NORWEGIAN PETROLEUM ACTIVITIES* 4 (1978). For a discussion of the body of law governing the apportionment of such deposits, see Onorato, *Apportionment of an International Common Petroleum Deposit*, 26 INT'L & COMP. L.Q. 324 (1977).

22. Convention on the Continental Shelf, *supra* note 9, art. 6.

23. *Id.* For adjacent States, "the boundary shall be determined by application of the principle of equidistance from the nearest points of the baselines from which the breadth of the territorial sea of each State is measured." *Id.* For opposite States, "the boundary is the median line, every point of which is equidistant from the nearest points of the baselines from which the breadth of the territorial sea of each State is measured." *Id.*

24. The Convention received 43 signatures, only 24 of which have been followed by ratifications. Gamble, *Post World War II Multilateral Treaty-Making: The Task of the Third United Nations Law of the Sea Conference in Perspective*, 17 SAN DIEGO L. REV. —, —, (1980).

ever, and in the *North Sea Continental Shelf Cases* the International Court of Justice refused to recognize the equidistance principle as binding customary international law.²⁵ Instead, the Court endorsed natural prolongation as the appropriate standard for determining an equitable solution.²⁶ Finally, and most recently, the ICNT/R provides that delimitation must "be effected by agreement in accordance with equitable principles, employing, where appropriate, the median or equidistance line . . ."²⁷

Once the continental shelf is delimited, coastal State rights become significant to petroleum exploitation. The ICNT/R restates portions of the original Continental Shelf Convention and also creates new rights under the EEZ provisions. For example, Article 77 restates the purpose of sovereignty as exploration and exploitation of shelf resources.²⁸ The rights of exploitation are exclusive; a coastal State's failure to exploit the resources does not create residual rights in other sovereigns.²⁹ Similarly, States need not occupy nor expressly proclaim jurisdiction over the shelf area; the rights are inherent.³⁰

The ICNT/R vests in coastal States the exclusive right to authorize and regulate drilling on the shelf for all purposes.³¹ All States, however, are entitled to lay pipelines on the shelf, subject to certain conditions the sovereign State may impose.³² In addition, through a significant cross-reference,³³ the ICNT/R grants

25. [1969] I.C.J. 3, 25-36.

26. *Id.* at 23.

27. ICNT/R, *supra* note 13, art. 83.

28. *Id.* art. 77.

29. *Id.*

30. *Id.*

31. *Id.* art. 81.

32. Once commercially recoverable petroleum deposits are discovered, decisions are made regarding transportation of the hydrocarbons to onshore production facilities. Pipelines are often utilized depending on the distance to shore and the size of the reserves. See P. BALDWIN & M. BALDWIN, *supra* note 5, at 95-104.

Article 79 of the ICNT/R states that the coastal State may not impede the laying or the maintenance of cables or pipelines; however, the routes are subject to the State's consent. Moreover, the coastal State retains power to impose conditions on the pipelaying pursuant "to its right to take reasonable measures for the exploitation of the continental shelf, the exploitation of its natural resources and the prevention, reduction and control of pollution from pipelines . . ." ICNT/R, *supra* note 13, art. 79.

33. Article 80 of the ICNT/R states: "Article 60 applies *mutatis mutandis* to artificial islands, installations and structures on the continental shelf." ICNT/R, *supra* note 13, art. 80. Article 60 grants to the coastal State "the exclusive right [in the EEZ] to construct and to authorize and regulate the construction, operation and use of: (a) Artificial islands; (b) Installations and structures for . . . economic

coastal States the exclusive right to construct and to regulate the construction and operation of installations and structures on the continental shelf.³⁴ The same provision creates exclusive jurisdiction in coastal States over such installations, including jurisdiction over health, safety, fiscal, customs, and immigration matters.³⁵ The cross-reference between the continental shelf provision (Article 80) and the EEZ provision (Article 60)³⁶ suggests a connection between the two "zones" of jurisdiction: sovereignty over installations on the shelf derives from the coastal State's plenary authority over all economic activities within the EEZ.

Environmental Protection

Human interest in the sea necessarily emanates from and returns to the coastal area.³⁷ Exploiting offshore petroleum is no exception; coastal areas suffer from oil-related development and marine pollution.³⁸ The nature and the location of the harmful effects necessitate national response;³⁹ however, several international Conventions provide, along with the prospective provisions of the ICNT/R, a framework for global and regional protection of the marine environment.

The Geneva Conventions

The same Convention which established the right of a coastal State to exploit shelf resources also provides for limited environmental protection. The Convention on the Continental Shelf proscribes "any unjustifiable interference with . . . fishing or the conservation of the living resources of the sea . . ." ⁴⁰ The sovereign State is entitled to establish safety zones around installations connected with exploitation, and the Convention obligates the State to "undertake, in the safety zones, all appropriate measures for the protection of the living resources of the sea from harmful agents."⁴¹ In addition, the Convention on the High Seas provides that every State must regulate and prevent oil pollution

purposes; (c) Installations and structures which may interfere with the exercise of the rights of the coastal State in the zone." *Id.* art. 60.

34. *Id.* art. 80.

35. *Id.*

36. See note 33 *supra*.

37. Hardy, *supra* note 1, at 240; Neuman, *Interactions and Conflicts in Coastal Areas*, in DEVELOPMENT AND MANAGEMENT OF RESOURCES OF COASTAL AREAS 445, 445 (1976).

38. See P. BALDWIN & M. BALDWIN, *supra* note 5; Hildreth, *supra* note 5, at 256-66; notes 135-38 and accompanying text *infra*.

39. Part II of this Comment examines the harmful effects and an exemplary national response.

40. Convention on the Continental Shelf, *supra* note 9, art. 5.

41. *Id.*

from ships, pipelines, exploration, and exploitation.⁴² However, these articles fail to consider the environment adequately.⁴³ The protection of non-living resources is ignored. No provisions address the harmful effects on human health nor on the air, water, and soil of the marine environment. Nor were rights of aesthetics, amenities, or public access considered. Subsequent conventions fill some of these gaps.

The Stockholm Conference

The Conference on the Human Environment, held at Stockholm in 1972, adopted a basic Declaration and a detailed action plan to guide the world community in environmental protection.⁴⁴ Neither the principles of the Declaration nor the recommendations of the action plan comprise binding law,⁴⁵ nevertheless, the Conference addressed issues relative to the marine environment which had only been addressed minimally at an international level. For example, Principle 2 recognizes the need for holistic protection in its affirmation that "natural resources . . . including the air, water, land, flora and fauna and . . . natural ecosystems must be safeguarded . . ." ⁴⁶ Particularly relevant is the resolution in Principle 7 that:

States shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other

42. April 29, 1958, 13 U.S.T. 2312, T.I.A.S. No. 5200, 450 U.N.T.S. 82 (*in force* Sept. 30, 1962), art. 24.

43. Similar to the Truman Proclamations, these Conventions focus on protecting sovereign rights and not environmental concerns.

44. United Nations Conference on the Human Environment, U.N. Doc. A/CONF.48/14 and Corrigenda 1 (1972), *reprinted in* 11 INT'L LEGAL MATERIALS 1416 (1972). Subsequent to the United Nations Conference, Denmark, Finland, Norway, and Sweden adopted the Nordic Convention on the Protection of the Environment, *done at* Stockholm Feb. 19, 1974 (*in force* Oct. 5, 1976), *reprinted in* 13 INT'L LEGAL MATERIALS 591 (1974). The Convention directs each State to appoint a special Supervisory Authority and Examining Authority for the purpose of safeguarding against inter-State environmental harm. The Convention applies to *all* environmentally harmful activities, including those on the continental shelf. *Id.* arts. 1, 13. *See* notes 218-23 and accompanying text *infra*.

45. The report of the Preparatory Committee for the Conference states: "[B]y its very nature, the Declaration should not formulate legally binding provisions, in particular as regards relations between States and individuals . . ." U.N. Doc. A/CONF.48PC/9, para. 33 (1971). Similarly, the action plan is phrased in "recommendations" and not "rules."

46. United Nations Conference on the Human Environment, U.N. Doc. A/CONF.48/14 and Corrigenda 1 (1972), *reprinted in* 11 INT'L LEGAL MATERIALS 1416, 1418 (1972).

legitimate uses of the sea.⁴⁷

Thus, the Declaration more completely addresses the potential environmental problems associated with offshore development than did previous international efforts. In addition, it addresses the issue of planning; Principle 14 states that planning is essential to reconciliation of conflicts between the needs of development and environment.⁴⁸ Principle 13 advises States to adopt integrated and coordinated resource management schemes which incorporate environmental factors.⁴⁹ Finally, the Declaration affirms not only the duty to avoid harming the environment of other States or of areas beyond national jurisdiction (Principle 21),⁵⁰ but also the need to develop international law regarding liability and compensation for such harm (Principle 22).⁵¹

The Stockholm action plan includes nine major Recommendations relating to preservation of the marine environment.⁵² The Recommendations focus on research and monitoring efforts coordinated at national and international levels.⁵³ However, Recommendation 86 directs Governments to “[a]ccept and implement available instruments on the control of the maritime sources of marine pollution . . . [and s]trengthen national controls over land-based sources of marine pollution”⁵⁴ The latter reference is particularly significant because land-based sources introduce the most severe pollutants into the marine environment.⁵⁵ Finally, Recommendation 92 directs Governments to endorse collectively as “guiding concepts” for UNCLOS III the principle that the “marine environment and all the living organisms which it supports are of vital importance to humanity, and all people have an interest in assuring that this environment is so managed that

47. *Id.*

48. *Id.* at 1419.

