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“Preservation and Protection” Under the 1991 ILC Draft Articles on the Law of International Watercourses

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I. INTRODUCTION

This paper is intended to discuss and provide independent commentaries on certain draft articles on the Law of Non-Navigational Uses of International Watercourses, adopted by the UN International Law Commission (ILC) during the 1991 session. We are concerned with the draft articles 20-23 which address the questions of “protection and preservation.” The provisions deal with the concept of pollution including its prevention, reduction and control; the introduction of alien or new species; and the protection and preservation of the marine environment. The draft articles are followed by supporting commentaries, and this paper will address some of the arguments developed therein.

It occurred to us that in these commentaries an important question is the significance of the draft articles as seen in the context of the existing corpus of international law. Therefore, in the second section we attempt a quick overview of the evidence of recognized international law as it relates to preservation and protection of international watercourses, especially the question of transboundary or extraterritorial environmental injuries. Selected subjects such as general principles, in the doctrinal sense, and arbitral decisions are discussed. A provision in bilateral treaties is significant evidence of acceptance of a rule in international law. But we are also aware of the hundreds of such treaties on the subject of international

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watercourses.¹ The purpose of this section is simply to illustrate the point by taking selected cases. Declarations and resolutions of international fora constitute a significant wave of opinion on matters of international law; representative ones with a bearing on the law of international watercourses are discussed. Finally we take proper note of the learned societies which have made notable contributions to the development of international law of water resources. Selected cases are examined here with respect to the specific issue of protection and preservation.

In the end we hope that this paper makes some contribution to the on-going debates on progressive development and codification of the law of international watercourses.

II. THE PROBLEM AND USE OF TERMS

The central subject before the ILC is water, in particular its quality and quantity as it exists in international courses. The significance of water derives from the uses to which it is put by nature. To man, the obvious significance of water arises from the fact that it sustains human life. As Laylin and Bianchi once observed, "[a] man dying of thirst cannot be revived with monetary compensation for his water, even when tendered in advance."² It is in this context that the Moslem teaching stresses that "no Moslem should work for water, such is the general principle laid down by the Prophet who made water perfect, indispensable and a priceless element of purification to obtain a state of grace. . . . Anyone who gives water to a living creature will be rewarded."³

Thus, water is indispensable for sustenance of life of all living things, including plants. Agriculture, on which human life depends for food, relies

1. By 1963 a UN publication listed 253 treaties on non-navigational uses of international rivers. U.N. LEGIS. SERIES, LEGISLATIVE TESTS AND TREATY PROVISIONS CONCERNING THE UTILIZATION OF INTERNATIONAL RIVERS FOR OTHER PURPOSES THAN NAVIGATION, U.N. DOC. ST/LEG/LER.B/12, U.N. Sales No. 63, v.4 (1963) [hereinafter U.N. Legis. Series]. Ten years later, another UN publication reproduced yet another 52 bilateral and multilateral agreements signed. *Legal Problems Relating to the Non-Navigational Uses of International Watercourses*, U.N. Doc. A/CN.4/274, prepared during the 26th session of the ILC in [1974] 1 Y.B. INT'L L. COMM'N. Admittedly, these are not all agreements on different rivers and lakes; however, the numbers are clear evidence of the widespread preservation, protection and utilization of the waters of such a systems.

The ILC Draft articles have used the term *watercourses* instead of *drainage basins* or *catchment*. We have accordingly used the term in the interest of consistency rather than as a preference.

2. John G. Laylin & Rinaldo L. Bianchi, *The Role of Adjudication in International River Disputes*, 53 AM. J. INT'L L. 30, 31 (1959).

3. 1 WATER LAWS IN MOSLEM COUNTRIES 11 (D.A. Caponera ed., Rome: Food and Agriculture Organization of the United Nations, Irrigation and Drainage Paper no. 20/1, 1973).

on water and there are still no substitutes. Therefore, water must exist in certain quantities to sustain life today and for all future times.

To sustain life, water must be of a certain quality. Salt water in the oceans, which constitutes approximately 97 percent⁴ of the water on earth, is certainly not the kind to which Laylin and Bianchi or the Moslem faith are referring. Its salinity is such that it will sustain only some unique kinds of life: Human beings will not drink it and it will not be used in general agricultural productivity. Therefore, the ILC task is concerned with a limited but invaluable resource amounting to about three percent of the water on earth. True, this amount may be varied slightly by the hydrologic cycle which involves the complex processes of evaporation and precipitation. Nevertheless, the fact that human population on earth is increasing and, consequently, the consumptive uses will, perforce, increase relative to the population increases, means that there is a necessity for concerted measures to ensure that water, the unique substance of fixed amount, is protected. It is to be noted that the increasing human population is invariably accompanied by increased water demand for agriculture and industry, both of which are heavy consumptive users of water and which already compete for the existing quantities.

Of critical significance is the quality of the water, despite whether the quantities are diminishing or an equilibrium between utilization and replenishment through the hydrologic cycle is maintained. We are told that pure water does not exist in nature;⁵ the quality of natural water carries natural solvents and suspended impurities which are produced by biogeochemical processes relating to the catchment area. Thus, the impurities will include sediments and decaying animal and vegetable particles and similar microorganisms. In a pristine setting these have not caused a threat of degradation, even though the water quality is often improved by treatment, before consumption.

The situation has changed drastically as the risk to water quality has increased because of effluents from agriculture, industries and domestic or municipal settlements. Most of these, which are in the form of substances or energy, are either persistent, toxic or capable of bioaccumulation within the environment.⁶ These problems are no longer exclusive to the highly industrialized countries as they were once known to be. Municipal, in-

4. UNITED STATES WATER RESOURCES COUNCIL, *THE NATION'S WATER RESOURCES, 1975 - 2000*, quoted extensively in THOMAS J. SCHOENBAUM, *ENVIRONMENTAL POLICY LAW CASES, READINGS, AND TEXT* 607 (1985 ed.) [hereinafter SCHOENBAUM].

5. *Id.*

6. See a pioneering work *Man's Impact on the Global Environment: Assessment and Recommendations for Action*, REPORT OF THE STUDY OF CRITICAL ENVIRONMENTAL PROBLEMS (SCEP REPORT) 76-77, 100-03, 186-91 (1970).

dustrial and agricultural wastes are reaching alarming proportions in many countries, leading to the eruption of public protests and confrontations,⁷ a sign that many environmental quality thresholds have been outstripped. Furthermore, studies under the aegis of the United Nations Environment Programme (UNEP) say, for instance, that if public health is to be protected in Eastern African, urgent measures are necessary to ensure effective treatment of solid waste.⁸

What, then, is the place of "protection" and "preservation" as used in article 20 of the draft articles? Neither term has been defined. However, the commentaries which follow suggest that the concept of protection relates to measures which are designed to prevent negative interferences with fresh-water ecosystems. Preservation relates to measures that maintain water in a pristine or unspoiled condition.⁹ This definition concurs with the concept of preservation as defined in the Draft Covenant on Environmental Conservation for Sustainable Use of Natural Resources, prepared by the International Union for the Conservation of Nature and Natural Resources (IUCN) Commission on Environmental Law. It states that

"[p]reservation" means to set aside and protect selected natural resources, such as unique biological or geological formations, endangered or threatened species, representative biomas or other natural and cultural sites of importance, so as to maintain their natural characteristics in a manner unaffected by human activities to the fullest extent possible.¹⁰

Thus, preservation is not feasible without protective measures.

Preservation of water has two components: the quantitative and qualitative aspects. Quantitative preservation of water resources would

7. Protests against environmental pollution by municipal or industrial wastes have become frequent in Kenya. But the most dramatic one was during September 1991 at the industrial town of Thika when residents of Makongeni Section went on protests and demonstrations against a chemical company. See particularly, KENYA TIMES (Nairobi) Sept. 23, 1991 at 1, col. 4, and Sept. 25, 1991 at 1, col. 6.

8. *Public Health Problems in the Coastal Zone of the East African Region*, U.N. ENV'T PROGRAMME, Regional Seas Reports and Studies No. 9 at 18 (1982). See also *Environmental Problems of the East African Region*, U.N. ENV'T PROGRAMME, Regional Seas Reports and Studies No. 12.

9. *Draft Articles on the Law of the Non-Navigational Uses of International Watercourses and Commentaries Thereto, Provisionally Adopted on First Reading by the International Law Commission at its Forty-Third Session*, art. 20, at 125, ¶ 3 (Sept. 1991) [hereinafter *Commentary*].

