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WATERCOURSES AND RIVER BASINS¹

Water plays a vital role in our society. It is important for nourishment, irrigation and agriculture, fishing and fish farming, conservation and the environment, flood control, and hydropower generation. It is also important in terms of navigation, affecting commerce, transportation, recreation and travel. This chapter explains the hydrological cycle and introduces the reader into the particularities of international watercourses and river basins.

Hydrology and the Hydrological Cycle

The presence of large quantities of water in each of its three phases (ice, liquid water and vapour) is a distinguishing feature of the Earth.

Water plays a particularly essential role in the climate system:

- Latent heat processes are a major component of the energy balance.¹
- Water vapour and clouds play a major part in determining the radiative balance of the Earth.
- Without water there would be no ecological system for life to exist, there would be no biosphere.

Most of the Earth's water is in the oceans and only a tiny amount is in the atmosphere. Nevertheless, atmospheric water vapour and clouds are of major importance in the climate system. The simple fact that water can exist in each of its three phases under the temperature and pressure conditions of the Earth is also an important factor in determining the Earth's climate:

- In its solid phase, water in glaciers is important for storage of water and because it increases the Earth's albedo.²
- Water is readily transported as vapour.
- Water formation in the form of cloud droplets: clouds are efficient cleansers of atmospheric pollution and clouds contribute to an increased global albedo.

TABLE 1: THE WATER DISTRIBUTION:

WATER SOURCE:	PERCENTAGE OF TOTAL WATER:
Oceans, Seas, & Bays	96.5
Ice caps, Glaciers, & Permanent Snow	1.74
Groundwater	1.7
Soil Moisture	0.001
Ground Ice & Permafrost	0.022
Lakes	0.013
Atmosphere	0.001
Swamp Water	0.0008
Rivers	0.0002
Biological Water	0.0001
Total	100

Source: Gleick, P. H., 1996: Water resources. In Encyclopedia of Climate and Weather, ed. by S. H. Schneider, Oxford University Press, New York, vol. 2, pp.817-823.

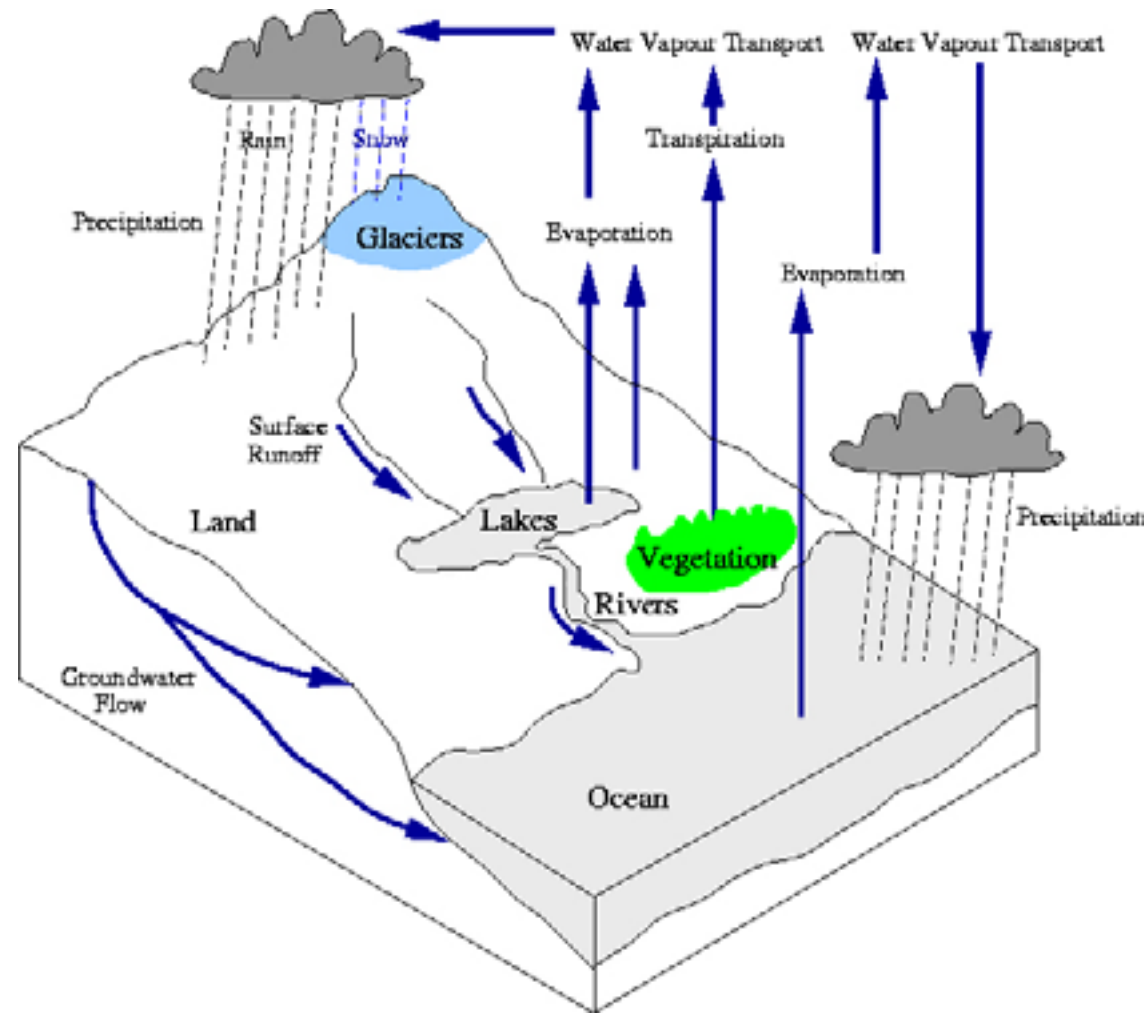
¹Source: http://www.internationalwaterlaw.org/bibliography/UN/UNFAO/FAO-Negotiations_Simulation.pdf

¹ Latent heat describes the amount of heat which is absorbed or evolved in changing the state of a substance without changing its temperature, e.g., in freezing or vaporizing water.