49. *Id.*

50. *Id.* at 1420.

51. *Id.*

52. *Id.* at 1454-57.

53. *Id.* at 1454-56.

54. *Id.* at 1454.

55. It should . . . be noted at the outset that land-based sources of all kinds (*e.g.*, outflow from rivers and outfalls, industrial wastes, agricultural run-off, air-borne pollutants such as vaporized hydrocarbons, and direct sewage discharge) provide the largest amounts of pollutants to the marine environment. In the specific case of petroleum, land-based sources are estimated to account for *between 50 to 90 percent of the two to five million metric tons of oil which enter the seas each year.*

Hardy, *Definition and Forms of Marine Pollution*, in 3 *NEW DIRECTIONS IN THE LAW OF THE SEA* 73, 74 (1973) (emphasis added).

Moreover, oil pollution is not the most serious harm. One author notes that “on-shore activities associated with offshore oil and gas development hold far greater potential for long-term damage to the coastal environment than does the risk of accidental oil pollution.” Hildreth, *supra* note 5, at 261. See generally Hickey, *Custom and Land-Based Pollution of the High Seas*, 15 *SAN DIEGO L. REV.* 409 (1978).

its quality and resources are not impaired. This applies especially to coastal area resources."⁵⁶ Thus, the Stockholm Conference set the stage for global protection of the marine environment.

The Oil Pollution Conventions

The 1954 Convention for the Prevention of Pollution of the Sea by Oil, as amended, prohibited ships from discharging oil or oily mixtures, unless specific mitigating conditions were satisfied.⁵⁷ The Convention would therefore apply to ocean to shore shipping of extracted hydrocarbons. However, the 1973 Convention for the Prevention of Pollution from Ships will wholly supplant the previous Convention when it enters into force.⁵⁸ The 1973 Convention applies to all vessels⁵⁹ and all harmful discharges,⁶⁰ but not to the discharge of "harmful substances directly arising from the exploration, exploitation and associated off-shore processing of sea-bed mineral resources."⁶¹ Similarly, the 1969 Convention on Intervention on the High Seas in Cases of Oil Pollution Casualties vests significant rights in coastal States to protect against oil pollution, yet applies only to ships in waters beyond national jurisdiction.⁶² Therefore, neither of these major oil pollution conventions directly relates to offshore exploitation. However, the 1969 Convention on Civil Liability for Oil Pollution Damage focuses on the damage, not the source, and therefore is significant to offshore ex-

56. United Nations Conference on the Human Environment, U.N. Doc. A/CONF. 48/14 and Corrigenda 1 (1972), *reprinted in* 11 INT'L LEGAL MATERIALS 1416, 1418 (1972).

57. Convention for the Prevention of Pollution of the Sea by Oil, *done* May 12, 1954, 12 U.S.T. 2989, T.I.A.S. 4900, 327 U.N.T.S. 3 (*in force* July 26, 1958), *amended* April 11, 1962, 17 U.S.T. 1523, T.I.A.S. 6109, 600 U.N.T.S. 322 (*in force* May 13, 1967 (amendment to Article 14 *in force* June 28, 1967)), *amended* Oct. 21, 1969, 28 U.S.T. 1205, T.I.A.S. 8505 (*in force* Jan. 20, 1978), *amended* Oct. 15, 1971, I.M.C.O. Doc. A VII/Res. 246 (Nov. 3, 1971).

58. *Done* Nov. 2, 1973, I.M.C.O. Doc.MP/CONF/WP.35, art. 9 *reprinted in* 12 INT'L LEGAL MATERIALS 1319 (1973).

59. Article 2 defines "ship" as "a vessel of any type whatsoever operating in the marine environment . . ." *Id.* art. 2, 12 INT'L LEGAL MATERIALS at 1320.

60. Article 1 binds parties to "prevent the pollution of the marine environment by the discharge of *harmful substances* . . ." *Id.* (emphasis added). Article 2 defines "harmful substance" as "any substance which, if introduced into the sea, is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea . . ." *Id.*

61. *Id.*

62. *Done* Nov. 29, 1969, 26 U.S.T. 765, T.I.A.S. 8068 (*in force* May 6, 1975), *reprinted in* 9 INT'L LEGAL MATERIALS 25 (1970).

ploitation.⁶³ The Convention imposes strict liability with specified exceptions, on the shipowner for "pollution damage caused on the territory including the territorial sea of a Contracting State"⁶⁴ Article 5 limits liability to 2,000 francs per ton and sets a maximum limit of 210 million francs.⁶⁵ However, a supplementary Convention creates an International Fund to compensate damage beyond the liability limits and to provide financial relief to the shipowner.⁶⁶ Thus, equitable compensation, not deterrence, seems to be the goal.

Regional Agreements

Five regional treaties add to international control of marine pollution from oil-related development: the Helsinki Convention,⁶⁷ the Barcelona Convention,⁶⁸ the Bonn Agreement,⁶⁹ the London Convention,⁷⁰ and the Paris Convention.⁷¹ In the Helsinki Convention the Baltic Sea States "place under a single umbrella provisions covering both ocean-based and land-based pollution."⁷² The parties agree to take all appropriate measures to prevent and abate pollution and to protect the Baltic Sea environment.⁷³ The Convention divides pollutants into "hazardous substances" and "noxious substances";⁷⁴ the parties agree to counteract introduc-

63. Done Nov. 29, 1969 [1975] U.K.T.S. 106 (*in force* June 19, 1975), *reprinted in* 9 INT'L LEGAL MATERIALS 45 (1970).

64. *Id.* art. 2.

65. *Id.* art. 5.

66. Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, *done* Dec. 18, 1971, *reprinted in* 11 INT'L LEGAL MATERIALS 284 (1972).

67. Convention on the Protection of the Marine Environment of the Baltic Sea Area, *done* Mar. 22, 1974, *reprinted in* 13 INT'L LEGAL MATERIALS 544 (1974).

68. Convention for the Protection of the Mediterranean Sea Against Pollution, *done* Feb. 16, 1976, *reprinted in* 15 INT'L LEGAL MATERIALS 285, 290 (1976).

69. Agreement for Cooperation in Dealing with Pollution of the North Sea by Oil, *done* June 9, 1969, [1969] U.K.T.S. No. 78 (Cmnd. 4205), 704 U.N.T.S. 3 (*in force* Aug. 9, 1969).

70. Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources, *done* May 1, 1977, *reprinted in* 16 INT'L LEGAL MATERIALS 1451 (1977).

71. Convention for the Prevention of Marine Pollution from Land-Based Sources, *done* Feb. 21, 1974, *reprinted in* 13 INT'L LEGAL MATERIALS 352 (1974).

72. Hickey, *supra* note 55, at 450.

73. Convention on the Protection of the Marine Environment of the Baltic Sea Area, *supra* note 67, art. 3.

74. Annex I lists as "hazardous": (1) DDT and its derivatives DDE and DDD; and (2) polychlorinated biphenyls. Annex II lists as "noxious":

1. Mercury, cadmium, and their compounds.
2. Antimony, arsenic, beryllium, chromium, copper, lead, molybdenum, nickel, selenium, tin, vanadium, zinc, and their compounds, as well as elemental phosphorus.
3. Phenols and their derivatives.
4. Phthalic acid and its derivatives.

tion into the marine environment of the former and to strictly limit pollution by the latter.⁷⁵ Similarly, in the Barcelona Convention, the Mediterranean Sea States structure an attack against both ocean-based and land-based pollution.⁷⁶ The parties agree to "prevent, abate and combat pollution of the Mediterranean Sea Area caused by discharges from ships . . . ,⁷⁷ exploration and exploitation of the continental shelf . . . ,⁷⁸ [and] discharges from rivers, coastal establishments or outfalls, or . . . other land-based sources"⁷⁹

The Bonn Agreement applies only to oil pollution.⁸⁰ In the Agreement the North Sea States structure a program which focuses on exchange of information, observation and assessment of

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5. Cyanides.
 6. Persistent halogenated hydrocarbons.
 7. Polycyclic aromatic hydrocarbons and their derivatives.
 8. Persistent toxic organosilicic compounds.
 9. Persistent pesticides, including organophosphoric and organostannic pesticides, herbicides, slimicides and chemicals used for the preservation of wood, timber, wood pulp, cellulose, paper, hides and textiles, not covered by the provisions of Annex I of the present Convention.
 10. Radioactive materials.
 11. Acids, alkalis and surface active agents in high concentrations or big quantities.
 12. Oil and wastes of petrochemical and other industries containing lipid-soluble substances.
 13. Substances having adverse effects on the taste and/or smell of products for human consumption from the sea, or effects on taste, smell, colour, transparency or other characteristics of the water seriously reducing its amenity values.
 14. Materials and substances which may float, remain in suspension or sink, and which may seriously interfere with any legitimate use of the sea.
 15. Lignin substances contained in industrial waste waters.
 16. The chelators EDTA (ethylenedinitrilote traacetic acid or ethylenediaminetetra acetic acid) and DTPA (diethylenetriamin-opentaacetic acid).