10. *Draft 4: Covenant on Environmental Conservation and Sustainable Use of Natural Resources*, art. 1(k), prepared by an Ad Hoc Working Group (Bonn: Int'l Union for the Conservation of Nature & Natural Resources (IUCN), Comm'n Envtl. L., Envtl. L. Centre, April 1991). The definition is distinctly different from that of "conservation" which means "to manage renewable natural resources sustainably, and to avoid waste of non-renewable natural resources." *Id.* at art. 1(c).

imply the requirement that man totally desist from abstraction and consumptive utilization of water. Yet we are aware that for it to be valuable, water must be available for agricultural, domestic and industrial uses. There is rarely a substitute for water in most of these uses, providing part of the reason that water is valued enough to warrant its preservation. Therefore, *preservation* in article 22 must not have been meant to include the protection from quantitative use, which is dealt with elsewhere in the draft articles (particularly in connection with equitable apportionment).

Preservation must, therefore, refer to the qualitative aspects of the watercourse. The critical objective of preservation is to maintain "the ecosystems of the international watercourses." The Rapporteur's commentary submits that the term *ecosystem* is precise and, therefore, preferable to *environment*. It ought to be pointed out that other, closer terms are *catchment* and *drainage basin*, both of which are commonly used to refer to the area which contributes water towards a common terminus. For instance, article II of the Helsinki Rules uses the term *drainage basin* which is described in the ensuing comment as "an indivisible hydrologic unit which requires comprehensive consideration."¹¹ The term *ecosystems*, however, presents the picture of a dynamic inter-relationship among the flora and fauna as well as the geophysical elements which sustain them.

It is, indeed, this phenomenon of the biogeophysical relationship within international watercourses which is also the basis of the physical and biological unity of the watercourses. Activities, events or changes in the upper reaches of the watercourse invariably affect the lower parts or interests of the riparians. Such is the case, for instance, in the Rhine where "waste salts from the Alsatian region in France, industrial pollution from around Basel in Switzerland, and German industry in the various tributaries of the Rhine ..." all have become a critical problem of the Netherlands and Belgium.¹² Conversely, a dam downstream may cause a backwater effect which may, in turn, cause environmental injuries to the property of upper riparians, such as flooding. Such was the case, for instance, with the Aswan High Dam in Egypt where the backwater effect flooded Wadi Halfa in Sudan. Similarly, the control of sluices at Owen Falls Dam likely caused the flooding around the shores of Lake Victoria in the early 1960s.¹³ By the

11. INTERNATIONAL LAW ASSOCIATION, REPORT OF THE FIFTY-SECOND CONFERENCE HELD AT HELSINKI 484 (1966) [hereinafter HELSINKI RULES]. See also *The Law of International Drainage Basins* 779, app. (A.H. Garretson et al., eds. 1967) [hereinafter Garretson].

12. See a synoptic discussion by Robert E. Stein, *The Potential of Regional Organizations in Managing Man's Environment*, in *LAW, INSTITUTIONS, AND THE GLOBAL ENVIRONMENT* 253, 265 (John Lawrence Hargrove ed., 1972) [hereinafter Hargrove].

13. A possible rise in the level of Lake Victoria of up to three meters with consequent flooding on the shores of the lake was anticipated in the plan for the dam and provided for

same token, pollution of one part of a lake will, because of the physical unity of the water, affect other parts, as is amply demonstrated by the condition of the Great Lakes between Canada and the United States.¹⁴

The nature of these problems makes it evident that individual initiatives for preservation and protection, while essential, are invariably inadequate. Joint action is not only imperative, but also essential, for it enables the watercourse States to take advantage of the economic and infrastructural benefits accruing from multipurpose planning. In Africa, for instance, the widespread problems of maldistributed rainfall and poor agricultural productivity have necessitated the control and transfer of waters of various rivers to facilitate irrigated agriculture. A multipurpose arrangement would enable the countries to harness the rivers for the secondary purpose of hydroelectric power generation. It has been pointed out that at present Africa cultivates approximately 24 percent of its available agricultural land. Additionally, even though Africa possesses about one-third of the world's hydropower potential, it currently generates only two percent.¹⁵ In which case, joint efforts towards preservation and protection could reasonably be packaged for multiple purposes with high-value economic incentives.

It seems that the most critical threat against preservation of international watercourses is pollution. As a term which implies deleterious consequences and possible liability on the part of the perpetrator, *pollution* ought to be precisely defined so that its control can clearly contribute to the protection of the watercourses and allied ecosystems.

Article 21 addresses the tasks of prevention, reduction and control of pollution. Paragraph 1 defines pollution of an international watercourse to mean "any detrimental alteration in the composition or quality of the waters of an international watercourse which results directly or indirectly from human conduct." We shall get back to this definition in a moment.

in the Exchange of Notes constituting the agreement for the construction of the Owen Falls Dam. See *Letter from the Egyptian Ministry of Foreign Affairs to the British Government* (July 16, 1952), U.N. LEGIS. SERIES, *supra* note 1, at 114, 115. See also Charles Odidi Okidi, *Review of Treaties on Consumptive Utilization of Waters of Lake Victoria and Nile Drainage System*, 22 NAT. RESOURCES J. 161, 176 (1982) [hereinafter *Review of Treaties*].

14. Although there are submissions that the quality of the Great Lakes is improving, this may just be a matter of degree from the mortuary smell of the 1960s. It is doubtful that the waters of Lake Erie will be fit for human consumption soon. Literature on the efforts by the two countries is legion. See, for instance, Richard B. Bilder, *Controlling Great Lakes Pollution: A Study in United States-Canadian Environmental Co-operation*, in Hargrove, *supra* note 12, at 308-10.

15. See Charles Odidi Okidi, *The State and the Management of International Drainage Basins in Africa*, 28 NAT. RESOURCES J. 645, 649 (1988).

What is required of watercourse States, by way of general obligation, is expressed in paragraph 2, "to prevent, reduce and control pollution that may cause appreciable harm to other watercourse States or to their environment. . . ." The ensuing commentary observes, and we concur in this, that to "prevent" relates to new pollution, while to "reduce" and "control" relate to existing pollution. Thus, in an effort to preserve international watercourses, the most critical obligation is to prevent the pollution from occurring in the first place. Restoration of water quality and controlling harm caused to the ecosystem are notoriously difficult problems often addressed without total success, as the experience in the Great Lakes or the Rhine has shown. Current or prevailing economic pressures are often given priority over the necessities of correcting past mistakes.¹⁶ Most of the pollutants from industries, municipal sewage or farmlands will, as observed in the commentaries, be toxic, persistent and/or bioaccumulative. The latter characteristics suggest that removing the pollutants once they are in the watercourse or ecosystem is either technically impossible or economically prohibitive, especially for developing countries.

It is for these reasons that the article should be looked at critically, not so much in the context of the developed or industrialized countries but particularly with the exigencies of development in the less developed and less industrialized countries. Water and its associated products are critical to development. One of the prerequisites of development is the provision of clean, drinkable water for human and animal needs. Another requirement is food protein, of which fish protein is one of the cheapest. The fishery sector has the additional potential to provide an avenue for diversification of an economy via employment creation. It is fair to assert that these water uses, which have no substitute, will be more important to development than any industrial establishment. It seems axiomatic that sound public policy should require watercourse States to prevent pollution from occurring in the first place.

At this point it is significant to have a close look at the definition itself before we return to the general obligations. The central element in the definition is that there must be a "detrimental alteration." The commentary explains that pollution must be established as a "purely factual" matter.¹⁷ The establishment of the fact is therefore *ex post facto*. In our view this

16. The Great Lakes, for instance, would not have reached a worrisome state since efforts for their protection started with the IJC agreement in 1909 in very good time. For comments on the present condition, see THEODORE E. COLBORN ET AL., *GREAT LAKES, GREAT LEGACY?* (1990) [hereinafter Colborn].

17. *Commentary, supra* note 9, art. 21, at 137, ¶2.

phraseology is suitable for a regime whose concern is with fixing liability for an established fact, namely that pollution has occurred.

For this reason, it is important to read the definition with paragraph 2 which specifies the obligation of the watercourse States as being to prevent, reduce or control pollution of the watercourse that may cause appreciable harm. But then the definition of pollution itself already means "detrimental alteration," meaning that appreciable harm is implied in the definition itself. It is a tautological definition which may both mislead and frustrate the search for the point at which fixing liability would be proper.

It would appear that the awkward drafting arose from an unnecessary attempt to avoid use of the term *introduction*, which the commentary notes has been accepted in several existing learned and intergovernmental reports.¹⁸ The advantage of the term *introduction* in defining pollution is that it refers to the conceptual interface of the action which may be called pollution, the point where the potential pollutant reaches the water medium. Thus, if the obligation is to prevent, first and foremost, then the preventive measure should be at that interface and not later when the fact is established with all its possibly invidious results. Prevention of pollution would thus refer to preventing the "introduction." We find the term *introduction* used in the 1971 definition of marine pollution by the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP)¹⁹ and subsequently modified significantly and adopted in the 1982 Law of the Sea Convention,²⁰ a more appropriate opening for the definition of pollution in this instance.