² Earth's albedo is the reflectivity of the Earth's atmosphere and surface combined.

The following diagram shows the principal components of the transformations which water undergoes. This is known as the Hydrological Cycle.

FIGURE 1: PRINCIPAL COMPONENTS OF THE "HYDROLOGICAL CYCLE"

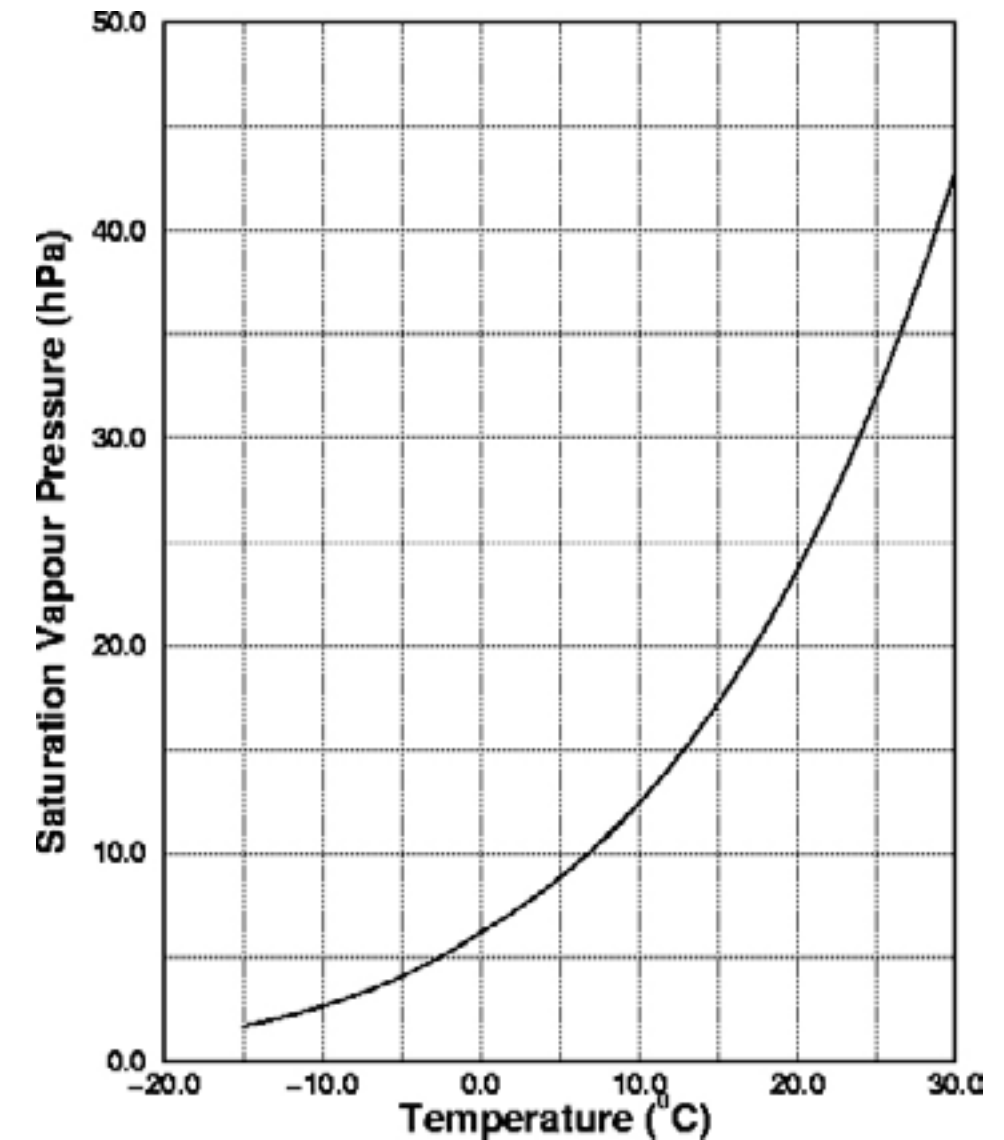


Source: School of Earth and Environment, University of Leeds.

Explanation of the Processes:

- **Evaporation:** Takes place from the surface of the oceans, from land and from wet vegetation. It is strongly temperature-dependent and requires latent heat to be supplied.
- **Transpiration:** This is the loss of water vapour from the leaf cells of plants. Soil water is taken up by plant roots and lost to the atmosphere through the leaves, mainly during the day.
- **Atmospheric Water Vapour Transport:** This is the transport of water in its vapour phase by the circulation of the atmosphere.
- **Cloud Formation:** Clouds form when water vapour condenses to form water droplets. This happens when air cools to a temperature equal to its dew point. The amount of water vapour in the air can be measured by its vapour pressure. There is a limit to the amount of water vapour which air can hold at a given temperature. This limit is called the saturation vapour pressure. The saturation vapour pressure increases rapidly with temperature.

FIGURE 2: SATURATION VAPOUR PRESSURE OF AIR (I.E. THE PRESSURE AT WHICH THE AIR BECOMES SATURATED) AS A FUNCTION OF TEMPERATURE.



Note the very rapid increase with temperature.

Source: School of Earth and Environment, University of Leeds.

- If air containing a fixed amount of water vapour is cooled (for example because it rises which causes it to expand), the saturation vapour pressure will decrease. Eventually a temperature will be reached where the saturation vapour pressure is equal to the actual vapour pressure of the air. This temperature is the dew point. Any further decrease in temperature would mean that the vapour pressure would be greater than the saturation vapour pressure, which does not occur to any significant extent. Hence some of the water vapour must condense as liquid water droplets. This process also involves the release of latent heat. Another way of measuring the water vapour content is using the relative humidity.

