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I. LEGAL

Emerging Trends in the Use of International Law and Institutions for the Management of International Water Resources*

VED P. NANDA**

I. THE PROBLEM

A recent United Nations study¹ notes that presently at least 20 percent of the world's urban population and 75 percent of the rural population (in many countries the number is as high as 50 percent of the urban population and 90 percent of the rural population) suffer from a lack of reasonably safe supplies of drinking water.² The quality of water supplies, and in turn the quality of life and environmental health, suffers for many reasons, including: (1) the increasing and unplanned concentration of population and industry in large urban areas; (2) the increase of toxic compounds and other pollutants caused by the proliferation of industrial processes, greater use of energy, and increased agricultural activity; (3) water-logging, salinization and erosion, exhaustion of groundwater supplies, and deterioration of both ground and surface water sources in many regions; (4) needlessly inefficient and wasteful water use; and (5) intensified conflicts about rights and priorities as the demand for available water accelerates.³

Since there is a fixed total stock of water⁴—even though it may be potentially inexhaustible—the future worldwide accelerating demand is likely to strain water resources not only in several countries but also in several regions of the world. Thus

* This paper is an adaptation of the author's remarks made at the Water Resources Conference at the University of Denver on Oct. 9, 1976.

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1. U.N. Water Conference, *Resources and Needs: Assessment of the World Water Situation*, U.N. Doc. E/CONF. 70/CBP/1 (1976) [hereinafter cited as *U.N. Assessment of the World Water Situation*].

2. *Id.* at 5.

3. *Id.*

4. *Id.* at 4.

the study concludes that there exists a potential world water crisis even though "globally there may be potentially enough water to meet forthcoming needs. But, frustratingly, it tends to be available in the wrong place, at the wrong time, or with the wrong quality."⁵ Consequently, all societies, rich and poor, are likely to be affected.

A recent study by the United Nations Economic Commission for Europe has concluded that water resources are inadequate to meet current needs in five European countries—Cyprus, the German Democratic Republic, Hungary, Malta, and the Ukrainian S.S.R.—and that seven more countries—Belgium, Bulgaria, Luxembourg, Poland, Portugal, Romania, and Turkey—will face similar problems by the year 2000.⁶

In September 1976, United Nations Secretary-General Kurt Waldheim described the main concern of the 1977 U.N. Water Conference: "[to ensure] that the world manages its water supply [so that] this vital resource is available in sufficient quantities and of sufficiently good quality to meet the mounting needs of a world population which is not only growing, but is seeking improved economic and social conditions for all."⁷ Subsequently, in November 1976, the consensus adopted by the General Assembly on the dispute between India and Bangladesh pertaining to the use of waters of the Ganges River⁸ highlighted the world community's interest in avoiding conflicts and in seeking cooperative action in the management of international water resources.

Invoking Article 14 of the U.N. Charter, Bangladesh brought the dispute before the Assembly, stating that "[f]ailure to resolve this issue expeditiously and satisfactorily carries with it the potential threat of conflict affecting peace and security in the area and the region as a whole."⁹

5. *Id.* at 5.

6. U.N. Economic Commission for Europe, *Problems of Europe's Water Suppliers*, Press Release ECE/GEN/F/4, ECE/ENV/9 (1976), cited in Report of the International Law Commission on the Work of its 28th Session, 31 U.N. GAOR, Supp. 10, at 384, U.N. Doc. A/31/10 (1976) [hereinafter cited as *Report of the 28th Session of Int'l L. Comm'n*].

7. In a letter to the author, *supra* at 225.

8. 13 *U.N. Monthly Chronicle*, Dec. 1976, at 35.

9. *Id.* at 35-36. See also U.N. Doc. A/31/195 & Add. 1, 2 (1976).

Bangladesh contended that India's construction of a barrier on the Ganges River at Farakka, a few miles from the Bangladesh-India border, for the purpose of diverting the river into the Hooghly River in India, and India's continued unilateral withdrawal of a large volume of water from the Ganges had a devastating impact on Bangladesh, causing "cumulative and permanent" damage.¹⁰ India expressed "serious misgivings about the desirability of involving the Assembly in an issue which was intrinsically bilateral."¹¹ It considered Bangladesh's insistence on the continued natural flow of an international river to be inconsistent with the concept of "equitable utilization."¹² Asserting that India "had always subscribed to the view that each riparian State was entitled to a reasonable and equitable share of the waters of an international river," it showed willingness not only to consult with Bangladesh on finding a short-term solution "to avoid the common hardship that might be caused by a shortage of water during the lean months, but also to co-operate in the search for a long-term solution by augmenting the flow."¹³ Accordingly, the parties "decided to meet urgently at Dacca at the ministerial level for negotiations with a view to arriving at a fair and expeditious settlement."¹⁴

If the Assembly involvement in the Ganges waters dispute were to be construed to be an emerging trend toward the internationalization of bilateral water management issues, or at least some of them, it would be a trend I would consider desirable, necessary, and long overdue; critical questions pertaining to water management and their proposed solutions have been traditionally considered primarily as local, regional, and national issues. These issues include the setting of priorities among multiple and often competing uses of water; the allocation, distribution, conservation, augmentation, and optimization of existing water resources; and the prevention of pollution and exhaustion. Obviously, experience of water resource management accrued at all these levels can be benefi-

10. 13 *U.N. Monthly Chronicle*, Dec. 1976, at 36.

11. *Id.*

12. *Id.*

13. *Id.*

14. *Id.* at 35. Negotiations, however, were stalled in January 1977. *N.Y. Times*, Mar. 14, 1977, at 12, col. 2.

cially shared by others. Similarly, experience in integrated development and management of international river basins¹⁵ can be helpful both in the devising of new plans and in their implementation. A brief inquiry into the role of international law and institutions in facilitating the management of international river resources, primarily for non-navigational uses, will be attempted in the following sections.