The use of the word *introduction* would also complement the provision of article 21(3) where the watercourse States undertake, "at the request of any of them, to consult with a view to establishing lists of substances the introduction of which into the waters of an international watercourse is to be prohibited, limited, investigated or monitored." This practice, adopted for a number of pollution control agreements such as the Oslo and London Conventions on Dumping, among others, identifies the

18. *Id.* at 138.

19. *The Sea: Prevention and Control of Maritime Pollution: Report of the Secretary-General*, U.N. ESCOR, 51st Sess., at 20, U.N. Doc. E/5003 (1971) [hereinafter GESAMP].

20. United Nations Convention on the Law of the Sea, *opened for signature* Dec. 10, 1982, U.N. Doc. A/CONF.62/122, *reprinted in* 21 I.L.M. 1261 (1982) [hereinafter *Law of the Sea Convention*]. Article 1(1)(4) defines pollution of the marine environment to mean the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazard to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality of use of the sea water and reduction of amenities.

substances with different levels of toxicity, persistence and bioaccumulation.²¹ Those identified to be highly dangerous to the ecosystem get prohibited, while substances with different classifications receive corresponding levels of regulation, as described in that paragraph.

The useful analogy from the Oslo and London Conventions is that once the classification and lists are completed, the stage of enforcement must, of necessity, begin with the "introduction" into the watercourses, thus resolving the determination of whether the substances would cause detrimental alteration. Whoever introduces those substances into the watercourse is contravening the law and is liable to suffer the consequences. The "limited" substances would presumably be those which may be discharged but only under permit, as with Annex II under the Oslo and London Conventions. Again, the offence would be the introduction in a manner contrary to the conditions in the permit.

The definition has also omitted the mention of the type of polluting agent, for example, substance or oil. Yet in paragraph 3, which is designed to identify the pollutants by the degree of their danger, the critical provision is "establishing lists of substances. . . ." It is not clear why the definition was not equally forthright. Besides, as the definition refers to alteration in "composition or quality of the waters," it is not clear if that includes temperature changes as a result of heat (energy). Heat does not necessarily change the quality or composition of water as a substance. Thomas Schoenbaum reports that by far the largest discharger of heat is the electric power industry, which uses great quantities of water for cooling.²² He adds in the same lines that "[g]rowth estimates lead to predictions of a six to tenfold increase by the year 2000 in the discharge of heated water from power plants." In other words, energy/heat and its possible detrimental alteration of water and possibly watercourses cannot be underestimated. There is little reason why the definition should not be precise in identifying these as pollutants.

The use of the word *results* in the definition to qualify "detrimental alteration" also presents a problem for a preventive regime. It is, again, a word which is helpful for purposes of fixing liability, meaning that as a

21. The Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft, Feb. 15, 1972, *signed at Oslo*, to apply to the northwest Atlantic is similar to the Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, Dec. 29, 1972, *held at London*, to apply globally. U.N. LEGIS. SERIES, NATIONAL LEGISLATION AND TREATIES RELATING TO THE LAW OF THE SEA, at 457, U.N. Doc. ST/LEG/SER.B/16, U.N. Sales No. E/F.74.V.2 (1974). Both conventions provide for classification of pollutants into three Annexes, the first of which contains substances to be prohibited completely, while the others list those to be regulated or dumped under permit.

22. SCHOENBAUM, *supra* note 4, at 609.

consequence of the identified human conduct, the results are identified. This conflicts with the thrust of a preventive regime, which the article calls for as a priority. A preventative regime should be directed at prevention of the introduction of the substance or energy (already identified in paragraph 3) which "may result" in the objectionable consequences.

Reference to "human conduct" as a component of the definition is rather suspect. Supposing that the introduction of the pollutive substance or energy into the watercourse results from some Act of God, and the deleterious effects are identified, would that not be pollution? It seems to us that pollution should be a scientifically identifiable state of facts (and it is the scientists who will advise us on the establishment of the lists of substances under paragraph 3). If investigations by the watercourse States establish that the pollution resulted from human conduct, then the liability is fixed against the perpetrator. The polluter may be called upon to pay for the reduction and control of the pollution under paragraph 2. On the other hand, if the pollution resulted from an Act of God, the watercourse States will still, individually or jointly, act to reduce or otherwise control its impact. We therefore submit that pollution occurs "however caused." The phrase "directly or indirectly from human conduct" would not be misleading or restrictive to the definition of pollution.²³

It is clear from the definition and commentary thereafter that the ILC was keen to provide a simplified and shorter definition. But the above analysis shows that the definition is, in fact, defective in several ways. The commentary explains that there were deliberate attempts to depart from the framework in the 1982 Law of the Sea Convention without satisfactory explanations as to why the changes were preferred. Specific instances, such as omitting the term *introduction* or identifying the concepts of "substance or energy," seem to have led to internal inconsistencies in the draft or downright incompatibilities with the objectives of this draft treaty.

Our observation is that the definition of pollution in article 21 is no improvement over the definition of marine pollution in the 1982 Law of the Sea Convention. For instance, the definition in the latter includes the causality as being "by man." But it is a far more advanced formulation than the GESAMP definition which was dominant at the start of the Third United Nations Conference on the Law of the Sea (UNCLOS III).²⁴ Thus,

23. See also CHARLES ODIDI OKIDI, REGIONAL CONTROL OF OCEAN POLLUTION: LEGAL AND INSTITUTIONAL PROBLEMS AND PROSPECTS 6-13 (1978).

24. In 1971 GESAMP defined *marine pollution* as "[i]ntroduction by man, directly or indirectly, of substances or energy into the marine environment (including estuaries) resulting in such deleterious effects as harm to living resources, hazard to health, hindrance to marine activities including fishing, impairment of quality for use of seawater and reduction of amenities." GESAMP, *supra* note 19.

there is evidence of progress in finding a definition of environmental pollution applicable to different ecosystems, such as watercourses, *mutatis mutandis*. It should have followed that the ILC definition was more, not less, advanced by improving on the UNCLOS III definition. For instance, it should have eliminated the hang up of "by man" which we presume is evidence of lawyers' preoccupation with fixing liability yet inappropriate for a regime whose first priority is prevention of pollution.

There are two specific points on article 21(2): First, the watercourse States undertake to act only in circumstances which may cause "appreciable harm." Apart from the problem of determining the threshold of "appreciable" harm, the term *appreciable* is, strictly speaking, both irrelevant and misleading because it is a fundamental assumption under the principle of *lex de minimis* that law shall not concern itself with trivia. Therefore in law, "harm" automatically means something more serious than trivia; "serious" or "appreciable" is already implied.

Second, the obligation of the watercourse States extends only to "harm to other watercourse states or to their environment. . . ." This is, of course, the standard formulation confined to legally protected rights of States. But is it not time to include an obligation to prevent harm to "the ecosystem of the watercourse" as such? This would open the way for a search for *locus standi* for natural or juridical persons within the watercourse States to plead before a court for the protection of the ecosystem when the States do not take the action.

Article 22, which deals with the issue of introduction of alien or new species into an international watercourse, is straightforward but of immense importance. It is significant because the sustainability of an ecosystem depends on the natural balance among its components, including the flora and fauna. The consequences of the introduction of alien or new species into the ecosystem of a watercourse is invariably unpredictable. The following report on Lake Victoria is an apt example:

Lake Victoria is one of the richest lakes in the world in terms of fish diversity and endemism, yet has no protection. Introduction of Nile perch into Lake Victoria has already had serious ecological consequences as well as reducing local fish catches. Some protective mechanism is required in cooperation with Tanzania and Uganda.²⁵

The draft simply cautions that all measures should be taken to prevent the introduction, deliberate or accidental. As was the case with Nile perch into Lake Victoria, the alien species may be introduced on an experimental

25. IUCN, COMMISSION ON NATIONAL PARKS AND PROTECTED AREAS, ACTION STRATEGY FOR PROTECTED AREAS IN THE AFROTROPICAL REALM 37 (1978).

basis.²⁶ Whether the introduction will in fact be detrimental to the ecosystem is invariably unpredictable. Once the alien or new species is in the ecosystem it may be very difficult to control its behaviour or rate of reproduction or propagation. This is particularly true in the era of biotechnology when it may be scientifically attractive to introduce species of flora and fauna whose long-range behaviour is totally unpredictable.

The only recommended change in article 22 is that the word *appreciable*, preceding harm, should be deleted. Law would not concern itself with trivial harm. In this regard, the formulation in article 196 of the 1982 Law of the Sea Convention is preferable. That article is concerned with the introduction "which may cause significant and harmful changes thereto." In this case the changes would be both "significant" and "harmful." If the changes are minor, they would probably not be harmful.

Because of the possibility of harm that an introduction of alien and new species creates, States should undertake to investigate and monitor any changes in the ecosystem of the watercourse despite any immediate or past investigations. It is possible, for instance, that any species, say, the water hyacinth or *Salvinia molesta*, may be introduced accidentally into the water. A deliberate and careful regular monitoring of the watercourse may detect such alien species before they become widespread and harmful. In such cases, the watercourse States should accept an obligation, individually or jointly, to take the necessary measures to control and, where appropriate, eradicate the alien or new species.