Relative humidity =	$\frac{\text{vapour pressure}}{\text{saturation vapour pressure}}$	x 100 %
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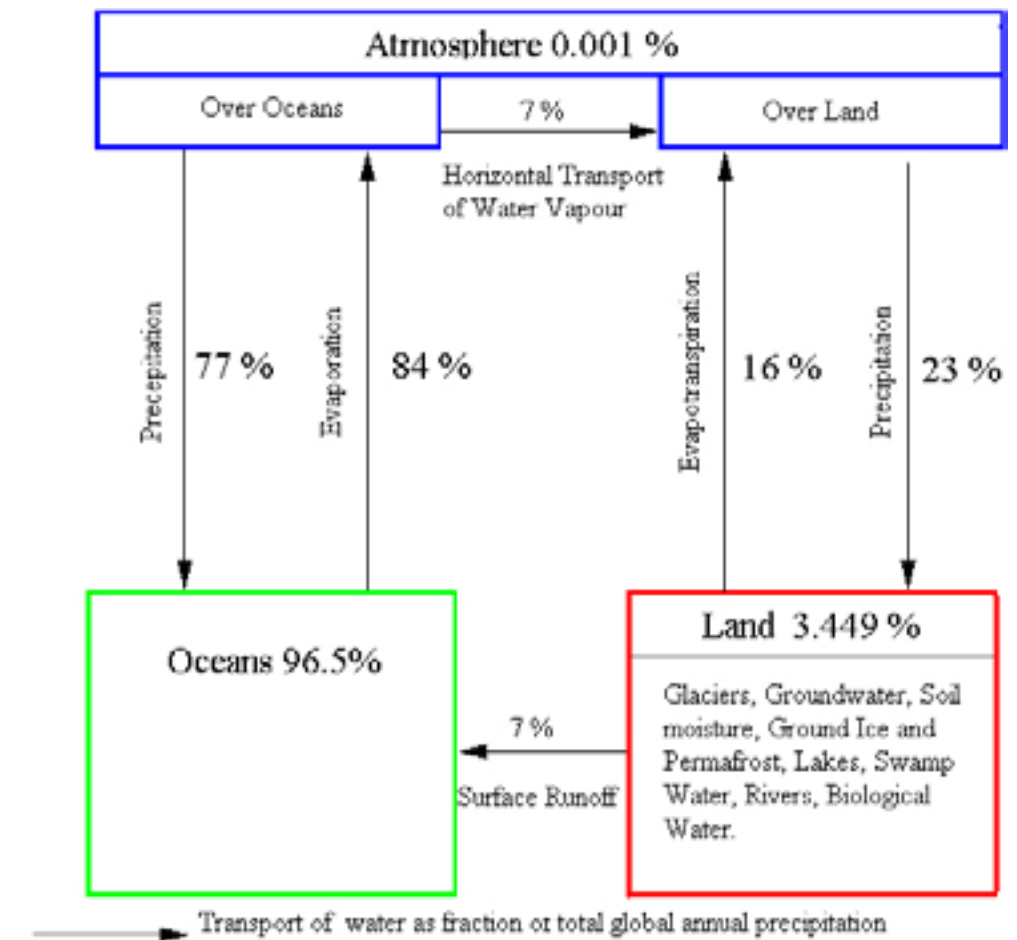
- As air cools, its relative humidity increases until it reaches 100%. Then condensation must occur if there is any further cooling.
- In reality, however, condensation cannot occur quite as easily as the above suggests. Condensation usually only takes place on the surface of small particles called aerosols.
- If the temperature is below 0°C then ice crystals form rather than liquid water droplets.
- Precipitation: water droplets coalesce and eventually become large enough to settle significantly under gravity. As they fall, they sweep up more droplets and rain droplets are formed.

Relative Importance of the Water Exchange Processes:

Figure 3 shows the amount of water involved in exchanges between the reservoirs explained above. The exchanges are measured relative to a total annual global precipitation of 100 units.

The most important point to note is that approximately two-thirds of the precipitation over land is accounted for by evapotranspiration over land. The other third is due to horizontal transport of water vapour which was evaporated from the oceans. Now evapotranspiration is strongly affected by land-use and vegetation. Thus there is the potential for a strong feedback between changes in land-use and local precipitation. For example, deforestation can mean smaller evapotranspiration which leads to reduced rainfall.

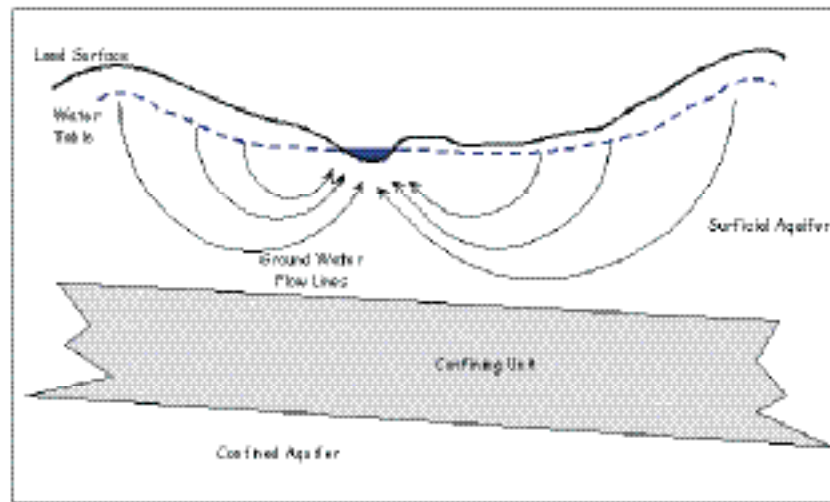
FIGURE 3: PRINCIPAL EXCHANGES AND RESERVOIRS IN THE HYDROLOGICAL CYCLE.



The Relationship between Surface and Ground Water Resources

The hydrologic cycle teaches that, more often than not, surface and ground water resources are interlinked and highly interdependent. In other words, most of the world's rivers, streams and lakes are fed by or contribute to one or more aquifers. As a result of these relationships, interlinked surface and ground waters form a system whereby activities in (or changes to) one part of the system can result in consequences to other parts of the system.