75. *Id.* arts. 5-6.

76. Convention for the Protection of the Mediterranean Sea Against Pollution, note 68 *supra*.

77. *Id.* art. 6.

78. *Id.* art. 7.

79. *Id.* art. 8.

80. Agreement for Cooperation in Dealing with Pollution of the North Sea by Oil, note 69 *supra*. Subsequent to the Agreement, Norway, Denmark, Finland, and Sweden adopted the Agreement Concerning Cooperation in Taking Measures Against Pollution of the Sea by Oil, *done* Sept. 16, 1971, (*in force* Oct. 16, 1971), reprinted in 2 NEW DIRECTIONS IN THE LAW OF THE SEA 637 (1973). The latter Agreement recapitulates many of the obligations delineated in the former. In addition, the latter Agreement provides for stockpiling equipment and anti-oil materials. *Id.* art. 4. See note 188-93 and accompanying text *infra*.

pollution incidents, and communication to the parties of damage.⁸¹ The Agreement divides the North Sea into zones of responsibility which each State must monitor.⁸² Yet the Agreement addresses neither prevention of nor liability for pollution. In the London Convention the North Sea States address the specific question of liability for pollution damage from offshore petroleum installations.⁸³ The Convention recognizes in the preamble "the dangers of oil pollution posed by the exploration for, and exploitation of certain seabed mineral resources, . . . [and] the need to ensure that adequate compensation is available"⁸⁴ Article 3 imposes strict liability on the operator of the installation,⁸⁵ and waives defenses based on sovereign immunity.⁸⁶ However, Article 6 limits the potential liability, unless it is proved the operator deliberately caused the pollution damage,⁸⁷ and Article 8 requires that the operator maintain insurance to cover the potential liability.⁸⁸

In the Paris Convention the North Sea States join several western European nations to address the problem of land-based pollution in the North East Atlantic.⁸⁹ In Article 1 the parties agree to "take all possible steps to prevent pollution of the sea, . . . [and] adopt individually and jointly measures to combat marine pollution from land-based sources"⁹⁰ Pollution from land-based sources is defined to include pollutants from watercourses, from the coast, and from man-made structures under the jurisdiction of

81. Agreement for Cooperation in Dealing with Pollution of the North Sea by Oil, *supra* note 69, arts. 4-6.

82. *Id.* art. 6.

83. Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources, note 70 *supra*. The Convention is not limited to oil rigs; the term "installation" includes all offshore facilities, abandoned or operative, fixed or mobile, used for exploring, producing, or regaining control of the flow of crude oil, gas, or natural gas liquids. *Id.* art. 1.

84. *Id.* Preamble.

85. *Id.* art. 3.

86. *Id.* art. 13.

87. *Id.* art. 6. The operator's liability is limited to 30 million Special Drawing Rights as defined by the International Monetary Fund. *Id.*

88. *Id.* art. 8.

89. Convention for the prevention of Marine Pollution from Land-Based sources, note 71 *supra*. Article 2 limits the convention to the Arctic Ocean, the North Sea north of 36° north latitude and between 42° west longitude and 51° east longitude (excluding the Baltic and Mediterranean Seas), and the Atlantic Ocean north of 59° north latitude and between 44° west latitude and 42° west longitude. *Id.* art. 2.

90. *Id.* art. 1. "Pollution of the sea" is defined as "the introduction by man, directly or indirectly, of substances or energy into the marine environment (including estuaries) resulting in such deleterious effects as hazards to human health, harm to living resources and to marine eco-systems, damage to amenities or interference with other legitimate uses of the sea." *Id.*

the coastal State.⁹¹ The Convention classifies specific pollutants according to persistence, toxicity, and tendency to bio-accumulate.⁹² The parties agree in Article 4 to "eliminate" the most severe pollutants and "limit strictly" pollution from the less harmful agents.⁹³ The Convention provides for the establishment of a monitoring system to assess both existing pollution levels and the effectiveness of reduction techniques.⁹⁴ Emphasis is placed on inter-State cooperation in developing complementary pollution programs and in preventing and mitigating the consequences of pollution incidents.⁹⁵

UNCLOS III

Part XII of the ICNT/R sets forth a comprehensive regime for protection of the marine environment.⁹⁶ States have ultimate discretion to exploit their natural resources; yet simultaneously they "have the obligation to protect and preserve the marine environment."⁹⁷ States must take all necessary measures, using the best practicable means to prevent, reduce, and control pollution.⁹⁸ Part XII addresses mitigatory measures,⁹⁹ international cooperation,¹⁰⁰ scientific assistance for developing nations,¹⁰¹ monitoring and assessment techniques,¹⁰² and methods of enforcement and liability.¹⁰³ Further, Part XII applies to *all* sources of pollution in the marine environment, including: (1) the release of harmful substances from land-based sources, the atmosphere, and dumping; (2) pollution from vessels; (3) pollution from installations used in exploring and exploiting natural resources of the seabed and subsoil; and (4) pollution from other devices in the marine environment.¹⁰⁴ Moreover, Article 194 includes within the measures to be taken "those necessary to protect and preserve rare or

91. *Id.* art. 3.

92. *Id.* Annex A.

93. *Id.* art. 4.

94. *Id.* art. 11.

95. *Id.* arts. 10, 13.

96. ICNT/R, *supra* note 13, arts. 193-237.

97. *Id.* arts. 192-93.

98. *Id.* art. 194.

99. *Id.* arts. 194-96.

100. *Id.* arts. 197-201.

101. *Id.* arts. 202-03.

102. *Id.* arts. 204-06.

103. *Id.* arts. 213-22, 235.

104. *Id.* art. 194.

fragile eco-systems as well as the habitat of depleted, threatened, or endangered species and other marine life."¹⁰⁵

Articles 197 through 201 of the ICNT/R create a basis for global and regional cooperation.¹⁰⁶ States must cooperate in formulating international rules and standards and recommended practices and procedures for marine environmental protection.¹⁰⁷ In addition, they must notify other States in imminent danger of pollution damage as well as the competent international organizations, and all States in the affected area must cooperate in eliminating the harmful effects.¹⁰⁸ States must develop and promote joint contingency plans to respond to pollution incidents.¹⁰⁹ Finally, they must cooperate in research efforts to assess the nature, pathways, and risks of pollution as well as its remedies.¹¹⁰

The ICNT/R also directs States toward international rules and national legislation for pollution control.¹¹¹ Article 207 requires States to establish national laws and regulations to prevent land-based pollution, especially the release of toxic, noxious, and persistent substances.¹¹² Article 208 similarly provides for pollution from seabed activities and from artificial islands, installations, and structures within coastal State jurisdiction.¹¹³ For both seabed and land-based pollution, the ICNT/R encourages regional harmonization of policies.¹¹⁴ Article 211 provides for international standards for control of pollution from vessels and promotes routing systems designed to minimize the risk of accidents.¹¹⁵

THE NORWEGIAN RESPONSE

Because of the inherent limitations of international law, each State must develop national regulations concerning offshore exploitation and environmental protection. Norway's legislation will be examined to demonstrate an exemplary response to problems posed by vast offshore petroleum reserves.

Exploitation

In 1963 Norway claimed sovereign rights over the seabed and

105. *Id.*

106. *Id.* arts. 197-201.

107. *Id.* art. 197.

108. *Id.* art. 198-99.

109. *Id.* art. 199.

110. *Id.* art. 200.

111. *Id.* arts. 207-12.

112. *Id.* art. 207.

113. *Id.* art. 208.

114. *Id.* arts. 207-08.