Article 23 enjoins the watercourse States to take measures, individually or jointly, to protect and preserve the marine environment. This entails ensuring that nothing that happens in the international watercourse, including pollution, reaches the marine environment, including estuaries. Of course, juxtaposing and articulating marine environment and estuaries is consistent with the notion in the 1982 Law of the Sea Convention. In defining pollution of the marine environment, article 1(1)(4) of that Convention refers to "marine environment, including estuaries."²⁷ Whether we should now move to the understanding that marine environment, as stated in article 23, always includes estuaries is not yet certain. Possibly this is a matter over which our debates should adopt a consensus so that the progressive development confirms a position.

26. See the comments by Norbert Odero, Kenya's Director of Fisheries, in his paper, *Fish Species, Distribution and Abundance*, in NATURAL RESOURCES AND THE DEVELOPMENT OF LAKE VICTORIA BASIN OF KENYA 390, 401-05 (Charles Odidi Okidi ed., 1987).

27. Law of the Sea Convention, *supra* note 20, art. 1.

It is well known that pollution loads carried in the rivers do, in turn, pollute the sea. For instance, the odious chemical pollution originating from the industrial areas in France, Germany and Switzerland is not only a problem for the Netherlands as the lowest riparian; it is also a problem for Belgium, a non-riparian State which adjoins the mouth of the Rhine, thereby suffering from the consequences of the pollution of that international watercourse.²⁸ Such issues and, therefore, the significance of article 23, will be particularly pertinent not only to non-riparian industrializing countries, but also to countries which may be land-locked. Rivers which drain land-locked countries are numerous in Africa. They include the Niger, Senegal, Congo/Zaire and the Nile. Yet so far there has been very little, if any, effort to involve land-locked countries in the prevention and control of land-based sources of pollution. It is now known that on the average, more than eighty percent of the pollution of the marine environment originates from land-based sources. It is, therefore, imperative that while States are responsible for the control of pollution in rivers that are exclusively national, formulae should be worked out to establish the obligation for all States riparian to international watercourses. Founding the obligations on "generally accepted international rules and standards," as article 23 does, provides an additional basis for exerting pressure on land-locked States to comply with the obligations.

III. SELECTIVE EVIDENCE OF RECOGNIZED LAW

In the preceding section, we defined the concepts of preservation and protection as terms in environmental management. We also related the formulation of the draft articles to the problems with which they are supposed to deal. In this process attempts were made to ascertain the soundness of the draft articles by some selective comparison with articles in existing treaties and vis-à-vis the respective environmental problems for which preservation and protection is required.

The present section will briefly outline some evidence that the concepts underlying preservation and protection have actually been recognized by some specific sources of international law. There is a close nexus between the rules relating to qualitative as well as those on quantitative use of water resources. At the beginning of these discussions we reached the conclusion that preservation would reasonably refer only to the qualitative rather than quantitative aspects of the water resources. Quantitative utilization is, nonetheless, a necessity for various consumptive imperatives of development.

28. Hargrove, *supra* note 12, at 253, 265.

The discussion will be presented under four broad categories: First, there will be a brief presentation of the general principles of law, in the doctrinal sense. Along with that we shall briefly discuss provisions in selected declarations and guidelines from intergovernmental conferences. Although such declarations and guidelines are not, as such, sources of obligation, they are, nevertheless, evidence of the growing international consensus on the principles. Secondly, we shall outline the salient features of major international judicial decisions relevant to preservation and protection. Thirdly, a limited number of treaties on international watercourses will be selected for discussion. There are over three hundred bilateral and multilateral treaties on non-navigational uses of international watercourses. The limited number will be drawn from Latin America and Africa, playing down the North American and European cases which have enjoyed considerable discussions in existing literature. Fourthly, a review will be done of the work of the leading learned societies which have contributed to the development of legal thought on international watercourses.

The majority of these principles, judicial decisions, treaties and reports of the learned societies have been discussed rather widely in existing literature. Therefore, this paper will confine itself to indicating their link to the specific question of preservation and protection of the ecosystem of international watercourses as understood in the preceding sections.

A. *General Principles*

A pioneering work by Anthony Lester on the legal basis of the protection of international drainage basins identifies and examines three concepts as the doctrinal basis of the obligation not to cause transboundary pollution.²⁹ The three concepts are international servitude; abuse of rights; and neighbourship.

In this case, servitude refers to permanent relations between the upper and lower riparian States, dictating that the former renders certain fixed services to the latter. It requires that the upper riparian binds itself permanently to forego the use of the resources of an international watercourse for certain purposes. In his analysis Lester finds that servitude would be an overly rigid principle restricting the expansion of use of water for its industrial or agricultural purposes. This is particularly true as population changes and technological innovation provide new requirements or opportunities for increased consumption. In Lester's view "[a] doctrine based

29. Anthony Lester, *Pollution, in* Garretson, *supra* note 11, at 89. For a discussion of the three concepts, *see id.* at 97.

upon private property cannot be transferred to the different context of international community without modification."³⁰

In that analysis Lester confines himself primarily to the consumptive use of international waters, finding the notion of "permanence" as the basis of objection to application of servitude at the international plane. However, the notion of permanence may have some value to the ideals of preservation and protection. It was agreed in the definition of preservation, as given above, that it implies application of every effort of protection to ensure that water is maintained in its natural condition, free from pollution but allowing only for those impurities which are created in the natural processes. Pollution, we agreed, should be unacceptable—permanently. Therefore, watercourse States would properly bind themselves to one another to ensure that they desist from introducing substances or energy which may have detrimental impacts on the water. Thus it seems that there may be some limited application of the rule of servitude to the international watercourses, but only in one respect: to protect the water quality from any substances or energy which might have a detrimental effect on the watercourse or its ecosystem.

The second doctrine is that of abuse of rights. Within the present context the doctrine suggests that pollution of an international watercourse by a riparian or watercourse State is an abuse of rights. This would be subsumed under the rules of state responsibility for activities which a State has a right to do in its own territory even though these activities may have adverse consequences in the territory or interests of other States. But Lester also argues that wherever the doctrine of abuse of rights is applied, there must also be the right that can be forfeited as a consequence of the abuse.³¹ In the present instance, there are no rights to be forfeited. Lester concludes that the doctrine of abuse of rights, as such, is inappropriate with respect to obligations to preserve and protect the ecosystem of an international watercourse because sovereignty over a territory cannot be thus forfeited.

The third doctrine is that of neighbourship, implying reciprocity in the conduct of States which share a neighbourhood. Lester submits that neighbourship derives from physical interdependence of contiguous States. How contiguous the States should be is unclear. In the context of an international watercourse, the watercourse States may be so far apart physically that application of the term *neighbourhood* becomes tenuous. For instance, Uganda and Egypt are watercourse States for the Nile, just as

30. *Id.* at 98.

31. *Id.* at 97.

the Netherlands and Switzerland share the basin of the Rhine. However, the ordinary meaning of neighbourhood might seem inapplicable without an operational definition which extends the notion of neighbourhood beyond that range within which noise from one compound can be heard or, for that matter, beyond the range within which offensive fumes from one premise can create discomfort to residents. There is an additional idea of neighbourhood created by being in a community of States which are riparian to a given international watercourse. Thus, it may be argued that States on opposite ends of a large ocean are neighbours, so joined, rather than separated, by the ocean. In which case for either riparian to pollute the body of water or otherwise cause harm to its ecosystem is deemed to be unacceptable conduct among neighbours.

The fundamental point here is that the very fact of being neighbours creates an obligation to the effect that actions taken by one party on its side of the fence should not harm or annoy the other. This is not based on being a good neighbour; rather, if one does no wrong to a neighbour, one does not expect a wrong in return. At the very least, the neighbourship doctrine breeds a situation of co-existence, even if there is no active cooperation.³² The implication is a recognition of the obligation to preserve and protect the watercourse and its ecosystem individually, where there is no joint or cooperative action by the watercourse States.

Although this seems self-evident as a doctrine on which to found obligation among States, Professor Goldie considers it only "an emerging principle of international law, with many transnational law qualities."³³ He was, in fact, referring to "good neighbourliness," which does not differ significantly from neighbourship. It may be submitted, though, that the neighbourship doctrine obliges a State to preserve and protect the ecosystem, not out of goodness, but out of self-interest and reciprocity. That is, if one causes harmful effects to the ecosystem in a manner that injures the interests of the other party, then a similar measure may be meted against it.

This neighbourship doctrine also finds expression in the ageold Roman maxim *sic utere tuo ut alienum non laedas*, or so use your own that it does not injure the interests of your neighbour. Professor Albert Utton³⁴ traced the application of the maxim in the common law jurisdictions, and we conclude with him that international law has applied it to limiting the

32. See discussion of international law of co-existence as distinct from international law of cooperation in WOLFGANG FRIEDMANN, *THE CHANGING STRUCTURE OF INTERNATIONAL LAW* (1964).