FIGURE 4: GROUND WATER-SURFACE WATER INTERACTION



The diagram illustrates the typical relationship between ground water and surface water. The surficial aquifer is recharged through rainfall on and infiltration into the upland areas between drainages. Discharges from the surficial aquifer occur into local streams and rivers.

The Components of a Watercourse:

- Surface Waters
 - » Drainage Basin – land area drained by an interrelated system of stream, river, lake and/or other surface waters.
 - » Watershed or catchment area – drainage area for subsets or sub-basin units of the drainage basin (i.e., tributaries, streams, etc.).
 - » Divide – high point on land, which separates two drainage basins or watersheds.
 - » Tributary – a lesser river/stream that feeds into the main river/stream.
 - » Mouth of a river – endpoint of a river where it flows into another river or into the sea.
 - » Source or headwaters of a river – origin of a river/stream.
- Ground Waters:
 - » Ground Water – water occupying voids, cracks or other spaces between particles of clay, silt, sand, gravel or rock within a geologic formation.
 - » Aquifer – a permeable geologic formation (such as sand or gravel) that has sufficient water storage and transmitting capacity to provide a useful water supply via wells and springs.
 - » Water Table – the level in the geologic formation below which all voids or cracks are saturated; the top of the saturated zone.
 - » Recharging Aquifer – an aquifer that is connected to the hydrologic cycle and has a continuous and significant source of recharge.
 - » Non-Recharging Aquifer – an aquifer that is completely detached from the hydrologic cycle and obtains insignificant or no recharge.

- » Ground Water Mining – pumping an aquifer at a rate exceeding recharge.
- » Aquifer-Stream relationship:
 - ◊ Effluent (Gaining) Stream – a relationship whereby the water table is at higher elevation than an intersected stream channel and slopes downward toward the stream. In such relationships, the aquifer recharges the stream.
 - ◊ Inflow (Losing) Stream – a relationship whereby the water table slopes downward from the stream to the aquifer. In such relationships, stream water percolates into the underlying aquifer recharging the aquifer.

Ultimately, the hydrologic cycle exhibits that surface and ground water resources are interlinked and highly interdependent. Most of the world's rivers, streams and lakes are fed by or contribute to one or more aquifers. As a result of these relationships, interlinked surface and ground waters form a system whereby activities in, or changes to, one part of the system can result in consequences to other parts of the system. While this understanding has been recognized among scientists for decades, until recently it received little attention in the political or legal arenas. More troubling, this understanding is still sorely neglected in the vast majority of international agreements.

The value of water is also an important aspect of international watercourses. How states value water is especially relevant for resolving conflicts in a multitude of ways. For some, water is a property right and a commodity that is subject to the free market; others value it in relation to its significance for human survival; others, still, assess water as an integral component of the natural environment; and some appreciate water in relation to its cultural, religious, and societal significance. The idea of valuation often is at the core of disputes over fresh water resources. On the international front, fresh water disputes often involve issues of human rights, health, the right to develop and environmental and pollution issues, all of which relate to how States and their citizens value water.

The implications of issues regarding both the hydrological cycle and the importance of water valuation are extremely relevant to the principle of equitable and reasonable use of water which lies at the core international law.

Draft articles on the Law of Transboundary Aquifers**2008**

Text adopted by the International Law Commission at its sixtieth session, in 2008, and submitted to the General Assembly as a part of the Commission's report covering the work of that session. The report, which also contains commentaries on the draft articles, appears in *Official Records of the General Assembly, Sixty-third Session, Supplement No. 10 (A/63/10)*.



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The law of transboundary aquifers

...

Conscious of the importance for humankind of life supporting groundwater resources in all regions of the world,

Bearing in mind Article 13, paragraph 1 (a), of the Charter of the United Nations, which provides that the General Assembly shall initiate studies and make recommendations for the purpose of encouraging the progressive development of international law and its codification,

Recalling General Assembly resolution 1803 (XVII) of 14 December 1962 on permanent sovereignty over natural resources,

Reaffirming the principles and recommendations adopted by the United Nations Conference on Environment and Development of 1992 in the Rio Declaration on Environment and Development and Agenda 21,

Taking into account increasing demands for freshwater and the need to protect groundwater resources,

Mindful of the particular problems posed by the vulnerability of aquifers to pollution,

Convinced of the need to ensure the development, utilization, conservation, management and protection of groundwater resources in the context of the promotion of the optimal and sustainable development of water resources for present and future generations,

Affirming the importance of international cooperation and good neighbourliness in this field,

Emphasizing the need to take into account the special situation of developing countries,

Recognizing the necessity to promote international cooperation,

...

PART ONE INTRODUCTION Article 1 Scope

The present draft articles apply to:

(a) utilization of transboundary aquifers or aquifer systems;

(b) other activities that have or are likely to have an impact upon such aquifers or aquifer systems; and

(c) measures for the protection, preservation and management of such aquifers or aquifer systems.

Article 2 Use of terms

For the purposes of the present draft articles:

(a) “aquifer” means a permeable water-bearing geological formation underlain by a less permeable layer and the water contained in the saturated zone of the formation;

(b) “aquifer system” means a series of two or more aquifers that are hydraulically connected;

(c) “transboundary aquifer” or “transboundary aquifer system” means respectively, an aquifer or aquifer system, parts of which are situated in different States;

(d) “aquifer State” means a State in whose territory any part of a transboundary aquifer or aquifer system is situated;

(e) “utilization of transboundary aquifers or aquifer systems” includes extraction of water, heat and minerals, and storage and disposal of any substance;

(f) “recharging aquifer” means an aquifer that receives a non-negligible amount of contemporary water recharge;

(g) “recharge zone” means the zone which contributes water to an aquifer, consisting of the catchment area of rainfall water and the area where such water flows to an aquifer by runoff on the ground and infiltration through soil;

(h) “discharge zone” means the zone where water originating from an aquifer flows to its outlets, such as a watercourse, a lake, an oasis, a wetland or an ocean.