115. *Id.* art. 211.

subsoil contiguous to its coast "in respect of the exploitation of and exploration for natural deposits . . ." ¹¹⁶ Norway's sovereign rights extend "to such extent as the depth of the sea permits utilization of natural deposits, irrespective of any other territorial limits at sea, but not beyond the median line in relation to other states." ¹¹⁷ Thus, although Norway did not ratify the Geneva Convention on the Continental Shelf until 1971, ¹¹⁸ the 1963 declaration adopts the Convention's exploitability criterion and median line principle. ¹¹⁹ The Submarine Natural Resources Act of 1963 vests in the State the right to submarine natural resources and the power to license exploration and exploitation by domestic and foreign concerns. ¹²⁰ Subsequent regulations establish three types of offshore licenses. ¹²¹ The reconnaissance license allows exploration but conveys "no exclusive right to the licensee." ¹²² The production license provides the "exclusive right to exploration for and exploitation of petroleum in specific areas." ¹²³ The construction license permits installation of facilities for storage, liquification, electricity, and hydrocarbon transportation. ¹²⁴

Norway's declaration of sovereignty over its shelf has resulted in three delimitation problems. First, in the North Sea, Norway's claim potentially conflicted with offshore territory of the opposite and adjacent States: the United Kingdom, Sweden, and Denmark. The conflicts were resolved through bilateral agreements which delimit the shelf according to the equidistance principle. ¹²⁵ Second, in the North Atlantic and Arctic Oceans and the Barents

116. Royal Decree of 31 May 1963, *reprinted and translated in* ROYAL MINISTRY OF INDUSTRY AND HANDICRAFT (Norway), LEGISLATION CONCERNING THE NORWEGIAN CONTINENTAL SHELF 9 (5th ed. 1977).

117. *Id.*

118. 2 NEW DIRECTIONS IN LAW OF THE SEA 805 (1973).

119. See notes 9-12 and accompanying text *supra*.

120. Law No. 12 of 21 June 1963 Relating to Exploration for and Exploitation of Submarine Natural Resources § 2, *reprinted and translated in* ROYAL MINISTRY OF INDUSTRY AND HANDICRAFT, *supra* note 116, at 11.

121. Royal Decree of 8 December 1972 Relating to Exploration for and Exploitation of Petroleum in the Seabed and Substrata of the Norwegian Continental Shelf §§ 3-37, *reprinted and translated in* ROYAL MINISTRY OF INDUSTRY AND HANDICRAFT, *supra* note 116, at 35-67.

122. *Id.* at § 3.

123. *Id.*

124. *Id.*

125. Agreement Relating to Delimitation of the Continental Shelf, Mar. 10, 1965, Great Britain - Norway, [1965] Gr. Brit. T.S. No. 71 (Cmd. 2757), 551 U.N.T.S. 213; Agreement Relating to Delimitation of the Continental Shelf, Dec. 8, 1965, Denmark - Norway, 634 U.N.T.S. 71; Agreement on the Delimitation of the Continental

Sea,¹²⁶ boundaries have yet to be drawn with the United Kingdom, Denmark, Iceland, and the Soviet Union. In addition, complex issues surround delimitation with respect to the Jan Mayen island, the Svalbard archipelago, and the Barents Sea.¹²⁷ Third, in the areas not in conflict with other national claims, Norway's adoption of the exploitability criterion presents the usual problem of uncertainty; as Norway's technology advances, increasing portions of the seabed will become subject to national and not international control.

Norway's Economic Zone Act of 1976 established a 200-mile economic zone in the seas adjacent to Norway's coast.¹²⁸ With respect to opposite and adjacent states, the Act incorporates the median line principle.¹²⁹ The primary focus of the Act is protection of national fisheries. However, Article 7 also asserts Norway's right to issue regulations concerning environmental protection, scientific research, and "the exploration and exploitation of the economic zone for other economic purposes, including

Shelf, July 24, 1968, Sweden - Norway, [1969] *Overenskemster med Fremmede Stater* No. 324.

Subsequent to the Agreements, two major commercial petroleum deposits have been discovered to straddle the Norway - United Kingdom offshore boundary. The Frigg gas field lies approximately 61% on the Norwegian side, giving Norway access to about 120 billion cubic meters of gas. BERGEN BANK, PETROLEUM ACTIVITIES IN NORWAY 10 (1978). The Statfjord oil field lies approximately 89% on the Norwegian side, giving Norway estimated reserves of 295 million metric tons of oil and 60 billion cubic meters of gas. *Id.* at 11. Of lesser significance, the Murchison oil field lies about 20% on the Norwegian side with total estimated reserves of 360 million barrels of oil. *Id.* at 13.

126. Eighty percent of Norway's 700,000 square kilometer shelf lies in the areas north of the North Sea. BERGEN BANK, *supra* note 125, at 23.

127. The Svalbard archipelago lies about 355 miles north of Norway with a total land area of approximately 20% of the mainland. The Svalbard Treaty of 1920 recognizes Norway's sovereignty over the previously *nullus terrae* archipelago; however, the Treaty provides for equal access by the parties to the natural resources in the territorial waters around the islands. Currently, disputes exist whether the Treaty also applies to the continental shelf. ROYAL MINISTRY OF FOREIGN AFFAIRS, *supra* note 21, at 14. Jan Mayen, a small island in the Arctic Ocean, has been under Norwegian possession since 1929. But recently Iceland has confronted Norway's continental shelf claim by claiming sovereign rights over the economic zone around the island. Norway and Iceland are negotiating agreements concerning rights to the zone's resources. Reykjavik Morgunblaðid, Dec. 23, 1978, at 25, *translated in* U.S. JOINT PUBLICATIONS RESEARCH SERVICE 90 (1979). Finally, Norway and the Soviet Union are negotiating demarcation of the shelf in the Barents Sea. Norway's continental shelf claim would place Norwegian petroleum operations near Russian nuclear missile submarine routes to the Atlantic Ocean. Both parties ratified the Geneva Convention on the Continental Shelf, note 9 *supra*, and Russia asserts that the "special circumstances" exception in Article 6 should prevail over the median line principle. *See* text accompanying note 24 *supra*; ROYAL MINISTRY OF FOREIGN AFFAIRS, *supra* note 21, at 13-14.

128. Law No. 91 of 17 December 1976 Relating to the Economic Zone of Norway, art. 1, *translated in* 5 *NEW DIRECTIONS IN THE LAW OF THE SEA* 337 (1977).

129. *Id.*

the production of energy."¹³⁰ Thus, Norway asserts extensive national control over resources and activities associated with its continental shelf.

Norway's governmental structure relating to regulation and management of exploitation is divided between the Ministry of Petroleum and Energy and the Petroleum Directorate. In addition, Statoil, the state-owned oil company, contributes to government control by negotiating and managing government participation in each production license.¹³¹ The Ministry of Petroleum and Energy is the lead agency responsible for offshore oil and gas activity. The Ministry formulates national policy, prepares legislation and regulations, determines concession areas, grants production and landing licenses, and coordinates agencies connected with petroleum.¹³² The Petroleum Directorate is the regulatory agency responsible for planning and supervising continental shelf operations.¹³³ Three departments execute the Directorate's functions: the legal and economic department awards reconnaissance licenses; the inspection and control department supervises offshore safety; and the planning department carries out long-term geological and technological analyses.¹³⁴ Thus, through Statoil, the Ministry of Petroleum and Energy, and the Petroleum Directorate, the government controls both operational and administrative aspects of exploitation.

130. *Id.* art. 7.

131. All shares in Statoil are owned by the Norwegian State; political control is exercised by the Storting and the Minister of Petroleum and Energy. Statoil's major responsibility is to fulfill government participation agreements: upon issuance of a production license the government secures an option to participate with the licensee(s) in the offshore operations. Presently, the government interest reaches upward of 50%, and Statoil participates in operational decisions from the time the license is awarded *whether or not the State exercises its option*. Thus, the State avoids capital risks during exploration while maintaining direct input into offshore decisions. In addition, Statoil has taken full operator responsibility in some cases and participates fully in transportation, refining, and marketing of extracted hydrocarbons. See Ministry of Industry (Norway), Report No. 30 to the Norwegian Storting (1973-74): Operations on the Norwegian Continental Shelf 35-43, Parliamentary Proposition No. 72 (1977-78) 7.

132. ROYAL MINISTRY OF FOREIGN AFFAIRS, *supra* note 21, at 3; BERGEN BANK, *supra* note 125, at 22.

133. ROYAL MINISTRY OF FOREIGN AFFAIRS, *supra* note 21, at 3.

134. Ministry of Industry (Norway), Report No. 30 to the Norwegian Storting (1973-74): Operations on the Norwegian Continental Shelf 23-24.

Environmental Protection

Petroleum exploitation poses harm to the Norwegian marine environment through both offshore and land-based operations. The North Sea's severe climatic conditions and constricted shipping areas increase the risk of serious oil spills from offshore operations.¹³⁵ Drilling muds, waste materials, and effluents containing hydrocarbons discharged from offshore platforms and vessels produce further pollution.¹³⁶ However, land-based operations such as service bases, marine terminals, storage facilities, gas processing plants, platform fabrication yards, refineries, and petrochemical plants produce greater environmental harms than the offshore activity.¹³⁷ Environmental degradation from land-based operations cannot be contained onshore; sewage disposal, oil spills, industrial wastes, thermal discharges, and air pollutants have deleterious effects on the marine environment.¹³⁸

135. THE LIBRARY OF CONGRESS, CONGRESSIONAL RESEARCH SERVICE, 94TH CONGRESS, 2D SESS., NORTH SEA PETROLEUM OPERATIONS IN THE UNITED KINGDOM AND NORWAY 30 (Comm. Print 1976). Oil pollution results from blow-outs, tanker mishaps, pipeline discharges, and daily spillage from production and storage facilities. *Id.* To date, one major blow-out has occurred on Norway's shelf. In April 1977, a well in the Ekofisk field blew and remained out of control for seven and one-half days. An estimated 18,000 tons of oil escaped into the sea. 4 ENV'T'L POL'Y & L. 28 (1978).