33. L.F.E. Goldie, *Development of an International Environmental Law—An Appraisal*, in Hargrove, *supra* note 12, at 104, 129.

34. Albert E. Utton, *International Water Quality Law*, in *INTERNATIONAL ENVIRONMENTAL LAW* 158 (Ludwig A. Teclaff & Albert E. Utton eds., 1974) [hereinafter Utton].

freedom of basin States in their use of international law and in their use of international rivers.

Either way, it seems that a state obligation to ensure that activities within its territory or its jurisdiction should not cause injuries to others is well founded. It expresses the reason why most commentators reject the theory of absolute territorial sovereignty enunciated in 1895 by Judson Harmon, an Attorney General of the United States who saw no obligation on the part of the United States when it came to diverting the waters of the Rio Grande in a manner that would harm the interests of Mexico.³⁵

Within the foregoing discussion it is established that there are principles of international law which can be applied to the preservation and protection of international watercourses in the absence of bilateral and multilateral agreements.³⁶

Several declarations and resolutions by international institutions addressing environmental issues have reiterated the general principles of international law regarding the obligation to preserve and to protect general or specific components of the environment. Because of its epochal character, the preparation which was entailed, the impact in terms of the international arrangements and action which it has generated, the June 1972 Stockholm Conference on the Human Environment³⁷ has a definite global respect, as does its solemn Declaration of Principles.

Principle 21 of the Declaration of Principles adopted by the 1972 Stockholm Conference is directly relevant to the questions of state obligation to preserve and protect the ecosystem. It reads:

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or to areas beyond the limits of natural jurisdiction.³⁸

35. See Utton, *id.* at 155. See also Jacob Austin, *Canadian - United States Practice and Theory Respecting the International Law of International Rivers: A Study of the History and Influence of the Harmon Doctrine*, 37 CAN. BAR REV. 393 (1959); Jerome Lipper, *Equitable Utilization*, in Garretson, *supra* note 11, at 15, 26.

36. This argument was urged in the recommendations of the United Nations Water Conference held at Mar del Plata, Argentina, in March 1977. See *Report of the United Nations Water Conference*, at 115, U.N. Doc. E/CONF.70/29, U.N. Sales No. E.77.II.A.12 (1977).

37. Stockholm Declaration on the Human Environment, U.N. Doc. A/CONF.48/14 (1972), reprinted in 11 I.L.M. 1416 (1972) [hereinafter Stockholm Declaration].

38. *Id.* Principle 21, at 5.

No one would have a quarrel with the first part of the declaration: the right to exploit or use resources within a country is simply an expression of the notion of sovereignty. Only the national government can exercise it, and it is free to do so. But with that right goes the responsibility to ensure that such activities do not cause damage to the environment of other States. Thus, far, the declaration expressed the notion of *sic utere tuo*, limiting it to the legally protected interests of States.

The last part of the declaration, "or to areas beyond the limits of national jurisdiction," has been considered a proper extension of the maxim *sic utere tuo* to the commons or areas not under the jurisdiction of any State, such as the high seas or the outer space.³⁹ Principle 22 went further and urged States to cooperate "to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States *to the areas beyond their jurisdiction*."⁴⁰ In other words, the declaration partly emphasizes the significance of the obligation and partly stresses that the requirement extends to all areas beyond the jurisdiction of the perpetrator of the pollution.

That this principle is relevant to the requirements for the preservation and protection of the ecosystem of the watercourse is certain. The so-called extension of the notion of *sic utere tuo* might be considered to apply, in part, to the general phrase which we recommended for paragraph 2 of article 23, namely "the ecosystem of the watercourse." That phrase was proposed to create the obligation to preserve and protect even parts of the ecosystem where no one pursues legal protection of an interest. Admittedly, it is rare to find within a watercourse an area *not* falling within the jurisdiction of a State. However, as indicated in the earlier discussion of article 23, those provisions will create an obligation over such areas, opening the avenue for claims of *locus standi*.

The Stockholm Declaration of Principles may, arguably, be said to stand on its own among declarations, resolutions and guidelines adopted by international organizations. It does not in itself create an obligation for States to protect the environment. Rather, it purports to recognize the obligation of States under the Charter of the United Nations and the existing principles of international law.

It is significant that the principle was adopted, verbatim, as principle 3 of the Report of the Intergovernmental Working Group of Experts on

39. See the insightful comments on the Declaration, Louis B. Sohn, *The Stockholm Declaration on the Human Environment*, 14 HARV. INT'L L.J. 423 (1973).

40. Stockholm Declaration, *supra* note 37, principle 22 (emphasis added).

Natural Resources shared by Two or More States which worked under the aegis of the UNEP from January 1976 to February 1978.⁴¹

B. Case Law

Instances of international water disputes involving preservation and protection are hard to come by. In fact, the two arbitral decisions, *Trail Smelter Arbitration*⁴² and *Lac Lanoux Arbitration*⁴³ (only by analogy and by way of dictum, respectively), have become the celebrated examples. What they have in common is the direct expression that there is an international obligation not to cause transboundary environmental injuries.

The well-known *Trail Smelter* arbitration arose from a dispute between the United States of America and Canada. The issue concerned sulfur dioxide fumes emitted into the air from a smelting firm located at Trail on the Canadian side of the border. The ensuing precipitation, in form of acid rain, caused damage to crops in the Columbia Valley in the State of Washington.⁴⁴ The United States complained and, following a Special Agreement signed and ratified by both parties, an Arbitral Tribunal was set up.

The decision of the Tribunal was based on analogies from cases of interstate disputes over waters of various rivers in the United States. In the end the Tribunal declared its decision and expressed the following statement of obligation which has made this arbitration a leading case in international environmental law:

The Tribunal, therefore finds that . . . under the principles of international law as well as the law of the United States, no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of a serious consequence. . . .⁴⁵

The Tribunal also added a significant statement on the responsibility to make good the injurious act. It said:

The Dominion of Canada is responsible in international law for the conduct of the Trail Smelter. Apart from the undertaking in the Convention, it is, therefore, the duty of the Government of the Dominion of

41. The final session of the Working Group was at Nairobi Jan. 23 - Feb. 7, 1978. Its final report is UNEP/IG.12/2 of February 8, 1978.

42. *Trail Smelter* (U.S. v. Can.), 3 R.I.A.A. 1905 (1938) (initial dec.) 3 R.I.A.A. 1938 (1941) (final dec.) [hereinafter *Trail Smelter*].

43. *Lac Lanoux* (Fr. v. Spain), 12 R.I.A.A. 281 (Nov. 16, 1957) (for English, see 24 I.L.R. 101).

44. The facts are outlined in *Trail Smelter*, *supra* note 42, at 1916.

45. *Id.* at 1965.

Canada to see to it that this conduct should be in conformity with the obligation of the Dominion under international law herein determined.⁴⁶

The emphasis is on the responsibility of the Dominion to reduce or otherwise control pollution, even though Trail Smelter was a private firm. This is the point which brings the jurisprudence of the *Trail Smelter* case close to that of the *Corfu Channel* case.⁴⁷ In the latter case the International Court of Justice (ICJ) found Albania responsible for the placement of the mines at Corfu Channel even though there was no proof that Albania, the State, had actually performed the wrongful act. Responsibility was based on the fact of sovereignty. In a separate concurring opinion, Judge Alvarez put forth the point forcefully that "[e]very State is considered as having known, or as having a duty to have known, of prejudicial acts committed in parts of its territory where local authorities are installed; that this is not a presumption, nor is it a hypothesis, it is the consequence of sovereignty."⁴⁸ Then he added in the same lines that "[e]very State is bound to take preventive measures to forestall the execution in its territory of criminal or prejudicial acts to the detriment of other States or of their nationals."⁴⁹

Clearly, then, the *Corfu Channel* case and the *Trail Smelter* decision seem to articulate rather forcefully the rule of state responsibility to prevent environmental pollution which may injure the interest of other States. Some writers have argued, too, that the *Trail Smelter* decision actually builds on the celebrated *Rylands v. Fletcher* case of 1868 which is a standard common law precedent on the rule of strict liability.⁵⁰ And, indeed, given the argument of Judge Alvarez above, it may be concluded that the three cases establish an equivalent of strict liability on the international plane.

Lake Lanoux arbitration was between France and Spain. Spain argued that a dam which France proposed to construct on the River Carol would prejudice the interest of Spain as a lower riparian. The River Carol flows from France into Spain where it joins the River Segre. But in France the river drains Lake Lanoux, which is wholly in France and which is fed by a number of streams, also wholly within the French territory.

France proposed to construct a dam on the River Carol to raise the capacity of Lake Lanoux and create a head for hydroelectric power generation. Furthermore, France was to restore the entire quantity of water in full to the Carol.⁵¹ However, in the negotiations which extended from 1917 to

46. *Id.* at 1965-66.