PART TWO GENERAL PRINCIPLES Article 3 Sovereignty of aquifer States

Each aquifer State has sovereignty over the portion of a transboundary aquifer or aquifer system located within its territory. It shall exercise its sovereignty in accordance with international law and the present draft articles.

Article 4
Equitable and reasonable utilization

Aquifer States shall utilize transboundary aquifers or aquifer systems according to the principle of equitable and reasonable utilization, as follows:

(a) they shall utilize transboundary aquifers or aquifer systems in a manner that is consistent with the equitable and reasonable accrual of benefits therefrom to the aquifer States concerned;

(b) they shall aim at maximizing the long-term benefits derived from the use of water contained therein;

(c) they shall establish individually or jointly a comprehensive utilization plan, taking into account present and future needs of, and alternative water sources for, the aquifer States; and

(d) they shall not utilize a recharging transboundary aquifer or aquifer system at a level that would prevent continuance of its effective functioning.

Article 5
Factors relevant to equitable and reasonable utilization

1. Utilization of a transboundary aquifer or aquifer system in an equitable and reasonable manner within the meaning of draft article 4 requires taking into account all relevant factors, including:

(a) the population dependent on the aquifer or aquifer system in each aquifer State;

(b) the social, economic and other needs, present and future, of the aquifer States concerned;

(c) the natural characteristics of the aquifer or aquifer system;

(d) the contribution to the formation and recharge of the aquifer or aquifer system;

(e) the existing and potential utilization of the aquifer or aquifer system;

(f) the actual and potential effects of the utilization of the aquifer or aquifer system in one aquifer State on other aquifer States concerned;

(g) the availability of alternatives to a particular existing and planned utilization of the aquifer or aquifer system;

(h) the development, protection and conservation of the aquifer or aquifer system and the costs of measures to be taken to that effect;

(i) the role of the aquifer or aquifer system in the related ecosystem.

2. The weight to be given to each factor is to be determined by its importance with regard to a specific transboundary aquifer or aquifer system in comparison with that of other relevant factors. In determining what is equitable and reasonable utilization, all relevant factors are to be considered together and a conclusion reached on the basis of all the factors. However, in weighing different kinds of utilization of a transboundary aquifer or aquifer system, special regard shall be given to vital human needs.

Article 6
Obligation not to cause significant harm

1. Aquifer States shall, in utilizing transboundary aquifers or aquifer systems in their territories, take all appropriate measures to prevent the causing of significant harm to other aquifer States or other States in whose territory a discharge zone is located.

2. Aquifer States shall, in undertaking activities other than utilization of a transboundary aquifer or aquifer system that have, or are likely to have, an impact upon that transboundary aquifer or aquifer system, take all appropriate measures to prevent the causing of significant harm through that aquifer or aquifer system to other aquifer States or other States in whose territory a discharge zone is located.

3. Where significant harm nevertheless is caused to another aquifer State or a State in whose territory a discharge zone is located, the aquifer State whose activities cause such harm shall take, in consultation with the affected State, all appropriate response measures to eliminate or mitigate such harm, having due regard for the provisions of draft articles 4 and 5.

Article 7
General obligation to cooperate

1. Aquifer States shall cooperate on the basis of sovereign equality, territorial integrity, sustainable development, mutual benefit and good faith in order to attain equitable and reasonable utilization and appropriate protection of their transboundary aquifers or aquifer systems.

2. For the purpose of paragraph 1, aquifer States should establish joint mechanisms of cooperation.

Article 8
Regular exchange of data and information

1. Pursuant to draft article 7, aquifer States shall, on a regular basis, exchange readily available data and information on the condition of their transboundary aquifers or aquifer systems, in particular of a geological, hydrogeological, hydrological, meteorological and ecological nature and related to the hydrochemistry of the aquifers or aquifer systems, as well as related forecasts.

2. Where knowledge about the nature and extent of a transboundary aquifer or aquifer system is inadequate, aquifer States concerned shall employ their best efforts to collect and generate more complete data and information relating to such aquifer or aquifer system, taking into account current practices and standards. They shall take such action individually or jointly and, where appropriate, together with or through international organizations.

3. If an aquifer State is requested by another aquifer State to provide data and information relating to an aquifer or aquifer system that are not readily available, it shall employ its best efforts to comply with the request. The requested State may condition its compliance upon payment by the requesting State of the reasonable costs of collecting and, where appropriate, processing such data or information.

4. Aquifer States shall, where appropriate, employ their best efforts to collect and process data and information in a manner that facilitates their utilization by the other aquifer States to which such data and information are communicated.

Article 9 **Bilateral and regional agreements and arrangements**

For the purpose of managing a particular transboundary aquifer or aquifer system, aquifer States are encouraged to enter into bilateral or regional agreements or arrangements among themselves. Such agreements or arrangements may be entered into with respect to an entire aquifer or aquifer system or any part thereof or a particular project, programme or utilization except insofar as an agreement or arrangement adversely affects, to a significant extent, the utilization, by one or more other aquifer States of the water in that aquifer or aquifer system, without their express consent.

PART THREE **PROTECTION, PRESERVATION AND MANAGEMENT**

Article 10 **Protection and preservation of ecosystems**

Aquifer States shall take all appropriate measures to protect and preserve ecosystems within, or dependent upon, their transboundary aquifers or aquifer systems, including measures to ensure that the quality and quantity of water retained in an aquifer or aquifer system, as well as that released through its discharge zones, are sufficient to protect and preserve such ecosystems.

Article 11 **Recharge and discharge zones**

1. Aquifer States shall identify the recharge and discharge zones of transboundary aquifers or aquifer systems that exist within their territory. They shall take appropriate measures to prevent and minimize detrimental impacts on the recharge and discharge processes.

2. All States in whose territory a recharge or discharge zone is located, in whole or in part, and which are not aquifer States with regard to that aquifer or aquifer system, shall cooperate with the aquifer States to protect the aquifer or aquifer system and related ecosystems.