Oil pollution can damage the marine ecosystem by exposing marine life to mutative or lethal concentrations of oil. Ministry of Industry and Crafts (Norway), Report No. 91 to the Norwegian Storting (1975-76): Petroleum Exploitation North of 62° N at 123-26 app. In addition, oil pollution has been the main cause of declines in seabird populations attached to the Norwegian coasts. *Id.* at 127-28 app. Further, oil can damage Norway's coastal habitats which support the spawning of the types of fish most important to North Atlantic fisheries. Royal Norwegian Ministry of Finance, Parliamentary Report No. 25 (1973-74): Petroleum Industry in Norwegian Society at 30 app.

136. Ministry of Industry and Crafts, *supra* note 135, at 59.

137. Hildreth, *supra* note 5, at 261. Degradation of coastal waters results from the increase in industrial discharges, sewage, and harbor activity that attends oil-related operations. NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE AND OUTER CONTINENTAL SHELF DEVELOPMENT - AN ASSESSMENT OF IMPACTS 91 (1977). In addition, refinery discharges cause thermal pollution in the receiving waters. Royal Norwegian Ministry of Finance, *supra* note 135, at 34 app. Air quality in the marine environment is severely degraded by refineries emitting sulfur and nitrogen oxides, potentially carcinogenic hydrocarbons, and particulate matter. 2 COUNCIL ON ENVIRONMENTAL QUALITY, OCS OIL AND GAS—AN ENVIRONMENTAL ASSESSMENT (1974). Petrochemical plants also impose severe air quality problems stemming from the disposal of ethylene and nitrogen gases. Royal Norwegian Ministry of Finance, *supra* note 135, at 34 app. Finally, the actual siting of oil-related facilities can destroy habitats critical to marine life, e.g., when construction occurs in wetlands. Hildreth, *supra* note 5, at 260.

138. Hickey, *supra* note 57, at 412.

Oil Pollution

Chapter 23 of the Norwegian Maritime Act,¹³⁹ implementing the 1969 Convention on Civil Liability for Oil Pollution Damage¹⁴⁰ and the supplementary Fund Convention,¹⁴¹ holds a shipowner strictly liable for oil pollution damage.¹⁴² Liability is limited according to the ship's tonnage, and liability for a single incident is limited to ninety-five million kroner (\$5.7 million).¹⁴³ However, the Maritime Act supplements the limited liability by incorporating the Fund Convention¹⁴⁴ and establishing an independent fund through which damage may be compensated.¹⁴⁵ In two instances the Maritime Act provides more stringent protection than the Convention on Civil Liability. First, while the Convention applies only to ships carrying "oil in bulk as cargo"¹⁴⁶ the Act applies to any mobile vessel which causes oil pollution.¹⁴⁷ Second, unlike the Convention,¹⁴⁸ the Maritime Act includes warships and non-commercial government ships within the liability scheme.¹⁴⁹

Norwegian case law also provides remedies for oil pollution damage. Since 1874, Norwegian courts have imposed strict liabil-

139. Act of 20 July 1893 Relating to the Maritime at ch. 12. For a discussion of the Act, see Levandowski, *Civil Liability for Oil Pollution Damage on the Norwegian Continental Shelf*, 5 OCEAN DEV. & INT'L L. 397, 400-01 (1978).

140. Done Nov. 29, 1969, reprinted in 9 INT'L LEGAL MATERIALS 45 (1970). See text accompanying notes 64-66 *supra*.

141. Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, note 66 *supra*.

142. Act of 20 July 1893 Relating to the Maritime at § 267; Levandowski, *supra* note 139, at 400.

143. Ministry of Environment (Norway), Parliamentary Bill No. 182 (1975-76): Extraordinary Appropriations for Reinforcement of the Oil Pollution Contingency Planning at 14. The limitation of liability applies only to ships registered in States which have ratified the Convention on Civil Liability and the Fund Convention. Act of 20 July 1893 Relating to the Maritime at § 282; Levandowski, *supra* note 139, at 401.

144. Act of 20 July 1893 Relating to the Maritime at § 277; Levandowski, *supra* note 139, at 400-01.

145. Act of 20 July 1893 Relating to the Maritime at §§ 271-272; Levandowski, *supra* note 139, at 401.

146. Convention on Civil Liability for Oil Pollution Damage, *supra* note 70, at art. 1.

147. Act of 20 July 1893 Relating to the Maritime at § 282; Levandowski, *supra* note 139, at 401.

148. Convention on Civil Liability for Oil Pollution Damage, *supra* note 70, at art. 11.

149. Act of 20 July 1893 Relating to the Maritime at §§ 282-283; Levandowski, *supra* note 139, at 401.

ity for harm caused by inherently dangerous activities.¹⁵⁰ The doctrine of "objective enterprise liability" applies to enterprises engaging in activities which expose the community to excessive foreseeable risk of harm. The enterprise must bear responsibility for damage resulting from the activity.¹⁵¹ Courts have not formulated precise rules, but rather balance policy and practical considerations in each case.¹⁵² Although no decision has addressed the issue of whether the doctrine applies to offshore operations, commentators agree that the licensee would probably be held liable for pollution damage which stems from the extraordinary risks associated with offshore drilling, e.g., blow-outs, collisions, leakage, and structural failure.¹⁵³ In addition, the regulations issued pursuant to the Submarine Natural Resources Act¹⁵⁴ provide: "If damage or inconvenience is caused, the Norwegian law of torts shall be applicable. The tortfeasor as well as his employer and the licensee shall be jointly and severally liable for any claim for compensation."¹⁵⁵ Thus, the licensee would be liable not only for harms caused by those under his direct control, but also for negligent acts of independent contractors.¹⁵⁶

Two bodies of law address control of oil pollution in Norwegian waters: The Oil Pollution Prevention Act of 1970 (OPPA)¹⁵⁷ and the Safety Regulations¹⁵⁸ issued pursuant to the Submarine Natu-

150. The development of modern rules on strict liability started in Norwegian law with a Supreme Court decision of 1874, where a steamship company was held responsible for damage occurring on the shore of a river as a consequence of waves caused by the steamship. In a number of subsequent decisions Norwegian courts have imposed strict liability in various situations, such as for water damage caused by bursting pipes, damage caused by dynamite explosions, the falling of cornices from buildings, high-tension power lines, etc.

Kruse, *The Scandinavian Law of Torts: Theory and Practice in the Twentieth Century*, 18 AM. J. COMP. L. 58, 64 (1970).

151. Levandowski, *supra* note 139, at 407.

152. *Id.*

153. *Id.* at 408; BERGEN BANK, *supra* note 125, at 33.

154. Act No. 12 of 21 June 1963 Relating to Exploration for and Exploitation of Submarine Natural Resources, note 120 *supra*.

155. Royal Decree of 8 December 1972 Relating to Exploration for and Exploitation of Petroleum in the Seabed and Substrata of the Norwegian Continental Shelf, *supra* note 121, at § 51.

156. BERGEN BANK, *supra* note 125, at 33.

157. Act No. 6 of 6 March 1970 on Protection Against Damage due to Oil. For a discussion of the Act, see Ministry of Environment, *supra* note 143, at 16-23; 20 INT'L & COMP. L.Q. 564, 577-78 (1971).

158. Two separate sets of Safety Regulations were issued: (1) Royal Decree of 3 October 1975 Relating to Safe Practices in Exploration and Drilling for Submarine Petroleum Resources [hereinafter cited as Drilling Safety Regulations] and (2) Royal Decree of 9 July 1976 Relating to Safe Practice for the Production of Submarine Petroleum Resources [hereinafter cited as Production Safety Regulations], *reprinted and translated in* ROYAL MINISTRY OF INDUSTRY AND HANDICRAFT, *supra* note 116, at 99-163, 189-261.

ral Resources Act. Administrative responsibility rests in the Ministry of Environment.¹⁵⁹ The purpose of the OPPA is to prevent damage from oil pollution emanating from both land and sea sources.¹⁶⁰ Section 2 provides for the regulation of oil discharges into the marine environment from land-based operations, domestic and foreign ships, and offshore installations.¹⁶¹ The OPPA establishes a three-tier hierarchy for oil pollution contingencies. First, at the national level, the Council for Oil Pollution Prevention supervises, plans, and coordinates action against oil pollution emergencies.¹⁶² The Director of the State Pollution Control Authority chairs the Council which consists of representatives from twenty authorities and institutions.¹⁶³ The Council commands operations for combatting pollution and limiting the damage. However, in extreme cases responsibility may be transferred to the military.¹⁶⁴ The OPPA establishes the Main Centre for Oil Pollution Prevention to execute the State's responsibilities.¹⁶⁵ The state-owned Centre stocks emergency equipment and assists municipalities and the State Pollution Control Authority.¹⁶⁶ Second, the municipal governments are responsible for day-to-day prevention of pollution and for initiating immediate necessary action within their jurisdiction.¹⁶⁷ The OPPA requires each municipality potentially exposed to oil damage to maintain sufficient personnel and equipment to combat smaller spills.¹⁶⁸ Guidelines for development of municipal oil pollution contingency arrangements in all coastal towns have been established by the Council for Oil Pollution Prevention.¹⁶⁹ The municipalities retain cleanup responsibility until it becomes clear that the spill is of such magnitude that State authorities should take charge.¹⁷⁰ Third, the OPPA provides

159. Ministry of Environment, *supra* note 143, at 5-6.

160. Act No. 6 of 6 March 1970 on Protection Against Damage due to Oil at § 1; 20 INT'L & COMP. L.Q. 564, 577 (1971).

161. Act No. 6 of 6 March 1970 on Protection Against Damage due to Oil at § 2.

162. Ministry of Environment, *supra* note 143, at 19.

163. *Id.*

164. *Id.*

165. *Id.* at 20.