II. POLICY CONSIDERATIONS

Unilateral attempts by states to solve water problems are likely to produce limited results for at least two reasons: (1) many nations lack adequate scientific data about water supply and its rational use, and adequate technical know-how and resources to develop local water systems and to appraise their long range effects and implications, and (2) there is likely to be unnecessary and wasteful duplication of effort.¹⁶ Efficient, rational development and use of water resources demands cooperative, concerted efforts by nation states.

The need for such concerted efforts is especially striking where internationally interconnected water resources—surface or underground—are involved. The emergence of the international drainage basin concept and its wide acceptance, contrasted with the “international river” and “international river system,” can be attributed to a better understanding of hydrologic facts.¹⁷ This development has created expectations that

15. The concept of “international drainage basin” is used in article 2 of the Helsinki Rules, INT’L LAW ASS’N, HELSINKI RULES ON THE USES OF THE WATERS OF INTERNATIONAL RIVERS art. II (1967). For a discussion of various aspects of this concept see L. TECLAFF, *THE RIVER BASIN IN HISTORY AND LAW* (1967); U.N., *Integrated River Basin Development*, U.N. Doc. E/3066/Rev. 1 (1970); THE LAW OF INTERNATIONAL DRAINAGE BASINS (A. Garretson, R. Hayton & C. Olmstead eds. 1967); *Developments in the Field of Natural Resources—Water, Energy and Minerals—Technical and Economic Aspects of International River Basin Development*, U.N. Doc. E/C.7/35 (1972) [hereinafter cited as *The 1972 U.N. Report*]; U.N. Secretary-General’s Supplementary Report, *Legal Problems Relating to the Non-Navigational Uses of International Watercourses*, U.N. Doc. A/CN.4/274 (1974) [hereinafter cited as 1-2 *The 1974 Supplementary Report of the Secretary-General*]; Report of the Panel of Experts on the Legal and Institutional Aspects of International Water Resources Development, *Management of International Water Resources: Institutional and Legal Aspects*, U.N. Doc. ST/ESA/5 (1975) [hereinafter cited as *The 1975 U.N. Panel of Experts Report*]; Bourne, *The Development of International Water Resources: The “Drainage Basin Approach”*, 47 CAN. B. REV. 62 (1969); Menon, *Water Resources Development of International Rivers With Special Reference to the Developing World*, 9 INT’L LAW 441 (1975) [hereinafter cited as Menon].

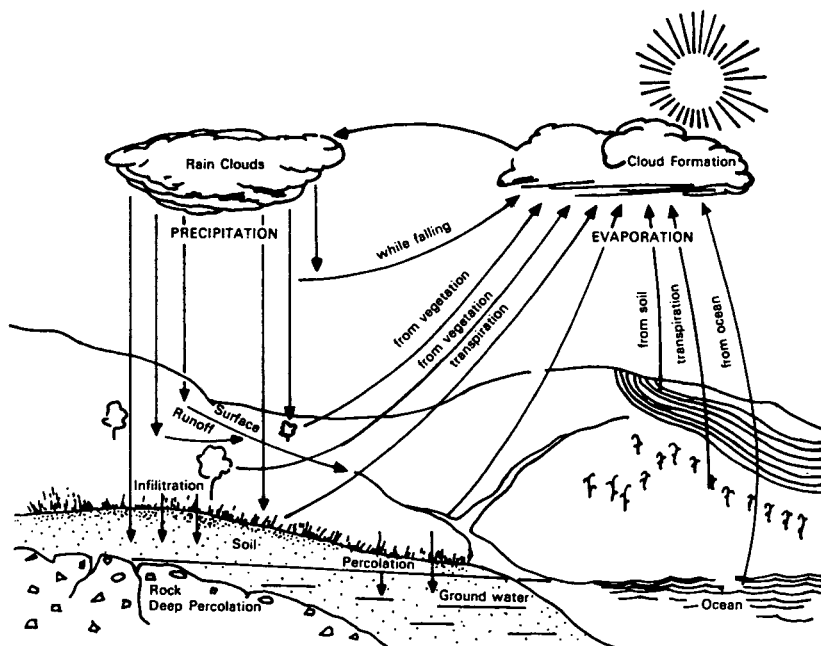
16. U.N. *Assessment of the World Water Situation* at 6.

17. *The 1975 U.N. Panel of Experts Report* at 9.

when two or more states, sharing uses of international water resources, establish a regime to regulate or govern such uses, the scope of such a regime would, barring special agreements, extend to the entire basin.¹⁸

The next step beyond the international drainage basin concept is the international water resources system concept. The latter concept allows the optimal utilization of all water resources, for the concept encompasses "a complete transnational, non-maritime hydrosystem"¹⁹ by recognizing: (1) the value and functioning of all portions of the hydrologic cycle—surface water, groundwater, and atmospheric water; (2) international frozen water resources including glaciers and polar ice; and (3) the many interrelationships which exist among various natural and human resources affected by such a system.^{19.1}

Figure 1. Hydrologic cycle



Source: THE WATER ENCYCLOPEDIA: COMPENDIUM OF USEFUL INFORMATION ON WATER RESOURCES 59 (D. Todd ed. 1970), cited in U.N. Doc. St/ESA/5, at 13 (1975).

18. *Id.* For an illustration of special agreements see *id.* at 48-54. *But see* Bourne, *supra* note 15, at 83-87.

19. *The 1975 U.N. Panel of Experts Report* at 12.

19.1. *Id.* at 12-15. Figure 1 illustrates the hydrologic cycle.