Article 12 **Prevention, reduction and control of pollution**

Aquifer States shall, individually and, where appropriate, jointly, prevent, reduce and control pollution of their transboundary aquifers or aquifer systems, including through the recharge process, that may cause significant harm to other aquifer States. Aquifer States shall take a precautionary approach in view of uncertainty about the nature and extent of a transboundary aquifer or aquifer system and of its vulnerability to pollution.

Article 13 **Monitoring**

1. Aquifer States shall monitor their transboundary aquifers or aquifer systems. They shall, wherever possible, carry out these monitoring activities jointly with other aquifer States concerned and, where appropriate, in collaboration with competent international organizations. Where monitoring activities cannot be carried out jointly, the aquifer States shall exchange the monitored data among themselves.

2. Aquifer States shall use agreed or harmonized standards and methodology for monitoring their transboundary aquifers or aquifer systems. They should identify key parameters that they will monitor based on an agreed conceptual model of the aquifers or aquifer systems. These parameters should include parameters on the condition of the aquifer or aquifer system as listed in draft article 8, paragraph 1, and also on the utilization of the aquifers or aquifer systems.

Article 14 **Management**

Aquifer States shall establish and implement plans for the proper management of their transboundary aquifers or aquifer systems. They shall, at the request of any of them, enter into consultations concerning the management of a transboundary aquifer or aquifer system. A joint management mechanism shall be established, wherever appropriate.

Article 15
Planned activities

1. When a State has reasonable grounds for believing that a particular planned activity in its territory may affect a transboundary aquifer or aquifer system and thereby may have a significant adverse effect upon another State, it shall, as far as practicable, assess the possible effects of such activity.

2. Before a State implements or permits the implementation of planned activities which may affect a transboundary aquifer or aquifer system and thereby may have a significant adverse effect upon another State, it shall provide that State with timely notification thereof. Such notification shall be accompanied by available technical data and information, including any environmental impact assessment, in order to enable the notified State to evaluate the possible effects of the planned activities.

3. If the notifying and the notified States disagree on the possible effect of the planned activities, they shall enter into consultations and, if necessary, negotiations with a view to arriving at an equitable resolution of the situation. They may utilize an independent fact-finding body to make an impartial assessment of the effect of the planned activities.

PART FOUR
MISCELLANEOUS PROVISIONS

Article 16
Technical cooperation with developing States

States shall, directly or through competent international organizations, promote scientific, educational, legal and other cooperation with developing States for the protection and management of transboundary aquifers or aquifer systems, including, *inter alia*:

- (a) strengthening their capacity-building in scientific, technical and legal fields;
- (b) facilitating their participation in relevant international programmes;
- (c) supplying them with necessary equipment and facilities;
- (d) enhancing their capacity to manufacture such equipment;
- (e) providing advice on and developing facilities for research, monitoring, educational and other programmes;
- (f) providing advice on and developing facilities for minimizing the detrimental effects of major activities affecting their transboundary aquifer or aquifer system;
- (g) providing advice in the preparation of environmental impact assessments;

(h) supporting the exchange of technical knowledge and experience among developing States with a view to strengthening cooperation among them in managing the transboundary aquifer or aquifer system.

Article 17
Emergency situations

1. For the purpose of the present draft article, “emergency” means a situation, resulting suddenly from natural causes or from human conduct, that affects a transboundary aquifer or aquifer system and poses an imminent threat of causing serious harm to aquifer States or other States.

2. The State within whose territory the emergency originates shall:

(a) without delay and by the most expeditious means available, notify other potentially affected States and competent international organizations of the emergency;

(b) in cooperation with potentially affected States and, where appropriate, competent international organizations, immediately take all practicable measures necessitated by the circumstances to prevent, mitigate and eliminate any harmful effect of the emergency.

3. Where an emergency poses a threat to vital human needs, aquifer States, notwithstanding draft articles 4 and 6, may take measures that are strictly necessary to meet such needs.

4. States shall provide scientific, technical, logistical and other cooperation to other States experiencing an emergency. Cooperation may include coordination of international emergency actions and communications, making available emergency response personnel, emergency response equipment and supplies, scientific and technical expertise and humanitarian assistance.

Article 18
Protection in time of armed conflict

Transboundary aquifers or aquifer systems and related installations, facilities and other works shall enjoy the protection accorded by the principles and rules of international law applicable in international and non-international armed conflict and shall not be used in violation of those principles and rules.

Article 19
Data and information vital to national defence or security

Nothing in the present draft articles obliges a State to provide data or information vital to its national defence or security. Nevertheless, that State shall cooperate in good

faith with other States with a view to providing as much information as possible under the circumstances.

**Convention on the Law of the Non-navigational Uses of
International Watercourses**
1997

Adopted by the General Assembly of the United Nations on 21 May 1997.
Not yet in force. See General Assembly resolution 51/229, annex, *Official
Records of the General Assembly, Fifty-first Session, Supplement No. 49
(A/51/49)*.



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See UN Press Release on the adoption of the Convention, URL: http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf and See Status of the Convention, URL: http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf.