47. *Corfu Channel* (Gr. Brit. v. Alb.), 1949 I.C.J. 4 (Apr. 9).

48. *Id.* at 44.

49. *Id.*

50. Utton, *supra* note 35, at 158.

51. The case is summarized by Brunson MacChesney, *Judicial Decisions*, 53 AM. J. INT'L L. 59 and discussed at length by Laylin and Bianchi, *supra* note 2.

1955 Spain remained firm in its objection; it rejected all proposals, even one offering a larger volume of water than that under the natural flow regime. Relying on the Treaty of Bayonne of May 26, 1866, and the Additional Act of the same date, Spain objected plainly to the very fact of the construction of the dam and control of the flow because it introduced human discretion into the regime of international drainage systems, possibly jeopardizing Spanish interest in irrigation.

The Tribunal rejected the argument that the Treaty of Bayonne and the Additional Act actually permitted Spain the veto power over the project, specifically because no harm to Spanish interests was actually established. It was in this argument that the Tribunal observed, by way of dictum, that one might have attacked this conclusion in several different ways. It could have been argued that the works would bring about definitive pollution of the waters of the Carol or that the returned waters would have a chemical composition or temperature or some other characteristic which could injure Spanish interests. Spain could have claimed that her rights had been impaired in violation of the Additional Act. Neither the *dossier* nor the debates of this case carry any trace of such an allegation.

It is this reference to possible change in quality or composition of the water which makes the *Lake Lanoux* decision significant as evidence of international obligation not to cause harm to an international watercourse. It also offers support to the provisions in the ILC draft articles on preservation and protection of the quality of such watercourses.

C. Treaty Law

Up to the end of the nineteenth century nearly all the treaties on international watercourses dealt with either navigational uses and/or, as was in the case of Africa, demarcation of spheres of influence for colonial regimes. The intensification of industrialization in North America and Europe changed this picture. Thus, the International Joint Commission between the US and Canada was established by a treaty in 1909 to cover, inter alia, standards for the quality of boundary waters.⁵² The Europeans woke up to the problems of pollution of international watercourses much later. In fact, it was at the urging of the Netherlands that the International Commission for the Protection of the Rhine Against Pollution was established in 1963, with Switzerland, Germany (F.R.), France, the Netherlands and Luxembourg as the parties.⁵³

52. See Treaty Relating to Boundary Waters Between the United States and Canada, Jan. 11, 1909, U.S.-U.K., 36 Stat. 2448, and Questions arising Between the United States and Canada signed at Washington, Jan. 11, 1909 in ST/LEG/SER.B/12 (1963).

53. See Agreement Concerning the International Commission for the Protection of the Rhine Against Pollution, Fr.-F.R.G.-Lux.-Neth.-Switz., Apr. 29, 1963, signed at Berne (with

Since these developments, there has been a rapid growth in the number of treaties and a plethora of scholarly reviews on the quality of water of international watercourses in Europe⁵⁴ and North America.⁵⁵ The same applies to the relation between the United States and Mexico on their common waters such as the Colorado River and Rio Grande. The degree of interaction, debates, comments and treaties is such that it can be assumed that the obligation has evolved and is commonly recognized. The rapid process of custom generation has grown well beyond the level referred to by Judge Tanaka in his dissenting opinion in *South West Africa Cases*.⁵⁶ By and large, the countries of Europe and North America are preoccupied with individual and joint efforts to prevent *and* reduce pollution of the international watercourses in the sense stipulated in article 21(2) of the ILC draft articles. In fact, they have proceeded to establish lists of substances as required by paragraph 3 of that article.⁵⁷ For these reasons we think the European and North American treaties are rather tired and need no specific treatment here.

It should suffice to look at two cases in Latin America, namely *River Plate* and *Amazon River*, and three in Africa, namely *Senegal*, *Niger* and the *Zambezi*. Two additional continent-wide treaties adopted under the aegis of the Organization of African States will further illustrate the trend of the consciences in Africa.

The River Plate Treaty, signed at Brasilia on April 23, 1969 by Argentina, Bolivia, Brazil, Paraguay and Uruguay, entered into force on August 14, 1970.⁵⁸ Article 1, stipulating the objectives, provides that the parties will ensure the promotion of harmonious development and physical integration of the entire Plate Basin; identify areas of common interest; and develop regulations for multiple uses as well as the conservation and development of the flora and fauna of the basin.

protocol of signature), U.N. Doc. A/CN.4/274 (vol. 1), Mar. 25, 1974. See also Stein, *supra* note 12, at 265-67.

54. On the Rhine, for instance, five articles are presented in NATURE MANAGEMENT AND SUSTAINABLE DEVELOPMENT (Will D. Verwey ed., 1989). On the range of treaties on the Rhine, see Johan G. Lammers, *The Rhine: Legal Aspects of the Management of a Transboundary River*, in *id.* at 440 [hereinafter Lammers].

55. On the Great Lakes of North America see Colborn, *supra* note 17, and Richard B. Bilder, *Controlling Great Lakes Pollution: A Study in U.S.-Canadian Environmental Cooperation*, in Hargrove, *supra* note 12, at 294.

56. *South West Africa*, Second Phase, Judgment, 1966 I.C.J. 6, 248 (dissenting opinion of Judge Tanaka). Judge Tanaka, referring to the repetitive pronouncements in the UN resolutions and declaration said: "This collective, cumulative and organic process of custom generation can be characterized as the middle way between legislation by convention and the traditional process of custom making and can be seen to have an important role from the viewpoint of development of international law." *Id.* at 292.

57. For details, see Lammers, *supra* note 54.

58. Treaty for the River Plate, Apr. 23, 1969, signed at Brasilia, 8 I.L.M. 905.

The Treaty for Amazonian Cooperation was adopted at Brasilia on July 3, 1978 by Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Surinam and Venezuela.⁵⁹ It is one of the new generation of treaties on international drainage basins which emphasizes integrated and comprehensive development rather than navigation and/or pollution control, which characterize contemporary European and North American agreements. As in the River Plate Treaty, the Amazonians are broadly based in their pronouncements. In article 1 they "agree to undertake joint actions to promote harmonious development of their respective Amazonian territories . . ." to produce equitable and beneficial results. Additionally, the article states their commitment to the preservation of the environment as well as to the conservation and rational utilization of the natural resources.

Thus, the concept of preservation of the environment, the central goal of Part IV of the ILC draft articles, is clearly stipulated. Besides, the phrase "respective Amazonian territories" may be interpreted to mean the ecosystem of the Amazon watercourse falling within respective territories of the contracting parties.

Article 22 of the ILC draft articles also finds support in article VII of the Amazonian treaty which, while recognizing the need to exploit the flora and fauna of the Amazonian region, also requires that the exploitation be done rationally to ensure ecological balance and to preserve the species. It is article XVI, however, which gives a note of caution, stating that nothing in the treaty should be to the detriment of projects within the respective territories of the parties. The caution against frustration of national projects is also appropriate if account is taken of the necessity to mobilize the natural resources for development while reserving preservation only for instances of endangered or threatened species of flora and fauna.

The Presidents of all of the eight contracting parties adopted a special instrument called the Amazon Declaration at Manaus, Brazil, on May 6, 1989.⁶⁰ The Declaration, while expressing support for indigenous people and denouncing conditions of foreign debt, also expressed support for the newly created Amazonian Special Environmental Commission and thus support for joint activities in recognition of their concern for the Amazon environment.

The two treaties from Latin America, signed by the majority of the regional States, include provisions for individual and joint efforts to preserve as appropriate, and to protect the ecosystem of the international watercourses.

59. Treaty for Amazonian Cooperation, July 3, 1978, 17 I.L.M. 1045.

60. Amazonia Declaration, May 6, 1989, 28 I.L.M. 1303.

African rivers were subject to several agreements during colonial time, but most of these had to do with either navigation or demarcation of spheres of influence by colonial powers. The notable cases of consumptive uses were the *Nile*, where there was a preoccupation with water security for the desert State of Egypt, and to some extent Sudan.⁶¹ The Senegal, presumably because of the climatic condition of its riparians, also enjoyed some consideration of consumptive uses but without a clear treaty on that until 1963.⁶² This agreement and a later one in 1964 were found inadequate; a current treaty was adopted at Nouakchott on March 11, 1972 by Senegal, Mali and Mauritania.

Two conventions were adopted by the three States on the same day. One was the Convention Creating the Organization for the Development of the Senegal Basin (OMVS), dealing only with the institutional arrangements; the other was the Convention relative to the Statute of the Senegal River, dealing with substantive issues.⁶³ Under article 2 of the Statute Convention, the parties undertake to cooperate towards rational management of the resources of the Senegal Basin. But article 4 is more precise: They undertake to carry out projects for, inter alia, water quality and the maintenance of the biological characteristics of the fauna and flora of the basin. Thus, the recognition of the obligation to preserve biological diversity and to protect water quality are explicitly recognized. The important point, though, is that these are to be undertaken alongside agricultural and industrial activities.⁶⁴

The obligation to act individually or jointly is explicitly stated in the creation of the OMVS.