The major impetus for evolving legal norms and institutional structures on the uses of international watercourses can be traced to the growing awareness and realization among states sharing international watercourses of their common interest in rational utilization and optimal development of these water resources.²⁰ In turn, these norms and institutions influence and shape policies affecting (1) water balance efficiency, and (2) mechanisms for regulating a balanced demand/supply relationship when supply is scarce.²¹

However, despite a significant trend toward cooperative action by states on international watercourses, which has already "reached international solutions in about 20 [international river] basins" and in about 300 related bilateral and multilateral treaties,²² states are still split on the appropriate scope of the definition of an international watercourse for the purpose of studying the legal aspects of the uses and pollution of such waters.²³ In reply to a recent International Law Commission questionnaire,²⁴ several states expressed opposition to the use of an international drainage basin concept as the appropriate basis for a study of the legal aspects both of non-navigational uses and the pollution of international watercourses.²⁵ Poland suggested that "from the legal point of view one cannot speak of the unity of the international drainage basin extending on the territory of more than one State until the States of this basin will not recognize the restriction of their territorial sovereignty on internal waters under their control."²⁶

20. Such a growing awareness and realization is reflected in a large number of recent agreements on the subject among nation states. See, e.g., 1 *The 1974 Supplementary Report of the Secretary General* at 79-183; U.N. Secretary-General's Report, *Legal Problems Relating to the Utilization and Use of International Rivers*, Pt. II, U.N. Doc. A/5409 (1963), which is conveniently contained in 2 Y.B. INT'L L. COMM'N Pt. II, at 33, U.N. Doc. A/CN.4/SER.A/1974/Add.1 (Part 2) (1974) [hereinafter cited as *The 1963 Report of the Secretary-General*, citation to pages being to the 1974 INT'L L. COMM'N YEARBOOK]; U.N., *Legislative Texts and Treaty Provisions Concerning the Utilization of International Rivers for Other Purposes than Navigation*, U.N. Doc. ST/LEG/SER.B/12 (1963).

21. *U.N. Assessment of the World Water Situation* at 52-53.

22. *Supra* note 20; *The 1972 U.N. Report* at 13.

23. *Report of the 28th Session of Int'l L. Comm'n* at 376-78.

24. *The Law of the Non-Navigational Uses of International Watercourses* at 8-9, U.N. Doc. A/CN.4/294 (1976).

25. *Id.* at 14 (Austria); 15-16, 35, 42 (Brazil); 17, 35 (Columbia); 18, 36, 42-43 (Ecuador); 27-28, 39-40, 45 (Poland); and 28-29 (Spain).

26. *Id.* at 39.

Acknowledging that the existence of a clear trend is "manifest in the legalizing of the river basin as the basis for cooperation" between the member basin states,²⁷ a commentator has recently noted that most existing international river institutions "have authority only to advise and supervise the execution of waterworks already approved,"²⁸ and are unable to initiate water resource projects.

What legal norms and what kind of institutions can encourage, facilitate, and accelerate integrated approaches to international watercourse management and development is a useful inquiry. The first step which will be attempted here is to outline in the next section the trends in decision; this will be followed by an appraisal of these trends and a few concluding recommendations.

III. TRENDS IN DECISION

Although legal rules to regulate and govern the use of water have existed since ancient times and civilizations,²⁹ the development of international water law can be traced back only to the end of World War I when peace treaties declared many European rivers to be international.³⁰ These treaties in many instances contained provisions concerning the regimes not only for the regulation of navigational uses of such rivers but also for their non-navigational uses.³¹ However, during the last 50 years, international law has played an increasingly influential role in dealing with questions pertaining to water resources. A brief sketch of this more recent development follows.

A. *General Conventions*

The first treaty on the subject was adopted by a General Conference on Freedom of Communications and Transit, convened in 1921 at Barcelona under the auspices of the League of Nations.³² The Conference also adopted a Statute on the regime of navigable waterways of international concern.³³ Al-

27. Teclaff, *The Influence of Recent Trends in Water Legislation on the Structure and Functions of Water Administration*, 9 LAND & WATER L. REV. 1, 2 (1974).

28. *Id.* at 3.

29. Menon at 443 n. 4-9.

30. *The 1975 U.N. Panel of Experts Report* at 21-22.

31. *The 1963 Report of the Secretary-General* at 57-61.

32. *Id.* at 60.

33. *Id.*

though both the Convention and the Statute, which entered into force in 1922, are primarily concerned with navigation, they contain provisions regarding the utilization and use of rivers for non-navigational purposes as well.³⁴

The following year, the League of Nations convened the Second General Conference on Freedom of Communications and Transit which adopted a convention on the development of hydraulic power affecting two or more states.³⁵ The convention formulated principles to accomplish the goal of "facilitating the exploitation and increasing the yield of hydraulic power."³⁶ Although the Conference did not require a state party to reach agreement with other states to ensure the hydroelectric development of an international river, it did provide "principles by means of which the interested States may negotiate and come to an agreement with a view to developing international rivers for the generation of hydro-electric power."³⁷

B. *Multilateral, Regional, and Bilateral Conventions*

The latest United Nations reports³⁸ list more than 300 agreements between and among states. However, more than half the treaties listed are in Europe and, while 23 of a total of 45 European basins are covered by treaties, only 38 of the 155 basins located in Africa, the Americas, and Asia have become the subject of international compacts.³⁹

One can surmise that this lopsided development in Europe is to a large measure attributable to industrialization and the resulting common interest and need perceived by European nations to enter into cooperative agreements, initially on navigational aspects of international rivers and subsequently on non-navigational uses of international water resources. With industrialization, a similar pressure for more extensive use and development of international water resources is likely to be felt in other regions as well. As a result, the need will be increasingly felt to enter into cooperative agreements both on regional

34. *Id.* at 60-61.

35. *Id.* at 57.

36. *Id.* at 58.

37. *Id.*

38. *Supra* notes 20-21.