Convention on the Law of the Non-navigational Uses of International Watercourses
Adopted by the General Assembly of the United Nations on 21 May 1997

The Parties to the present Convention,

Conscious of the importance of international watercourses and the non-navigational uses thereof in many regions of the world,

Having in mind Article 13, paragraph 1 (a), of the Charter of the United Nations, which provides that the General Assembly shall initiate studies and make recommendations for the purpose of encouraging the progressive development of international law and its codification,

Considering that successful codification and progressive development of rules of international law regarding non-navigational uses of international watercourses would assist in promoting and implementing the purposes and principles set forth in Articles 1 and 2 of the Charter of the United Nations,

Taking into account the problems affecting many international watercourses resulting from, among other things, increasing demands and pollution,

Expressing the conviction that a framework convention will ensure the utilization, development, conservation, management and protection of international watercourses and the promotion of the optimal and sustainable utilization thereof for present and future generations,

Affirming the importance of international cooperation and good-neighbourliness in this field,

Aware of the special situation and needs of developing countries,

Recalling the principles and recommendations adopted by the United Nations Conference on Environment and Development of 1992 in the Rio Declaration and Agenda 21,

Recalling also the existing bilateral and multilateral agreements regarding the non-navigational uses of international watercourses,

Mindful of the valuable contribution of international organizations, both governmental and non-governmental, to the codification and progressive development of international law in this field,

Appreciative of the work carried out by the International Law Commission on the law of the non-navigational uses of international watercourses,

Bearing in mind United Nations General Assembly resolution 49/52 of 9 December 1994,

Have agreed as follows:

PART I.
INTRODUCTION

Article 1
Scope of the present Convention

1. The present Convention applies to uses of international watercourses and of their waters for purposes other than navigation and to measures of protection, preservation and management related to the uses of those watercourses and their waters.

2. The uses of international watercourses for navigation is not within the scope of the present Convention except insofar as other uses affect navigation or are affected by navigation.

Article 2
Use of terms

For the purposes of the present Convention:

(a) “Watercourse” means a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus;

(b) “International watercourse” means a watercourse, parts of which are situated in different States;

(c) “Watercourse State” means a State Party to the present Convention in whose territory part of an international watercourse is situated, or a Party that is a regional economic integration organization, in the territory of one or more of whose Member States part of an international watercourse is situated;

(d) “Regional economic integration organization” means an organization constituted by sovereign States of a given region, to which its member States have transferred competence in respect of matters governed by this Convention and which has been duly authorized in accordance with its internal procedures, to sign, ratify, accept, approve or accede to it.

Article 3
Watercourse agreements

1. In the absence of an agreement to the contrary, nothing in the present Convention shall affect the rights or obligations of a watercourse State arising from agreements in force for it on the date on which it became a party to the present Convention.

2. Notwithstanding the provisions of paragraph 1, parties to agreements referred to in paragraph 1 may, where necessary, consider harmonizing such agreements with the basic principles of the present Convention.

3. Watercourse States may enter into one or more agreements, hereinafter referred to as “watercourse agreements”, which apply and adjust the provisions of the present Convention to the characteristics and uses of a particular international watercourse or part thereof.

4. Where a watercourse agreement is concluded between two or more watercourse States, it shall define the waters to which it applies. Such an agreement may be entered into with respect to an entire international watercourse or any part thereof or a particular project, programme or use except insofar as the agreement adversely affects, to a significant extent, the use by one or more other watercourse States of the waters of the watercourse, without their express consent.

5. Where a watercourse State considers that adjustment and application of the provisions of the present Convention is required because of the characteristics and uses of a particular international watercourse, watercourse States shall consult with a view to negotiating in good faith for the purpose of concluding a watercourse agreement or agreements.

6. Where some but not all watercourse States to a particular international watercourse are parties to an agreement, nothing in such agreement shall affect the rights or obligations under the present Convention of watercourse States that are not parties to such an agreement.

Article 4
Parties to watercourse agreements

1. Every watercourse State is entitled to participate in the negotiation of and to become a party to any watercourse agreement that applies to the entire international watercourse, as well as to participate in any relevant consultations.

2. A watercourse State whose use of an international watercourse may be affected to a significant extent by the implementation of a proposed watercourse agreement that applies only to a part of the watercourse or to a particular project, programme or use is entitled to participate in consultations on such an agreement and, where appropriate, in the negotiation thereof in good faith with a view to becoming a party thereto, to the extent that its use is thereby affected.

PART II.
GENERAL PRINCIPLES

Article 5
Equitable and reasonable utilization and participation

1. Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner. In particular, an international watercourse shall be used and developed by watercourse States with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse States concerned, consistent with adequate protection of the watercourse.

2. Watercourse States shall participate in the use, development and protection of an international watercourse in an equitable and reasonable manner. Such participation includes both the right to utilize the watercourse and the duty to cooperate in the protection and development thereof, as provided in the present Convention.

Article 6
Factors relevant to equitable and reasonable utilization

1. Utilization of an international watercourse in an equitable and reasonable manner within the meaning of article 5 requires taking into account all relevant factors and circumstances, including:

- (a) Geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;
- (b) The social and economic needs of the watercourse States concerned;
- (c) The population dependent on the watercourse in each watercourse State;
- (d) The effects of the use or uses of the watercourses in one watercourse State on other watercourse States;
- (e) Existing and potential uses of the watercourse;
- (f) Conservation, protection, development and economy of use of the water resources of the watercourse and the costs of measures taken to that effect;
- (g) The availability of alternatives, of comparable value, to a particular planned or existing use.

2. In the application of article 5 or paragraph 1 of this article, watercourse States concerned shall, when the need arises, enter into consultations in a spirit of cooperation.

3. The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is a reasonable and equitable use, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.

Article 7
Obligation not to cause significant harm

1. Watercourse States shall, in utilizing an international watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to other watercourse States.

2. Where significant harm nevertheless is caused to another watercourse State, the States whose use causes such harm shall, in the absence of agreement to such use, take all appropriate measures, having due regard for the provisions of articles 5 and 6, in consultation with the affected State, to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation.

Article 8
General obligation to cooperate

1. Watercourse States shall cooperate on the basis of sovereign equality, territorial integrity, mutual benefit and good faith in order to attain optimal utilization and adequate protection of an international watercourse.

2. In determining the manner of such cooperation, watercourse States may consider the establishment of joint mechanisms or commissions, as deemed necessary by them, to facilitate cooperation on relevant measures and procedures in the light of experience gained through cooperation in existing joint mechanisms and commissions in various regions.

Article 9
Regular exchange of data and information

1. Pursuant to article 8, watercourse States shall on a regular basis exchange readily available data and information on the condition of the watercourse, in particular that of a hydrological, meteorological, hydrogeological and ecological nature and related to the water quality as well as related forecasts.