The Convention Creating the Niger Basin Authority (NBA) was adopted by Benin, Cameroon, Ivory Coast, Guinea, Upper Volta, Mali, Niger, Nigeria and Chad at Conakry, Guinea, on November 21, 1980.⁶⁵ It has provisions which state the commitment by the parties to ensure integrated development of the Niger Basin⁶⁶ and to initiate and monitor an

61. See analysis in *Review of Treaties*, supra note 13 and Charles Odidi Okidi, *Legal and Policy Regime of Lake Victoria and Nile Drainage Basins*, INDIAN J. INT'L L. 395 (1980).

62. For the 1963 and 1964 Conventions see U.N. Doc. A/CN.4/274 (vol.1) 1974 at 79-80 and 81-82 respectively.

63. See INTERNATIONAL ENVIRONMENTAL LAW: MULTILATERAL AGREEMENTS 972:19/1 for the Statute and 972:20/1 for the OMVS Convention [printed by the IUCN/CEPLA Environmental Law Centre, Bonn].

64. On the integrated development of the Senegal basin, see Charles Odidi Okidi, *Development and the Environment in the Senegal Basin Under the OMVS Treaty* (Univ. of Nairobi, Institute for Development Studies, Discussion Paper No. 283, June 1987).

65. Copy obtained from the NBA Headquarters in Niamey.

66. *Id.* art. 3(1).

orderly and rational regional policy for surface and ground water in the basin.⁶⁷

The specific provision on water control and utilization, which deals primarily with quantitative aspects of water use, is in article 4(2)(c). Special treatment is, however, reserved for "Environmental Control and Preservation." It lays down a commitment to protect the environment by establishing the norms and measures applicable in alternative uses of the basin waters; prevention and reduction of water pollution; and preservation of human health as well as flora and fauna.

The commitment to take joint measures is explicitly underscored by the creation of the institutions of the Authority at Niamey, Niger.⁶⁸ The Agreement on the Action Plan for the Environmentally Sound Management of the Common Zambezi River System was adopted by Botswana, Mozambique, Tanzania, Zambia, and Zimbabwe at Harare, Zimbabwe on May 28 1987.⁶⁹ The structure of the agreement is unique: After an extended technical and expert level negotiation, the States agreed on an Action Plan comprised of an Introduction, Background and Objectives and the Suggested Actions. The main elements of the Suggested Actions are Environmental assessment, Environmental management, Environmental legislation and Supporting measures.⁷⁰ This Action Plan then became Annex I to a short agreement composed of a preamble, a portion on the Action Plan, institutional and financial arrangements, national focal points, implementation of the Action Plan and the final clauses.

By article 1(1) the parties adopted the Action Plan, understood to form an integral part of the Agreement. Their obligation is expressed in paragraph 5 stating that "[t]he Parties *will*, individually and/or jointly as a regional activity of the Southern African Development Coordinating Conferences (SADCC), take all appropriate measures for the expeditious and effective implementation of the Zambezi Action Plan."⁷¹ The substantive

67. *Id.* art. 4(1)(d).

68. *Id.* Arts. 5-9 give the details of the Secretariat while arts. 10-14 give the financial arrangements.

69. Agreement on the Action Plan for the Environmentally Sound Management of the Common Zambezi River System, May 28, 1987, 27 I.L.M. 1109.

70. *Id.* It is apparent that the Action Plan adopted a framework similar to that of the Regional Seas Programme where such an outline actually preceded the regular outline of the agreement.

71. *Id.* at 1112 (emphasis added). Since treaties bind only parties to it, the provision that the Zambezi Action Plan be an activity of the SADCC would seem improper. To correct this, article 1(2) requests the Council of Ministers of the SADCC to endorse the Action Plan "as a concerted action programme" of that organization. Further, article 4(2) requests the Executive Secretary of the SADCC and the Executive Director of UNEP to start immediate consultation regarding the implementation of the Action Plan.

provisions are in Annex I which is an array of pronouncements summarized as "environmentally sound water resources management" but which covers analogies for the draft articles 20-23. In fact, the statement of obligation quoted above and the Treaty's theme constitute sufficient analogy for the obligation to preserve and to protect the ecosystem of the watercourse.

Although there is no specific provision for a list of pollutants, there is a requirement to conduct studies to identify sources and levels of pollutants in various components of the river-basin environment. Protection of species of flora and fauna is provided for in the Action Plan Programme of Work No. 6(c) which specifically requires conservation and improvement of productive capacity of water-related ecosystems. This is further amplified in Programmes No. 18 and 19. The former requires the implementation of a living-resource conservation programme in accordance with the national strategy. The latter provides for the eradication or the prevention of the spread of (alien) harmful flora such as *Salvinia*.

This is one of the rare drainage-basin agreements that address the question of conservation and protection of the marine environment as in the ILC draft article 23. It simply calls for the development and adoption of a regional convention for the protection, management and development of the river-basin resources and the coastal and marine environment relevant to the basin.⁷²

The trend is definite towards a new generation of drainage-basin agreements that are broader, seeking the integrated management of the basins' resources for development. But in each case, they seem to stress the imperatives for preservation and protection; reduction, control and prevention of pollution; and the protection of biodiversity including the control and prevention of the introduction of alien species of flora and fauna. Specific instances such as the Zambezi Action Plan provide for protection of the marine environment.

Without exhausting the analysis of treaties on the African drainage basins,⁷³ we observe that treaty making within the Organization of African

72. It is curious, though, that neither in the agreement, for example, in the preamble, nor in the Annex did the parties mention that the Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region was concluded by Mozambique, Tanzania, and seven other Eastern African States on June 21, 1985 at Nairobi, under the aegis of UNEP Regional Seas Programme. For detailed discussion see Charles Odidi Okidi, *Nairobi Convention: Conservation and Development Imperatives*, 15 ENVTL. POL'Y & L. 43 (1985).

73. Among the recent agreements not discussed here is the Agreement Creating the Organization for the Management and Development of the Kagera Basin, *adopted* Aug. 24, 1977. The contracting parties are Burundi, Rwanda, Tanzania and Uganda. For details see

Unity (OAU) has shown deference to environmental preservation and protection generally, and water resources in particular. Within the first decade of independence of most African countries, they adopted the African Convention on the Conservation of Nature and Natural Resources at Algiers on September 15, 1968. Under article V the contracting parties undertook an obligation to manage their water and air resources so as to maintain them in the highest possible quantitative and qualitative levels. Furthermore, the parties would establish and implement policies which maintain air- and water-based essential ecological processes, including prevention of pollution. Paragraph 2 is particularly pertinent to international watercourses as it obligates States to ensure conservation, management, utilization and development of underground and surface water. In points of detail, the paragraph requires the study of water cycles and investigation of catchments, conservation of catchment areas, control of utilization, and the prevention and control of pollution as well as establishment of emission and water-quality standards. Indirectly, the establishment of water-quality standards may subsequently entail the establishment of lists of substances which pollute, as provided in the ILC draft article 21(3).

The sensitivity to environmental protection and natural resources management is, once more, evinced in the Treaty Establishing the African Economic Community adopted by the fifty one OAU member States at Abuja, Nigeria on June 3, 1991.⁷⁴ Article 46(2)(b) specifically requires the member States to cooperate in "the development of river and lake basins,"⁷⁵ while sub-paragraph (c) requires "the development and protection of marine and fishery resources. . ."⁷⁶ The protection of species of flora and fauna, including the prevention of introduction of alien or new species may, arguably, be covered by article 46(2)(d), which requires the States to cooperate in the field of plant and animal protection.⁷⁷ The general issue of cooperation in the management and/or protection of water resources is included in a number of articles.

D. Learned Societies

Learned societies have made notable contributions to the development of the law of international drainage basins or watercourses. Prominent

Charles Odidi Okidi, *Development and the Environment in the Kagera Basin Under the Rusumo Treaty* (Univ. of Nairobi, Institute for Development Studies, Discussion Paper No. 284 1986). Another one is the Treaty on the Highlands Water Project, Lesotho- S. Afr., Maseru, signed Oct. 24, 1989.

74. Treaty Establishing the African Economic Community, held at Abuja, Nigeria, June 3, 1991, 30 I.L.M. 1241.

75. *Id.* at 43.

76. *Id.*

77. *Id.*

among these are the works of the Institute of International Law and the International Law Association (ILA), even though the contribution of others, such as the Inter-American Bar Association and the Asian-African Legal Consultative Committee are not entirely negligible. The objective here is to highlight their major provisions on the subject of preservation and protection, just for completeness.