39. *The 1972 U.N. Report*, Annex VI, at 21. For a discussion of selected bilateral and regional agreements see Nanda, *The Establishment of International Standards for Transnational Environmental Injury*, 60 *IOWA L. REV.* 1089, 1101-08 (1975).

and bilateral levels. Three recent developments portend this direction: (1) in the post-World War II period, especially during the last two decades, a large number of multilateral treaties have been signed in Africa, the Americas, and in Europe;⁴⁰ (2) many recent multilateral conventions extend the scope of their coverage to the entire basins of international water resources in question;⁴¹ and (3) at least a few such conventions, such as the Senegal River Basin Authority, have set up institutions capable not only of settling disputes but also of providing the needed initiative and leadership in the management of international water resources.⁴²

C. *Intergovernmental Organizations*

A large number of intergovernmental organizations have been actively associated with various aspects of the uses of international watercourses. These organizations include the United Nations under whose auspices several international conferences, such as the 1972 Conference on the Human Environment,⁴³ the 1976 Conference on the Habitat,⁴⁴ and the 1977 Water Conference,⁴⁵ have studied various aspects of the problem. The United Nations Economic and Social Council and its subsidiary bodies have prepared several useful studies and reports regarding the development and utilization of water resources.⁴⁶

The U.N. Secretariat itself took the lead in 1968 in assembling an interdisciplinary panel of experts to study the legal and institutional aspects of international water resources development.⁴⁷ The Panel, which was composed of economists, engineers, lawyers, public administration specialists, and exec-

40. *Supra* note 20.

41. Treaties on the Senegal River basin, the Niger basin, the Chad basin, and the River Plate basin provide recent examples. See 1 *The 1974 Supplementary Report of the Secretary-General* at 79-83, 87-88.

42. See generally Parnall & Utton, *The Senegal Valley Authority: A Unique Experiment in International River Basin Planning*, 51 *IND. L.J.* 235 (1976).

43. See *Report of the United Nations Conference on the Human Environment*, U.N. Doc. A/CONF.48/14/Rev.1 (1973).

44. The Conference met in Vancouver, Canada, from May 31 to June 11, 1976. For a report of the Conference see U.N. Doc. A/CONF./70/15 (1976).

45. The Conference took place from March 14-25, 1977. The Work Programme of the Conference is contained in U.N. Doc. E/C.7/SR.96 (1976).

46. 2 *The 1974 Supplementary Report of the Secretary-General* at 190-212.

47. *The 1975 U.N. Panel of Experts Report* at iii.

utives from different parts of the world, held sessions in 1968 and 1969.⁴⁸ These sessions were also attended by participants from interested U.N. agencies.⁴⁹ The resulting Panel Report is an impressive document containing specific proposals.⁵⁰ Countries seeking help on the issue of international water resources planning will find the report of considerable assistance.

Among the specialized agencies of the United Nations, the Food and Agriculture Organization (FAO)⁵¹ and the World Meteorological Organization (WMO)⁵² have shown special concern for the problem. In 1972 the FAO legal office prepared a draft agreement on water utilization and conservation in the Lake Chad Basin.⁵³ WMO is presently conducting two studies: (1) on the effects of salinity caused by the erection of dams and other watercourse structures; and (2) on the thermal pollution of waters caused by effluents from energy-producing installations.⁵⁴ Additionally, the World Health Organization has conducted a comparative survey of health legislation on the control of water pollution,⁵⁵ and, in conjunction with the International Atomic Energy Agency, it convened in 1969 a panel of experts which prepared a report on the pollution of fresh waters by radioactive material.⁵⁶ The report makes specific recommendations to "control the quantities of radioactive materials passing from one country to another."⁵⁷

As early as 1933, the American states adopted the Declaration of Montivideo on the industrial and agricultural use of international rivers at the Seventh Inter-American Conference.⁵⁸ The Declaration, applicable to both contiguous and successive rivers, conditions the exercise of a state's "right to exploit, for industrial or agricultural purposes, the margin which is under their jurisdiction of the waters of international rivers . . . upon the necessity of not injuring the equal right due to

48. *Id.* at 3.

49. *Id.*, Annex I, at 187.

50. Specific proposals are contained in *id.* at 181-84.

51. *See* 2 *The 1974 Supplementary Report of the Secretary-General* at 216-22.

52. *See id.* at 223.

53. *Id.* at 217.

54. *Id.* at 223.

55. *Id.* at 222-23.

56. *Id.* at 223-25.

57. *Id.* at 225.

58. *The 1963 Report of the Secretary-General*, Annex I(A) at 212.

the neighboring State on the margin under its jurisdiction."⁵⁹ Thus no state "may, without the consent of the other riparian State, introduce into watercourses of an international character, for the industrial or agricultural exploitation of their waters, any alteration which may prove injurious to the margin of the other interested State."⁶⁰ It provides for joint action pertaining to studies regarding the utilization of such waters,⁶¹ prior consultation between and among riparian states on the projects contemplated on these waters,⁶² reparation and compensation,⁶³ and dispute settlement mechanisms.⁶⁴ Subsequent reports, declarations, and resolutions adopted in the Western Hemisphere on the use of international watercourses include: (1) a 1941 resolution concerning the establishment of joint technical commissions to study the hydrographic system of the River Plate;⁶⁵ (2) a 1965 draft convention on the industrial and agricultural use of international rivers and lakes, prepared by the Inter-American Judicial Committee;⁶⁶ (3) a 1966 resolution on control and economic utilization of hydrographic basins and streams in Latin America, adopted by the Inter-American Economic and Social Council;⁶⁷ and (4) various declarations and resolutions adopted by Argentina, Bolivia, Brazil, Paraguay, and Uruguay pertaining to their joint efforts for the development of the Plate Basin, including the 1971 Act of Asuncion.⁶⁸

The Inter-American practices may be highlighted by noting a few provisions from the 1965 draft convention and the 1971 Act of Asuncion. Articles 5 and 6 of the draft convention read:

5. The utilization of the waters of an international river or lake for industrial or agricultural purposes must not prejudice the free navigation thereof in accordance with the applicable legal rules, or cause substantial injury, according to international law, to the riparian States or alterations to their boundaries.

59. *Id.* art. 2.

60. *Id.*

61. *Id.* art. 6.

62. *Id.* arts. 7-8.

63. *Id.* art. 3.

64. *Id.* arts. 9-10.