166. *Id.*

167. *Id.* at 18.

168. Act No. 6 of 6 March 1970 on Protection Against Damage due to Oil at § 5; Ministry of Environment, *supra* note 143, at 18.

169. Royal Norwegian Ministry of Finance, *supra* note 135, at 37 app. The Council is also responsible for directing inter-municipal cooperation. Ministry of Environment, *supra* note 143, at 18.

170. Ministry of Environment, *supra* note 143, at 18.

for government "Headquarters" which assist local authorities and execute specific government requests.¹⁷¹

The Safety Regulations issued pursuant to the Submarine Natural Resources Act are among the strictest in the world.¹⁷² Pollution prevention is emphasized,¹⁷³ but mishaps are inevitable, and emergency guidelines are imposed upon all licensees.¹⁷⁴ Licensees must maintain "at all times a state of preparedness making it possible, in the event of an accident or dangerous situation, quickly to bring the situation under control and minimize the damage" ¹⁷⁵ Each licensee must submit a detailed emergency plan to the Ministry of Environment for approval.¹⁷⁶ A basic requirement of the plans is that they must be capable of operating in concert with a national contingency system.¹⁷⁷ Each emergency plan must include: (1) an organizational scheme delineating each person's area of responsibility; (2) a plan for combat equipment stating its nature, capacity, location, method of transport and directions for use; (3) a precise action plan; and (4) a plan for drilling and training personnel.¹⁷⁸ The Regulations require that the emergency plans utilize the best known technology and equipment available.¹⁷⁹ Should a blow-out occur, responsibility rests with the licensee to effect immediately the necessary measures to control and minimize the damage.¹⁸⁰ However, the Ministry of Environment or other competent authorities may, at their discretion, wholly or partly take charge of the cleanup operations.¹⁸¹ The licensee must provide the necessary equipment and personnel.¹⁸² The Government has ordered licensees to purchase

171. 20 INT'L & COMP. L.Q. 564, 577-78 (1971).

172. Horigan, *The North Sea*, in INTERNATIONAL MINERAL ACQUISITION AND OPERATIONS INSTITUTE 21 (1974).

173. E.g., Section 15 of the Production Safety Regulations, note 158 *supra*, requires purification of effluents that may contain hydrocarbons or other pollutants and continuous measurement of the pollutants prior to discharge. Section 17 requires special inspections to insure that nothing is left around the installations or on the seabed which may endanger marine life. Production Safety Regulations, *supra* note 158, at § 17.

174. Drilling Safety Regulations, *supra* note 158, at §§ 37-47; Production Safety Regulations, *supra* note 158, at §§ 38-48.

175. Drilling Safety Regulations, *supra* note 158, at § 37(a); Production Safety Regulations, *supra* note 158, at § 39.

176. Drilling Safety Regulations, *supra* note 158, at § 38; Production Safety Regulations, *supra* note 158, at § 40.

177. Drilling Safety Regulations, *supra* note 158, at § 39; Production Safety Regulations, *supra* note 158, at § 41.

178. *Id.*

179. Drilling Safety Regulations, *supra* note 158, at § 41; Production Safety Regulations, *supra* note 158, at § 43.

180. Drilling Safety Regulations, *supra* note 158, at § 42; Production Safety Regulations, *supra* note 158, at § 44.

181. *Id.*

182. *Id.*

oil spill equipment capable of handling blow-outs of 8,000 tons of oil a day under wave conditions of up to 2.5 meters.¹⁸³

Research by the Continental Shelf Division of the Norwegian Council for Industrial and Scientific Research indicates that oil spills from central North Sea operations will drift toward Denmark and the west coast of Sweden.¹⁸⁴ Because of the potential for transnational oil pollution, cooperation is necessary between the offshore operators and authorities in all North Sea States. In addition to close bilateral cooperation with the United Kingdom, Norway is a party with Denmark, Finland, and Sweden to the Copenhagen Agreement concerning Cooperation in Taking Measures against Pollution of the Sea by Oil.¹⁸⁵ Norway is also a party to the Bonn Agreement for Cooperation in Dealing with Pollution of the North Sea by Oil¹⁸⁶ and the London Convention on Civil Liability for Oil Pollution Damage resulting from Exploration for and Exploitation of Seabed Mineral Resources.¹⁸⁷ Under the Copenhagen Agreement, a State detecting oil pollution shall inform the party State which may be threatened.¹⁸⁸ The latter State "shall investigate the situation" and may request help from other party States.¹⁸⁹ The latter States "shall do what is possible to render such assistance."¹⁹⁰ The parties agree to stockpile equipment and anti-oil materials and to exchange information on equipment, materials, methodology, regulations, and authorities.¹⁹¹ Finally, States which observe a vessel violating oil pollution regulations within the waters of the party States must inform the party State in which the vessel is registered.¹⁹² All parties must assist in investigation of violations.¹⁹³

183. Letter from Norwegian Ministry of Environment to Kenneth Roberts (Jan. 7, 1980). In addition, enterprises whose operation entails a risk of oil spill (e.g., refineries) must maintain sufficient combat equipment and personnel for emergencies. Ministry of Environment, *supra* note 143, at 16.

184. Ministry of Environment, *supra* note 143, at 12.

185. *Done* Sept. 16, 1971 (*in force* Oct. 16, 1971), reprinted in 2 NEW DIRECTIONS IN THE LAW OF THE SEA 637 (1973).

186. See notes 80-82 and accompanying text *supra*.

187. See notes 83-88 and accompanying text *supra*.

188. Agreement Concerning Cooperation in Taking Measures Against Pollution of the Sea by Oil, *supra* note 80, art. 1.

189. *Id.* art. 2.

190. *Id.* art. 3.

191. *Id.* arts. 4, 8.

192. *Id.* art. 6.

193. *Id.* art. 7.

Land-Based Pollution

The Storting (Norwegian Parliament) will soon decide upon a new comprehensive pollution control law¹⁹⁴ based on the Water Pollution Act of 1970,¹⁹⁵ the Neighbor's Act of 1961,¹⁹⁶ and the Oil Pollution Prevention Act of 1970.¹⁹⁷ The proposed bill covers water, air, soil, and noise pollution, as well as hazards from solid waste and toxic chemical disposal.¹⁹⁸ The law will require in-depth assessment of the environmental consequences of all proposed major developments and other activities with substantial potential for pollution.¹⁹⁹ The major factors will include: (1) the current resource utilization possibilities which the proposed action would alter; (2) the probability and type of pollutant concerned; (3) the long and short-term environmental impacts; and (4) the possible mitigatory recourses.²⁰⁰ The proposal represents a vast improvement in environmental legislation in Norway. Environmental impact assessment insures more meaningful public input and consideration of environmental amenities in decision-making. The law will also provide for pollution emergency plans, supervision and control, and sanctions for violations.²⁰¹

The Neighbor's Act of 1961 and the Water Pollution Act of 1970 are based on the principle that a permit is required for any discharge of pollution.²⁰² In addition, the principle of "polluter-pays" applies to new industry. The costs of environmental protection are reflected in increased costs for public goods and services provided to the polluting enterprises.²⁰³ Also for new industry "best available technology" is generally required for pollution control.²⁰⁴

194. Letter from Norwegian Ministry of Environment (Oct. 14, 1978) (on file with the author).

195. Act No. 75 of 26 June 1970 Relating to the Prevention of Water Pollution, *translated in* MINISTRY OF ENVIRONMENT (NORWAY), SURVEY OF NORWEGIAN PLANNING LEGISLATION AND ORGANIZATION 25 (1975).

196. Act of 16 June 1961 Concerning Legal Relations Between Neighbors, *translated in* MINISTRY OF ENVIRONMENT, *supra* note 195, at 26.

197. Act No. 6 of 6 March 1970 on Protection Against Damage due to Oil; *see* text accompanying notes 157, 160-71 *supra*.