The early work of the Institute of International Law⁷⁸ reflects the preoccupation of the time. The 1887 Heidelberg Resolutions were concerned with regulation of river navigation and made only one reference to sanitary control, which is broader than the problem of pollution. It was the Declaration of Madrid on April 20, 1911 that focused on uses of international rivers other than for navigation. It provided that all "alterations injurious to the water, emptying therein injurious matter (from factories, so forth) is forbidden."⁷⁹ This concern surfaced again in the Resolution on Pollution of Rivers and Lakes in International Law adopted at Athens in 1979.⁸⁰ Article II of the Resolution is actually a small variation from principle 21 of the Stockholm Declaration, largely to fit the former to the specifics of international rivers and lakes. There is specific obligation to prevent new and abate existing pollution in article III(1). But a possible requirement for the establishment of lists of pollutants is suggested in paragraph 2 of that article. Other provisions relate to liability and requirements for consultation and joint action.

The ILA, more than any organization of its kind, has had the biggest impact on the development of the law of international drainage basins. For this study we cover only from the Dubrovnic Resolutions of 1956 to the Belgrade report in 1980.⁸¹

According to paragraph IV of the Resolution of Dubrovnic, States are responsible for any act on a river which causes injury to another State, but only if the injury is preventable. This limitation is further applied specifically to pollution in paragraph VII. This cautious formulation is a distinct departure from the position of strict liability suggested above in the analysis of the *Trail Smelter* arbitration and *Corfu Channel* case.

78. The tireless Dante Caponera compiled the reports of the Institute from the Resolution of Heidelberg of Sept. 9, 1987 to Athens Sept. 12, 1979 in the volume he edited: *THE LAW OF INTERNATIONAL WATER RESOURCES* 269 (Dante Caponera ed. FAO Legislative Study No. 23, Rome: FAO 1980) [hereinafter Caponera].

79. Declaration of Madrid, Apr. 20, 1911, ¶ II(2).

80. Caponera, *supra* note 78, at 282-84.

81. *Id.* at 287-314. The issues are still before an ILA committee under Professor Charles Bourne.

The parties to the Dubrovnic Resolutions agreed on the necessity for integrated and harmonious basin management, a principle which is also reflected in paragraph 1 of the New York Resolution of 1958. The latter resolution was explicit in enjoining co-riparians "to prevent further pollution" and to reduce all existing pollution.⁸² At Hamburg in 1960 the ILC reemphasized the New York recommendation, but also urged for studies to define the scope and responsibilities for the abatement and control of water pollution in drainage basins.

It was in 1966 at Helsinki that the ILA adopted its rules, popularly known as the Helsinki Rules,⁸³ which have had a major impact on the law of international water resources. Chapter 3 of the Helsinki Rules deals with "pollution," which is defined as "any detrimental change resulting from human conduct in the natural composition, content or quality of the waters of an international drainage basin."⁸⁴ Clearly, the attempt is to keep it short and concise; however, the idea that water pollution must be a detrimental change that results from human conduct makes it defective for the reasons analyzed earlier in this paper.

The obligation to prevent any form of pollution or any increase in the existing pollution is qualified only by reference to substantial injury or damage. As pointed out earlier, such a qualification is problematic and misleading because most pollution problems which become acute result from bioaccumulation over time. Secondly, it is a basic presumption that law does not concern itself with trivia.

The Helsinki Rules were elaborated at the August 1972 New York session which adopted "Articles on Marine Pollution of Continental Origin."⁸⁵ The six articles are a distinct support to the ILC draft article 23, and would have suggested its elaboration; however, as an umbrella convention article 23 seems adequate.

The extent to which the Helsinki Rules had influenced the thinking of other learned societies is testified to by the immediate adoption of its formulations by the Asian-African Legal Consultative Committee (AALCC). At its 1973 session the AALCC adopted a set of propositions on "The Law of International Rivers." Proposition VIII on pollution is identical to the provision on pollution under the Helsinki Rules.

82. *Id.* at 289.

83. HELSINKI RULES, *supra* note 11.

84. *Id.* at art. IX.

85. Caponera, *supra* note 77, at 317.

It is clear that there is ample support for preservation and protection in the legal commentaries of distinguished legal societies. But there is, admittedly, some degree of variation as to the clarity and firmness of the statements of obligations which States ought to assume.

IV. FINAL REMARKS

Two recent developments have necessitated the urgent adoption of globally acceptable principles and rules for the non-navigational uses of international water resources. The first development is the intensified industrialization in North America and Europe which has generated critical problems of waste disposal. The disposal of wastes of different degrees of toxicity, persistence and bioaccumulation in the rivers is the easiest mode for the industries. It is, however, environmentally unacceptable. The second development is the increasing demand for water, its control and distribution for agricultural and domestic uses, particularly in Africa, Latin America and Asia. The latter developments require comprehensive and basin-wide management of the water resources for the promotion of sustainable national development. The two perspectives are clearly signalled by the treaties discussed in this paper, and the problems do, indeed, require urgent attention.

The work of the ILC on the Law of Non-Navigational Uses of International Watercourses is one of the latest among the efforts which have engaged learned societies and different basin States since the beginning of this century. But the ILC has the advantage of being a Commission of the United Nations. Its findings and recommendations go directly to the UN General Assembly. One would, therefore, tend to urge the ILC to act innovatively and with great speed where the need seems to be so pressing.

However, for the very fact that the ILC is an intergovernmental institution it will tend to act cautiously, seeking positions where the governments would easily adopt consensus. In the process, the ILC would tend to avoid formulations which are potentially controversial.

The draft articles examined in this paper manifest innovativeness in several ways. The concepts of preservation, conservation and protection as discussed in this paper are significant to the development of the law of international waters. The provision on the introduction of alien and new species of flora and fauna is of considerable significance since adventurism in farming such waters may have drastic and deleterious consequences. Similarly, the provisions on prevention of marine pollution through the protection of international watercourses has far-reaching implications since it implies the involvement of land-locked basin States in the protec-

tion of marine environment for the ominous problems of pollution from land-based sources.

The draft articles are clearly inadequate on a number of points raised in the discussions. These include the definition of pollution, where the articles are weak in scope and content. It is observed that the definition offered in the draft articles is below the drafting standards in the 1966 Helsinki Rules and that of the 1982 Law of the Sea Convention, where these two could have been improved and adopted *mutatis mutandis*. Pollution, as a critical problem in the industrialized regions and a potentially troublesome issue in other regions, should be clearly and effectively formulated. For most of the basin States, it is the preventive regime, which ensures the sustainability in the use of the basin water, which is most critical. In the draft articles, however, the definition evinces a preoccupation with fixing liability for injuries *ex post facto*.

The use of the term *watercourse* by the ILC is inherently limited, as it restricts the application of the possible legal regime to only those streams where the water flows and not the land or other natural resources of the drainage basin. This contention may be somewhat challenged by the provision relating to the "ecosystem" of the watercourse. However, the concept of "ecosystem" may be strictly construed to apply only to the stream and the contents of its water rather than the drainage basin. The latter concept has been in common usage, and the draft articles would not have used a different term unless they had a different meaning. In the present case, the ILC seems to have preferred the restrictive terminology.

The treaties on the rivers in Africa and Latin America, which are discussed in this paper, deal with the problem of pollution as a small part of their regimes. In large measure, these treaties deal with the comprehensive management of the drainage basin and its natural resources for sustainable development. Thus, the legal and institutional arrangements deal with agrarian, industrial and domestic issues. Therefore, it seems appropriate to retain the concept of drainage basin as defined and popularized in the Helsinki Rules.

It is for these reasons that the ILC's departure from the familiar concept of international drainage basins and adoption of a narrow concept of international watercourse is manifestly inappropriate. Indeed, the approach suggests that the ILC was overly influenced by the trends in North America and Europe where the notion of comprehensive and basin-wide management is clearly absent. In these two broad jurisdictions, the idea of pollution is confined to industrial and municipal discharges, as distinct from pollution by loads of sediments from agricultural fields in the

drainage basins. The latter is a critical category of pollution in, say, African drainage basins and causes acute problems in estuaries and the marine environment. A preventive legal regime is more appropriate here especially given its implication for water and soil conservation in the agricultural lands. It compels the basin to seek conservation and management of basin resources, including involvement in agrarian issues which entail the rational management of the soil and water through catchment protection.

In these matters the ILC has a duty to analyse the problems on a comparative and global basis. In the end the ILC members should endeavour to educate the UN member States rather than seeking a position which will command easy agreement even when it is misleading. In the present case the trends in treaty practice in Africa and Latin America seem to have been ignored when adopting the concept of watercourse.

It is in the area of obligations to consult and to cooperate, which are discussed in other papers in this volume, where the ILC will assist the African and Latin American basin States. Comprehensive management of a drainage basin will provoke intractable legal and management problems for States with disparate national needs and strategies. But the discussions in this paper demonstrate that there is evidence in general international law, in case law and in treaty law that their jurisdictions do not cause harm to other States or areas beyond national jurisdiction. That position is amply supported by the principles developed by various learned societies.