65. See *The 1963 of the Secretary-General*, Annex I(B) at 212.

66. See 2 *The 1974 Supplementary Report of the Secretary-General* at 264.

67. See *id.* at 267.

68. See 1 *id.* at 173-79.

6. In cases in which the utilization of an international river or lake results or may result in damage or injury to another interested State, the consent of that interested State shall be required, as well as the payment or indemnification for any damage or harm done, when such is claimed.⁶⁹

Articles 1 and 2 of the Act of Asuncion provide:

1. In contiguous international rivers, which are under dual sovereignty, there must be a prior bilateral agreement between the riparian States before any use is made of the waters.
2. In successive international rivers, where there is no dual sovereignty, each State may use the waters in accordance with its needs provided that it causes no appreciable damage to any other State of the Basin.⁷⁰

Intergovernmental efforts in Africa and Asia have resulted in (1) a 1961 report, adopted at the first Inter-African Conference on Hydrology in Nairobi,⁷¹ which called for the establishment of effective consultation mechanisms, especially regarding the River Niger and Lake Chad,⁷² and (2) the 1973 draft propositions on the law of international rivers formulated under the auspices of the Asian-African Legal Consultative Committee,⁷³ which accepted the concept of an international drainage basin "except as may be provided otherwise by convention, agreement or binding custom among the basin states."⁷⁴ The draft propositions define the international drainage basin area as "a geographical area extending over two or more states determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus."⁷⁵ They accept the principle of equitable utilization,⁷⁶ require a state to "act in good faith in the exercise of its rights on the waters of an international drainage basin in accordance with the principles governing good neighbourly relations,"⁷⁷ prefer consumptive uses over other competing uses,⁷⁸ provide for prior consultation, and for inter-

69. *Supra* note 66, at 265-66.

70. *Supra* note 68, at 179.

71. See *The 1963 Report of the Secretary-General* at 217.

72. *Id.* at 218.

73. See *supra* note 66, at 226.

74. Proposition I, *id.* at 227.

75. Proposition II(1), *id.* at 228.

76. Proposition III, *id.*

77. Proposition IV(1), *id.* at 228-29.

78. Proposition V, *id.* at 229.

national arbitration and adjudication as dispute settlement mechanisms,⁷⁹ and impose state responsibility on violating states with injunctive and compensatory remedies.⁸⁰

European efforts, which have centered around water pollution problems, include: (1) the report of the 1961 Geneva Conference on Water Pollution Problems in Europe;⁸¹ (2) a 1965 report on fresh water pollution control in Europe submitted to the Consultative Assembly, Council of Europe,⁸² and a resulting recommendation adopted by the Assembly, calling upon member states to undertake joint action;⁸³ (3) the 1967 European Water Charter,⁸⁴ which calls for international cooperation "to conserve the quality and quantity of water," since water "knows no frontiers,"⁸⁵ and calls for the management of water resources to be based on their natural drainage basins rather than on political and administrative boundaries;⁸⁶ and (4) a 1969 draft European Convention on the Protection of Fresh Water against Pollution,⁸⁷ which has been further refined in a 1974 draft.⁸⁸ It should be noted that the 1974 draft defines an international watercourse as "any watercourse, canal or lake which separates or passes through the territories of two or more States,"⁸⁹ and prohibits or restricts the "discharge into the waters of international hydrographic basins of any of the [enumerated] dangerous or harmful substances."⁹⁰ It contains elaborate provisions on joint action including negotiations,⁹¹ joint agreements,⁹² the setting of standards,⁹³ the establishment of appropriate commissions,⁹⁴ and dispute settlement mechanisms.⁹⁵ Finally, the 1971 recommendation of the Con-

79. Proposition X, *id.* at 230.

80. Proposition IX, *id.*

81. *Supra* note 71, at 218.

82. *Supra* note 66, at 230-34.

83. *Id.* at 235-39.

84. *Id.* at 239-42.

85. *Id.* at 242.

86. *Id.*

87. *Id.* at 243-50.

88. *Id.* at 251-61.

89. Art. 1(a), *id.* at 252.

90. Art. 5(1), *id.* at 253.

91. Art. 12, *id.* at 255.

92. Arts. 12, 14, *id.* at 255-56.

93. Art. 4(1)(b), Appendix I, *id.* at 253, 259.

94. Arts. 15, 16, *id.* at 256-57.

95. Arts. 20, 22, Appendix A, *id.* at 258, 260-61.

sultative Assembly, calling for urgent action by all the countries bordering on the River Rhine, concerning the pollution of the Rhine Valley watertable should be noted.⁹⁶

D. *Nongovernmental Organizations*

Among scholarly and professional associations which have studied the uses of international watercourses, perhaps the one most widely known for its work in this field is the International Law Association.⁹⁷ The Rules on the Uses of the Waters of International Rivers adopted at the Fifty-Second Conference of the Association at Helsinki in 1966,⁹⁸ known as the Helsinki Rules, contain the "key principle" that "[e]ach basin State is entitled, within its territory, to a reasonable and equitable share in the beneficial uses of the waters of an international drainage basin."⁹⁹ What is a "reasonable and equitable share . . . is to be determined in the light of all the relevant factors in each particular case."¹⁰⁰ Some relevant factors are enumerated for illustrative purposes.¹⁰¹ According to the Rules, a "use or category of uses is not entitled to any inherent preference over any other use or category of uses."¹⁰² In addition to providing rules for the equitable utilization of the waters of an international drainage basin,¹⁰³ the Helsinki Rules cover many other areas such as pollution,¹⁰⁴ navigation,¹⁰⁵ and timber floating.¹⁰⁶ They also provide for dispute settlement mechanisms.¹⁰⁷ Since the Helsinki Conference, the Association has been actively pursuing the study of

certain selected aspects of water resources law [such as] underground waters; the relationship of water to other natural resources; domestic uses of water; hydraulic uses of water, including the generation of power and irrigation; flood control and silta-

96. *See id.* at 262-63.

97. For a summary of the work of the International Law Association in this field *see supra* note 71, at 202-208; *supra* note 66, at 287-304.

98. INT'L LAW ASS'N, HELSINKI RULES ON THE USES OF THE WATERS OF INTERNATIONAL RIVERS (1967). The Helsinki Rules are contained in *supra* note 66, at 288-94.