198. Letter from Norwegian Ministry of Environment (Oct. 14, 1978) (on file with the author).

199. *Id.*

200. *Id.*

201. Ministry of Environment (Norway), Parliamentary Report No. 44 (1975-76) on Pollution Control Measures at 11.

202. *Id.* at 6.

203. *Id.* The government intends to implement pollution control measures in older industries by 1984. *Id.* at 8.

204. *Id.* at 7. Pollution control measures must be based on the most effective internationally-known technology; however, there must exist "a reasonable relation between the expenses incurred and the environmental benefits obtained, as compared with other reasonable alternatives." *Id.*

The Water Pollution Act seeks to protect inland waters and sea areas against new and existing sources of pollution.²⁰⁵ The Act imposes a general duty to use "due care in the prevention of pollution" and prohibits pollution discharge without proper authorization.²⁰⁶ The Act defines water pollution as "the introduction into ground water, watercourses or sea areas—including bed and shore—of waste, solid objects or other solid substances, sewage water, impure water, [or] other fluids or gas"²⁰⁷ Water pollution also includes thermal pollution from cooling processes.²⁰⁸ Pollution problems which may arise from proposed development are resolved by the authorities under the Building Act of 1965.²⁰⁹ These authorities must cooperate with the State Pollution Control Authority and Ministry of Environment to ensure compliance with the Water Pollution Act.²¹⁰ For problems outside the scope of the Building Act, the State Pollution Control Authority grants permits and imposes conditions thereto.²¹¹

The Neighbor's Act requires permits for enterprises which can cause noise or air pollution.²¹² The Smoke Control Council passes on all permits, and decisions can be appealed to the Ministry of Environment.²¹³ The Act requires public notice and reasonable time to comment prior to issuance of a permit.²¹⁴ The Council may, in the public interest, attach pollution control measures to the permit.²¹⁵

On the international level, Norway participated in the Stockholm Conference on the Human Environment²¹⁶ and subsequently adopted, with Finland, Denmark, and Sweden, the

205. Act No. 75 of 26 June 1970 Relating to the Prevention of Water Pollution at § 1, translated in MINISTRY OF ENVIRONMENT, *supra* note 195, at 25.

206. MINISTRY OF ENVIRONMENT, *supra* note 195, at 26.

207. Act No. 75 of 26 June 1970 Relating to Prevention of Water Pollution at § 2, translated in MINISTRY OF ENVIRONMENT, *supra* note 195, at 25.

208. *Id.*

209. *Id.* at § 6. See notes 232-36 and accompanying text *infra*.

210. Act No. 75 of 26 June 1970 Relating to Prevention of Water Pollution at § 6, translated in MINISTRY OF ENVIRONMENT, *supra* note 195, at 25.

211. MINISTRY OF ENVIRONMENT, *supra* note 195, at 26. Decisions are based on cost/benefit analysis and can be appealed to the Ministry of Environment. *Id.*

212. Act of 16 June 1961 Concerning Legal Relations Between Neighbors, translated in MINISTRY OF ENVIRONMENT, *supra* note 195, at 26.

213. MINISTRY OF ENVIRONMENT, *supra* note 195, at 26.

214. Act of 16 June 1961 Concerning Legal Relations Between Neighbors, translated in MINISTRY OF ENVIRONMENT, *supra* note 195, at 26.

215. *Id.*

216. See notes 45-57 and accompanying text *supra*.

Convention on the Protection of the Environment.²¹⁷ While the Stockholm Conference provides no binding provisions, the Nordic Convention marks the first international attempt to provide a detailed legal framework for environmental protection. The basic objective of the Convention is to provide forums for disputes over transnational environmentally harmful activities.²¹⁸ The Convention covers air, water, noise, and thermal pollution.²¹⁹ The Convention applies not only to land-based sources, but also to fixed continental shelf installations.²²⁰ Under Article 3 "any person who is affected or may be affected by a nuisance caused by environmentally harmful activities in another contracting State, may institute proceedings before the appropriate court or administrative authority of that State as to whether the activity should be permitted."²²¹ When private initiative is inadequate, the appointed Supervisory Authority in each State asserts national environmental interests.²²²

Location of Onshore Facilities

The Norwegian government attaches great importance to environmental protection through land use controls.²²³ Onshore facilities related to production and development of offshore oil harm the marine environment not only through operational emissions, but also through utilization of land areas critical to marine ecosystems.²²⁴ The Building Act of 1965,²²⁵ the Establishment Control Act of 1976,²²⁶ and the Nature Conservation Act of 1970²²⁷ protect environmentally significant areas and prevent extreme

217. Done Feb. 19, 1974 (*in force* Oct. 5, 1976), reprinted in 13 INT'L LEGAL MATERIALS 591 (1974).

218. *Id.* art. 3.

219. *Id.* art. 1.

220. *Id.* arts. 1, 13.

221. *Id.* art. 3.

222. *Id.* art. 4.

223. Ministry of Environment, *supra* note 201, at 7.

224. See notes 137-38 and accompanying text *supra*. The marine food chain links Norway's coastal habitats such as wetlands and estuaries to the fish most important to North Atlantic fisheries. Royal Norwegian Ministry of Finance, *supra* note 135, at 30 app. Development can diminish marine productivity in these areas. Hildreth, *supra* note 5, at 260.

225. Act of 18 June 1965 Concerning Building, translated in MINISTRY OF ENVIRONMENT, *supra* note 195, at 7-14.

226. Act No. 5 of 20 February 1976 Relating to Approval for the Development of Economic Activities and to Guidance in Respect of their Location [hereinafter cited as Establishment Control Act], translated in REGIONAL DEVELOPMENT FUND (NORWAY), THE ESTABLISHMENT CONTROL ACT WITH REGULATIONS PURSUANT TO THE ACT (1978).

227. Act of 20 June 1970 Relating to Protection of Nature, translated in MINISTRY OF ENVIRONMENT, *supra* note 195, at 22-23.

concentration of polluting enterprises.²²⁸ In addition, the proposed comprehensive planning law will coordinate land use controls and environmental protection.²²⁹ The proposed bill disallows "irreversible changes in the use of land and natural resources" without previously approved plans.²³⁰ The law will also incorporate the proposed environmental impact assessment requirements previously discussed.²³¹

The Building Act creates a framework for environmental planning. The Act is "enabling" legislation which provides a planning structure through which local governments may regulate land use.²³² The thrust of the Act is coordination of necessary development with conservation and environmental needs.²³³ The Act establishes municipalities as the main authority for solving critical planning and development problems.²³⁴ The municipalities can weaken or strengthen the Act by adopting by-laws.²³⁵ For planning purposes, municipalities can acquire land through nationally-backed land acquisition bonds and cash loans.²³⁶ In addition, the Expropriation Act of 1959 allows municipalities to seize land for public purposes within defined situations,²³⁷ and the Concession Act of 1974 gives municipal governments preemption rights

228. The Shore Planning Act of 1971 would seem significant to controlling on-shore oil-related development; however, the Act fails to regulate coastal development unrelated to recreation or tourism. Act of 10 December 1971 on Planning in the Shore Area (amended June 7, 1973, to apply to mountain areas), *translated in* MINISTRY OF ENVIRONMENT, *supra* note 195, at 19.

229. Letter from Norwegian Ministry of Environment (Oct. 14, 1978) (on file with the author).

230. *Id.*

231. *Id.* See notes 199-200 and accompanying text *supra*.

232. MINISTRY OF ENVIRONMENT, *supra* note 195, at 5. Under the Act, county plans act as the coordinating hub for national, municipal, and county interests. As such, county plans largely determine the allowable scope of exploitation of natural resources within the respective jurisdictions and direct the principal demographic and economic developments within the county area. Regional plans coordinate land use and public facility siting and construction when inter-municipal joint planning is necessary. General plans indicate the general requirements of municipalities, including land use, water supply, and sewage disposal. General plans have particular impacts on maintenance of health and environmental quality and management of natural resources. Finally, local plans, guided by general plans, are prepared for specific areas of proposed development. See MINISTRY OF ENVIRONMENT, *supra* note 195, at 5-13; Royal Norwegian Ministry of Finance, *supra* note 135, at 86 app.

233. Royal Norwegian Ministry of Finance, *supra* note 135, at 86 app.

234. MINISTRY OF ENVIRONMENT, *supra* note 195, at 5.

235. *Id.*

236. *Id.* at 27.

237. MINISTRY OF ENVIRONMENT, *supra* note 195, at 28.

over undeveloped land within their jurisdiction.²³⁸

The Establishment Control Act of 1976 supercedes two previous laws pertaining to industrial location.²³⁹ Section 1 states:

The purpose of this Act is to develop and disperse economic activities in conformity with the national resources—and regional policies for the benefit of the community as a whole. Decisions pursuant to the Act shall be taken on the basis of an overall community evaluation whereby due consideration shall be given *inter alia* to the development of the country's regions and local communities, a well-balanced economy, the labour market and the protection of the environment.²⁴⁰

The Act prescribes two planning schemes: a national scheme for control of development throughout the country²⁴¹ and an urban scheme for control in highly developed municipalities.²⁴² In either case, approval for projects must be granted prior to any preparatory work including excavation, delivery of goods or performance of services.²⁴³

The Establishment Control Act and the regulations issued pur-

238. Act of 31 May 1974 Relating to Concessions and Municipal Preemption Rights on the Purchase of Real Estate, *translated in* MINISTRY OF ENVIRONMENT, *supra* note 195, at 30.