99. Art. IV, *supra* note 66, at 288.

100. Art. V(1), *id.*

101. Art. V(2), *id.* at 288-89.

102. Art. VI, *id.* at 289.

103. Ch. 2, arts. IV-VIII, *id.* at 288-90.

104. Ch. 3, arts. IX-XI, *id.* at 290.

105. Ch. 4, arts. XII-XX, *id.* at 290-91.

106. Ch. 5, arts. XXI-XXV, *id.* at 291.

107. Ch. 6, arts. XXVI-XXXVII, *id.* at 292-94.

tion; regulation of water flow; detailed rules on the navigation of rivers; and further consideration of the subject of pollution of coastal areas and enclosed seas.¹⁰⁸

The work is being done by the Association's Committee on International Water Resources Law.¹⁰⁹ One of the Committee's six working groups, the Working Group on Management of International Waters, was set up to study legal aspects concerning: (1) obligation (if any) to establish international administration; (2) functions, powers, and composition of international management; (3) economic and financial problems of international management; (4) questions concerning the constitutional requirements of certain states to accept the binding force of the decisions of international management; and (5) national water legislation of the co-basin states regarding the use of water under international management.¹¹⁰ Earlier, in 1958, the Committee on the Uses of Waters of International Rivers of the American Branch of the Association asserted a principle of law that a riparian "is under a duty to refrain from increasing the level of pollution of a system of international waters to the substantial detriment of a co-riparian."¹¹¹

Among other similar groups, the Institute of International Law and the Inter-American Bar Association have also studied the questions pertaining to the uses of international waterways and have made specific recommendations.¹¹² For instance, the Institute of International Law decided as early as 1910 to study the question of "determining the rules of international law relating to international rivers from the point of view of the utilization of their energy."¹¹³ The following year, the Institute adopted a resolution on "international regulations regarding the use of international watercourses."¹¹⁴ Fifty years later, in

108. *Id.* at 295.

109. For a report on the work of the Committee see *id.* at 294-304.

110. *Id.* at 300-02.

111. COMMITTEE ON THE USES OF THE WATERS OF INT'L RIVERS OF THE AMERICAN BRANCH OF THE INT'L LAW ASS'N, PRINCIPLES OF LAW AND RECOMMENDATIONS ON THE USES OF INTERNATIONAL RIVERS xii (1958).

112. For a summary of the work of these organizations see 3 M. WHITEMAN, DIGEST OF INTERNATIONAL LAW 921-24, 929-30 (1964); *supra* note 71, at 199-202, 208-09; *supra* note 66, at 283-86.

113. *Supra* note 71, at 199.

114. *Id.* at 200.

1961, at its Salzburg session the Institute adopted a resolution on utilization of non-maritime international waters (except for navigation).^{114.1} The principle of equitable utilization is recognized¹¹⁵ and provisions are contained (1) for prior notice before undertaking "works or utilizations of the waters of a water-course or hydrographic basin which seriously affect the possibility of utilization of the same waters by other States,"¹¹⁶ (2) for adequate compensation for any loss or damage,¹¹⁷ and (3) for settlement of disputes.¹¹⁸ Similar principles are outlined in a 1957 resolution of the Inter-American Bar Association,¹¹⁹ which also created a Permanent Committee on the Law Governing the Uses of International Rivers.¹²⁰ At the 16th Conference of the Association, held at Caracas in November 1969, the Association adopted a resolution recommending that "the laws of the American countries on the industrial and agricultural utilization of rivers and lakes be unified or harmonized in order to avoid international controversies."¹²¹

E. *The International Law Commission Study*

Pursuant to a General Assembly resolution of December 8, 1970,¹²² that the International Law Commission should study the law of the non-navigational uses of international water-courses with a view to its progressive development and codification, and the Assembly resolution of December 3, 1971,¹²³ recommending that the Commission give priority to the topic, the Commission appointed a Subcommittee and subsequently a special rapporteur to deal with the question.¹²⁴

In its report to the Commission,¹²⁵ the Subcommittee noted that the recent studies on the subject, as well as the more recent treaties and state practices, showed the use of varying

114.1. *Id.* at 202.

115. Arts. 2-4, *id.*

116. Arts. 4-5, *id.*

117. Art. 4, *id.*

118. Arts. 6-9, *id.*

119. *See id.* at 208.

120. *See id.* at 208-09.

121. *Supra* note 66 at 286.

122. G.A. Res. 2669, 25 U.N. GAOR Supp. 28, at 127, U.N. Doc. A/8028 (1970).

123. G.A. Res. 2780, 26 U.N. GAOR Supp. 29, at 136, U.N. Doc. A/8429 (1971).

124. For a report on the Commission's response to the General Assembly's recommendations see *Report of the 28th Session of Int'l L. Comm'n* at 367-69.

125. *See* [1974] 2 Y.B. INT'L L. COMM'N Pt. 1, at 301, U.N. Doc. A/CN.4/SER. A/1974/Add.1 (Part 1) (1974).

terms to determine the scope of "international watercourses." These terms include "river basin," "drainage basin," "international drainage basin," "hydrographic basin," and "successive and contiguous international rivers" as a basis for the solution of legal problems.¹²⁶ In view of these variations in practice and theory, showing that the term "international watercourses" lacks "a sufficiently well-defined meaning to delimit, with any degree of precision, the scope of the work which the Commission should undertake on the uses of fresh water,"¹²⁷ the Subcommittee proposed that the Commission request states to comment on the questions pertaining to: (1) "the appropriate scope of the definition of an international watercourse, in a study of the legal aspects" of fresh water uses and of fresh water pollution; and (2) the geographical concept of an international drainage basin as being the appropriate basis for a study of the legal aspects of non-navigational uses, as well as the pollution of international watercourses.¹²⁸

State responses confirmed the Subcommittee's initial conclusion that there is a lack of consensus on the subject.¹²⁹ Several states preferred the traditional definition of an international river, as contained in the Final Act of the Congress of Vienna of June 9, 1815—that international watercourses are those which separate or cut across the territory of two or more states.¹³⁰ However, several states supported the Commission's adoption of the concept of the drainage basin to determine the scope of its work,¹³¹ while others expressed some reservations.¹³²

A similar variation in the view of states was evident during the course of the subsequent discussion of the subject in July 1976 at the Commission's 28th Session.¹³³ While many members supported the traditional definition of an international

126. *Id.* at 301-02.

127. *Id.* at 302.

128. *Id.*

129. *The Law of the Non-Navigational Uses of International Watercourses* 13-47, U.N. Doc. A/CN.4/294 (1976).

130. *See, e.g., id.* at 15 (Brazil); 17 (Columbia); 20 (Federal Republic of Germany); and 27 (Poland).

131. *Id.* at 13-14 (Argentina); 15 (Barbados); 19 (Finland); 26 (Pakistan); 26 (Philippines); 30 (Sweden); and 30-31 (United States of America).

132. *Id.* at 21-25 (Hungary); and 31-32 (Venezuela).

133. *See Report of the 28th Session of Int'l L. Comm'n* at 385-87.

river embodied in the Final Act of the Congress of Vienna,¹³⁴ one member suggested that the subject was not yet "ripe for codification because experience was rapidly accumulating and scientific progress was opening many doors, with the result that it was impossible to predict new developments in irrigation and the proper economic uses of water."¹³⁵ He warned against making generalizations at this stage. Another member suggested that since river basins varied considerably—encompassing very limited or very large portions of the territory of a state or parts of the territory of different states, some of them covering areas as huge as the Amazon Basin and the River Plate Basin, which cover areas of 4,787,000 square kilometers and 2.4 million kilometers respectively—there could not be a serious contention "that the Commission had the authority to formulate rules that would be valid for the whole of such huge areas, imposing a kind of dual or multiple sovereignty."¹³⁶

In its deliberations the Commission was influenced by the following comments contained in the Subcommittee report:

Almost all of the States responding recognized, either expressly or implicitly, that the purpose of a definition of international watercourses should be to provide a context for examination of the legal problems that arise when two or more States are present in the same fresh water system and that a definition should not ineluctably bring with it corollary requirements as to the manner in which those legal problems should be solved. Thus some States objected to use of the drainage basin concept because they considered that its use implied the existence of certain principles, especially in the field of river management. Other States considered that traditional concepts such as contiguous and successive waterways would be too restricted a basis on which to carry out the study in view of the need to take account of the hydrologic unity of a water system.

Consequently, it would seem wise for the Commission to follow the advice proffered by a number of the commenting States that the work on international watercourses should not be held up by disputes over definitions. This approach is, of course, in line with the customary practice of the Commission in deferring the adoption of definitions, or at the most adopting them on

134. *Id.* at 385.

135. *Id.*

136. *Id.*

a provisional basis, pending the development of substantive provisions regarding the legal subject under review.¹³⁷

The Commission reached a general agreement that it need not determine the range of the term "international watercourses" at the outset of the work, and that, instead, it should begin formulating general principles applicable to legal aspects of the uses of these watercourses.¹³⁸ On the nature of these principles it was agreed that

every effort should be made to devise rules which would maintain a delicate balance between those which were too detailed to be generally applicable and those which were so general that they would not be effective. Further, the rules should be designed to promote the adoption of regimes for individual international rivers and for that reason should have a residual character. Effort should be devoted to making the rules as widely acceptable as possible and the sensitivity of States regarding their interests in water must be taken into account.¹³⁹

On the Subcommittee's recommendation, the Commission had also sought state responses to the question of what uses should be included in the study.¹⁴⁰ The suggested Subcommittee outline, containing the following three items, was generally endorsed: (1) agricultural uses—irrigation, drainage, waste disposal, and aquatic food production; (2) economic and commercial uses—energy production, manufacturing, construction, transportation other than navigation, timber floating, waste disposal, and extractive; and (3) domestic and social uses—consumptive, waste disposal, and recreational.¹⁴¹ However, the list was supplemented by proposals to include commercial fishing, gravel extraction, aquatic food control, stock-raising, pollution from inland shipping, sediment discharge, forestry, and heat dissipation.¹⁴² There was general agreement that (1) flood control, erosion problems, and sedimentation be included in the Commission study¹⁴³ and (2) the interaction between the uses of international watercourses for navigational and other purposes had to be taken into account.¹⁴⁴ Thirteen

137. Cited in *id.* at 382.

138. *See id.* at 387.

139. *Id.*

140. *See id.* at 373-74.

141. *Id.* at 378, 388.

142. *Id.* at 378.

143. *Id.* at 388.

144. *Id.*

out of twenty states responding to the question whether the Commission should give priority to the problem of pollution answered that the question of uses should be taken up first;¹⁴⁵ six suggested that pollution problems should be taken up first;¹⁴⁶ while suggestions were made to study these problems simultaneously.¹⁴⁷ The Commission decided to study the pollution problems to the extent possible in connection with the particular uses that give rise to the pollution.¹⁴⁸

IV. APPRAISAL AND RECOMMENDATIONS

It seems that although the interplay over a period of the last several decades between customary practices and specific multilateral, regional, and bilateral treaties has resulted in some broad, general guidelines on the use of international watercourses, no cohesive body of rules has yet been widely accepted by states. At the basis of these guidelines lies the Roman maxim, *sic utere tuo ut alienum non laedas* (one must so use his own not to do injury to others). Implicit in the acceptance of this maxim is the rejection of the absolute territorial sovereignty theory,¹⁴⁹ a classical example of which is United States Attorney-General Harmon's assertion in 1895 of U.S. claims against Mexico in a conflict concerning the utilization of the Rio Grande.¹⁵⁰ According to this theory, a state's rights as an upper riparian over water within its jurisdiction are unlimited since it has absolute territorial sovereignty under international law. Thus it would be held to be unaccountable to the co-riparian for the use of those waters in a manner that adversely affected the latter. Additionally, the generally accepted guideline—reasonable and equitable utilization of waters—implicitly rejects the territorial integrity theory,¹⁵¹ according to which a lower riparian is entitled to demand the continuation of the natural flow of waters from upstream.