239. Act No. 15 of 20 March 1970 Relating to Guidance on Industrial Location established a compulsory siting service on manufacturing industries. No restrictive controls were exercised, but the measure set the stage for such controls. Lecture by the Norwegian Minister of Local Government and Labour, Mr. Arne Nilsen, at the meeting of the OECD Industry Committee, WP/6, in Oslo (June 5, 1978). By 1973, onshore oil-related industries imposed upon the already tight competition for coastal sites. Particularly imposing was the influx of service bases, repair and maintenance yards, and platform fabrication yards. Royal Norwegian Ministry of Finance, *supra* note 135, at 85 app. To secure an immediate handle on the establishment and location of these and other major industries the Storting passed Provisional Act No. 62 of 14 December 1973 Concerning Consent to Construction of Bases for Petroleum Operations and Major Industrial Projects. The provisional act required governmental permission prior to major development. *Id.*

240. Establishment Control Act, *supra* note 226, at § 1.

241. Under the national scheme:

Unless approved by the King, no one may initiate the following development projects in respect of:

1. the development or land-use conversion of an area,
2. the construction, extension, reconstruction or conversion of a building or plant, if the said area, building or plant shall be utilized for the purpose of economic activities and if the project will require a work input of at least 100 man-years or an investment exceeding an amount prescribed by regulation by the King, or if the new activity will require a minimum labour force of 100 employees.

Establishment Control Act, *supra* note 226, at § 2. Subsequent regulations prescribe a minimum investment of 30 million kroner (\$5.7 million). Royal Decree of 21 Sept. 1979.

242. Under the urban scheme: "For such municipalities as the King shall determine, no one may, without the approval of the King, initiate the construction, extension, reconstruction or conversion of a building which is to be used for purposes of economic activity." Establishment Control Act, *supra* note 226, at § 3. The urban scheme applies to cities such as Oslo, Stavanger, Bergen, and Bamble. Royal Decree of 10 December 1976 at § 5, *translated in* REGIONAL DEVELOPMENT FUND, *supra* note 226, at 10.

243. Establishment Control Act, *supra* note 226, at § 6.

suant thereto address development projects which provide services directly connected with exploration and exploitation of petroleum. Even if the national scheme would not apply to such projects because they fail to meet the minimum criteria,²⁴⁴ governmental approval is nevertheless required prior to establishment.²⁴⁵ Service bases, certain ancillary industries, companies operating oil rigs or vessels, and even administrative offices must be approved by either the Ministry of Local Government and Labour or the King in council.²⁴⁶ Approval is required even where no construction or conversion occurs and the company merely *utilizes* an area, building, or plant for oil-related services.²⁴⁷ The Act even extends into Norwegian territorial waters.²⁴⁸ The fjords provide key link-up sites for platform modules and other elements of the exploitation process, and approval is required for every individual operation of this type irrespective of size or investment.²⁴⁹

The Establishment Control Act provides that the Regional Development Fund²⁵⁰ shall assist in the preparation of cases falling under both the national and urban planning schemes and shall provide location guidance for economic activities.²⁵¹ The Board of the Regional Development Fund is empowered to make final decisions on urban scheme permits for premises over 2,000 square meters.²⁵² The Board also is the appellate agency for decisions of

244. See note 240 *supra*.

245. Establishment Control Act, *supra* note 226, at § 2. However, approval is not required for developments covering less than 2000 square meters nor for buildings with gross floor space of less than 200 square meters. Royal Decree of 10 December 1976 at § 3, *translated in* REGIONAL DEVELOPMENT FUND, *supra* note 226, at 9.

246. The Ministry of Local Government and Labour makes decisions when the gross floor area of the project is less than 1500 square meters. Royal Decree of 10 December 1976 at § 8, *translated in* Norway, REGIONAL DEVELOPMENT FUND, *supra* note 226, at 13.

247. *Id.* at § 3.

248. *Id.*

249. *Id.*

250. The Regional Development Fund was created in 1965 "to promote measures which will ensure increased, permanent and profitable employment . . . where underdeveloped industrial conditions prevail." Act No. 11 of 18 June 1965 at § 1, *quoted in* Lecture by the Minister of Local Government and Labour, note 239 *supra*. The Fund provides economic incentives for industries to locate in areas other than concentrated urban districts. *Id.*

251. Establishment Control Act, *supra* note 226, at § 9.

252. Royal Decree of 10 December 1976 at § 8, *translated in* REGIONAL DEVELOPMENT FUND, *supra* note 226, at 12.

the County Employment and Development Committee, which has the responsibility for implementing the Establishment Control Act.²⁵³ Thus, the Establishment Control Act aims at insuring coordination between economic planning and land use planning. The Nature Conservation Act seeks to preserve environmentally sensitive animal and plant habitats, pristine areas, and landscapes.²⁵⁴ The Act protects marshes and estuaries, which support the marine environment, from oil-related development. Section 1 declares: "Nature is a national asset which must be protected. Nature Conservation means the management of natural resources based on a consideration of the close interdependence of man and nature, and of the necessity of preserving the quality for the future."²⁵⁵ The Act disallows "[i]nterference with nature" except on the basis of long-term plans providing for preservation of the environment.²⁵⁶ Under the Act, pristine or distinctive natural areas may be preserved as national parks, protected landscapes, or nature preserves.²⁵⁷ In other areas "of major importance to flora and fauna," development, construction, and pollution can be prohibited.²⁵⁸

CONCLUSION

Immense offshore petroleum reserves challenge the world community to develop these resources without damaging the marine environment. Development, transportation, and storage of extracted hydrocarbons create risks of extensive oil pollution. Offshore discharges and construction and operation of onshore oil-related facilities degrade air and water quality and damage marine habitats. To minimize environmental harms associated with offshore exploitation, public international law provides a framework for global, regional, and national response. The Geneva Convention on the Continental Shelf and the currently evolving law of the sea establish sovereign rights to develop shelf resources, yet impose upon States the obligation to prevent and mitigate the harms which accompany such development. The Stockholm Conference produced specific recommendations for the global community and represents an important first step toward effective international protection of the living resources and

253. *Id.* at § 11.

254. Act of 20 June 1970 Relating to Protection of Nature; MINISTRY OF ENVIRONMENT, *supra* note 195, at 22.

255. Act of 20 June 1970 Relating to Protection of Nature at § 1, *translated in* MINISTRY OF ENVIRONMENT, *supra* note 195, at 22-23.

256. *Id.*

257. *Id.* at §§ 3, 5-6.

258. *Id.* at § 9.

amenities of the sea. In conjunction with the oil pollution conventions, regional agreements develop mechanisms for neighboring States to cooperate in combatting all forms of marine pollution, thus demonstrating worldwide recognition that the seas can no longer be regarded as a fathomless receptacle for whatever pollution industrial needs generate.

The harmful effects from offshore development necessitate national response to support the structure created by international law; inadequate national planning and regulation fosters proliferous exploitation. The Norwegian experience in the North Sea can be educational to governments faced with typical problems presented by exploitable offshore petroleum reserves. Not only the government's substantive response, but also the failures therein may prove instructive. The key to Norway's success is the relation of comprehensive planning to pollution control. The Building Act and the Establishment Control Act help alleviate development pressures in coastal areas while the pollution control legislation acts in coordination to prevent environmental degradation. Generally, best available technology is required for newly expanded enterprises, and polluting industries are charged increased prices for public goods and services to compensate for environmental protection expenditures.

The major gap in Norway's response to offshore oil involves the absence of specific legislative recognition of the coastal area as a focal point of industrial and demographic development. Coastal zones present unique challenges which require direct confrontation. Comprehensive planning should integrate solutions not only to problems related to use of land but also to those involved in estuarine development, management of marine resources, and the complex interrelation between land and ocean uses. In addition, coastal communities require special financial aid to help minimize or prevent particular burdens imposed by offshore petroleum development. Establishment of such a fund would greatly enhance governmental mitigatory efforts. Norway's proposed comprehensive planning and pollution control laws will bridge a further gap by incorporating environmental impact assessment and by regulating all forms of pollution. Impact assessment facilitates adequate consideration of previously unquantified environmental amenities and enables meaningful public input to planning deci-

sions which impact the environment.²⁵⁹ Even if impact assessment is not required for offshore licensing and operation, the requirement will significantly add to the control of environmental harm from oil-related facilities and thereby maximize the benefits from offshore development.

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259. *See generally* National Environmental Policy Act of 1969, 42 U.S.C. § 4332 (1976); 35 Fed. Reg. 7391 (1970).