145. *Id.* at 379.

146. *Id.*

147. *Id.*

148. *Id.* at 388.

149. For a discussion of the various theories see Lipper, *Equitable Utilization*, in *THE LAW OF INTERNATIONAL DRAINAGE BASINS*, *supra* note 15, at 18; Menon at 445-46. See also Witaschek, *International Control of River Water Pollution*, 2 *DENVER J. INT'L L. & POL.* 35 (1972).

150. The statement is contained in 21 *OP. ATT'Y GEN.* 274, 283 (1895).

151. *Supra* note 149.

Under this theory, no interruption, augmentation, or diminution of the flow would be permitted.

However, while there seems to be consensus that territorial sovereignty and integrity have to be limited, no generally agreed formulation exists of the criteria to be used in weighing and balancing the co-riparian's interests. The often-used prescription—prohibition from causing substantial damage or injury to a co-riparian¹⁵²—is negative, again lacking precision.

A recommendation that the community interest be a guiding principle in determining the use of international waterways was made by a member of the International Law Commission at the most recent discussion of the subject by the Commission. The member reportedly

stressed that sovereignty was not a basis for dealing with the uses of international watercourses. The Commission must realize that there was another principle of international law to which it should attach greater importance, namely, the principle of the development of international law in the direction of a social law dealing with the delimitation of competence and sovereignty and with the interests of the international community as a whole in using all natural resources for the benefit of all mankind.¹⁵³

The Commission felt the need to further explore legal concepts, such as abuse of rights, good faith, good neighborliness, and humanitarian treatment, in the elaboration of legal rules for water use.¹⁵⁴

If the community approach to international watercourses were to be generally accepted, adequate institutional arrangements would be needed to give effect to this approach. Clearly, the nature of the institutional structures which would bring about integrated management of international water resources will vary with their purposes, states' capabilities, and various economic, political, and social factors. However, there are many similarities and general patterns in several experiments to date which could offer lessons for future development. Examples both among developed and developing states where

152. The prescription prohibiting "substantial injury" in the territory of a co-basin state is contained in art. X(1)(a) of the Helsinki Rules, *supra* note 66, at 290. The term "substantial damage" is used in Proposition VIII of the draft propositions prepared by the Asian-African Legal Consultative Committee, *id.*, at 229.

153. *Supra* note 133, at 387.

154. *Id.*

agreements have been reached on the utilization of water resources include the following international watercourses: the Danube, Rhine, Indus, Moselle, Niger, Senegal, Columbia, Nile, Mekong, Rio Grande, Chad, Plate, the Great Lakes, and St. Lawrence waters.¹⁵⁵

In commenting recently on the inadequacy of the many existing institutional arrangements to provide for a rational and coordinated development of water resources, Professors Parnall and Utton have noted that "the inability of river basin organizations to make decisions and to draw up resource management plans that have at least some binding effect on the member basin states is probably the single most important weakness of the majority of international river organizations."¹⁵⁶ They relate the example of an international watercourse institution which is modeled on the concept of integrated river basin development, l'Organisation Pour la Mise en Valeur du Fleuve Senegal (OMVS).¹⁵⁷ An appraisal of the structure of the OMVS has led them to suggest that "[p]erhaps uniquely, the OMVS is endowed with [the] highly desirable planning and management authority,"¹⁵⁸ which is a prerequisite for the optimal management of the international watercourse resources within the jurisdiction of such an authority. Of course such development presumes joint action by states treating the basin as a geoeconomic unit. And the establishment of an institution with the kind of jurisdiction, functions, and authority enjoyed by the OMVS presumes that basin states have balanced their interests between following the traditional notion of national sovereignty and opting for rational utilization and optimal development of the international basin resources, and have chosen the latter.

To accomplish the objective of optimal development and

155. Institutional arrangements of multipartite and bipartite commissions established for some of these watercourses are contained in *supra* note 66, at 270-81. See also Israel & Zupkus, *Model Statute: International Drainage Basin Pollution Control*, 2 DENVER J. INT'L L. & POL. 89 (1972).

156. Parnall & Utton, *supra* note 42, at 236. See also Menon, *The Lower Mekong River Basin—Some Proposals for the Establishment of a Development Authority*, 6 INT'L LAW. 796 (1972); Utton, *International Water Quality Law*, 13 NAT. RES. J. 382 (1973); Israel & Zupkus, *supra* note 155.

157. *Supra* note 42.

158. *Id.* at 253-54.

utilization, it is essential to investigate the basin resources, to collect scientific data, and to know the potential benefits before any planning is undertaken for joint, coordinated action. These joint actions will usually take the form of basin-wide programs and multi-purpose projects.¹⁵⁹ Of course, at the basis of such efforts lies the concept of community interest, which implies the equality of all basin states in the use of the whole of the course of the river, without any discrimination or preference of any one state in relation to others. To finance specific projects the assistance of U.N. organizations, such as the U.N. Development Program and various U.N. specialized agencies, regional and bilateral economic commissions, and financing institutions, should be actively explored.

The building of new institutional arrangements or the upgrading of existing ones requires taking into account necessary technical information and the political and legal framework. Beginning with the establishment of consultation mechanisms, nations may create permanent joint agencies, undertake joint construction programs, and reach agreements on many important issues such as customs, immigration, labor, taxation, and dispute settlement mechanisms.¹⁶⁰ Such joint agencies could be linked with the United Nations and its various specialized agencies and commissions. The common interest in the optimal utilization of international waters demands a definite worldwide move toward integrated basin management, administration, and development. The development of appropriate legal norms by the International Law Commission and the establishment of more institutional structures on the model of the OMVS will facilitate and accelerate this desirable trend.

159. See generally *The 1975 U.N. Panel of Experts Report*, at 92-143, 174-84.

160. *Id.*