2. If a watercourse State is requested by another watercourse State to provide data or information that is not readily available, it shall employ its best efforts to comply with the request but may condition its compliance upon payment by the requesting State of the reasonable costs of collecting and, where appropriate, processing such data or information.

3. Watercourse States shall employ their best efforts to collect and, where appropriate, to process data and information in a manner which facilitates its utilization by the other watercourse States to which it is communicated.

Article 10
Relationship between different kinds of uses

1. In the absence of agreement or custom to the contrary, no use of an international watercourse enjoys inherent priority over other uses.

2. In the event of a conflict between uses of an international watercourse, it shall be resolved with reference to articles 5 to 7, with special regard being given to the requirements of vital human needs.

PART III.
PLANNED MEASURES

Article 11
Information concerning planned measures

Watercourse States shall exchange information and consult each other and, if necessary, negotiate on the possible effects of planned measures on the condition of an international watercourse.

Article 12
Notification concerning planned measures with possible adverse effects

Before a watercourse State implements or permits the implementation of planned measures which may have a significant adverse effect upon other watercourse States, it shall provide those States with timely notification thereof. Such notification shall be accompanied by available technical data and information, including the results of any environmental impact assessment, in order to enable the notified States to evaluate the possible effects of the planned measures.

Article 13
Period for reply to notification

Unless otherwise agreed:

(a) A watercourse State providing a notification under article 12 shall allow the notified States a period of six months within which to study and evaluate the possible effects of the planned measures and to communicate the findings to it;

(b) This period shall, at the request of a notified State for which the evaluation of the planned measures poses special difficulty, be extended for a period of six months.

Article 14
Obligations of the notifying State during the period for reply

During the period referred to in article 13, the notifying State:

(a) Shall cooperate with the notified States by providing them, on request, with any additional data and information that is available and necessary for an accurate evaluation; and

(b) Shall not implement or permit the implementation of the planned measures without the consent of the notified States.

Article 15
Reply to notification

The notified States shall communicate their findings to the notifying State as early as possible within the period applicable pursuant to article 13. If a notified State finds that implementation of the planned measures would be inconsistent with the provisions of articles 5 or 7, it shall attach to its finding a documented explanation setting forth the reasons for the finding.

Article 16
Absence of reply to notification

1. If, within the period applicable pursuant to article 13, the notifying State receives no communication under article 15, it may, subject to its obligations under articles 5 and 7, proceed with

the implementation of the planned measures, in accordance with the notification and any other data and information provided to the notified States.

2. Any claim to compensation by a notified State which has failed to reply within the period applicable pursuant to article 13 may be offset by the costs incurred by the notifying State for action undertaken after the expiration of the time for a reply which would not have been undertaken if the notified State had objected within that period.

Article 17

Consultations and negotiations concerning planned measures

1. If a communication is made under article 15 that implementation of the planned measures would be inconsistent with the provisions of article 5 or 7, the notifying State and the State making the communication shall enter into consultations and, if necessary, negotiations with a view to arriving at an equitable resolution of the situation.

2. The consultations and negotiations shall be conducted on the basis that each State must in good faith pay reasonable regard to the rights and legitimate interests of the other State.

3. During the course of the consultations and negotiations, the notifying State shall, if so requested by the notified State at the time it makes the communication, refrain from implementing or permitting the implementation of the planned measures for a period of six months unless otherwise agreed.

Article 18

Procedures in the absence of notification

1. If a watercourse State has reasonable grounds to believe that another watercourse State is planning measures that may have a significant adverse effect upon it, the former State may request the latter to apply the provisions of article 12. The request shall be accompanied by a documented explanation setting forth its grounds.

2. In the event that the State planning the measures nevertheless finds that it is not under an obligation to provide a notification under article 12, it shall so inform the other State, providing a documented explanation setting forth the reasons for such finding. If this finding does not satisfy the other State, the two States shall, at the request of that other State, promptly enter into consultations and negotiations in the manner indicated in paragraphs 1 and 2 of article 17.

3. During the course of the consultations and negotiations, the State planning the measures shall, if so requested by the other State at the time it requests the initiation of consultations and negotiations, refrain from implementing or permitting the implementation of those measures for a period of six months unless otherwise agreed.

Article 19

Urgent implementation of planned measures

1. In the event that the implementation of planned measures is of the utmost urgency in order to protect public health, public safety or other equally important interests, the State planning the measures may, subject to articles 5 and 7, immediately proceed to implementation, notwithstanding the provisions of article 14 and paragraph 3 of article 17.

2. In such case, a formal declaration of the urgency of the measures shall be communicated without delay to the other watercourse States referred to in article 12 together with the relevant data and information.

3. The State planning the measures shall, at the request of any of the States referred to in paragraph 2, promptly enter into consultations and negotiations with it in the manner indicated in paragraphs 1 and 2 of article 17.

PART IV.

PROTECTION, PRESERVATION AND MANAGEMENT

Article 20

Protection and preservation of ecosystems

Watercourse States shall, individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses.

Article 21

Prevention, reduction and control of pollution

1. For the purpose of this article, "pollution of an international watercourse" means any detrimental alteration in the composition or quality of the waters of an international watercourse which results directly or indirectly from human conduct.

2. Watercourse States shall, individually and, where appropriate, jointly, prevent, reduce and control the pollution of an international watercourse that may cause significant harm to other watercourse States or to their environment, including harm to human health or safety, to the use of the waters for any beneficial purpose or to the living resources of the watercourse. Watercourse States shall take steps to harmonize their policies in this connection.

3. Watercourse States shall, at the request of any of them, consult with a view to arriving at mutually agreeable measures and methods to prevent, reduce and control pollution of an international watercourse, such as:

(a) Setting joint water quality objectives and criteria;

(b) Establishing techniques and practices to address pollution from point and non-point sources;

(c) Establishing lists of substances the introduction of which into the waters of an international watercourse is to be prohibited, limited, investigated or monitored.

Article 22
Introduction of alien or new species

Watercourse States shall take all measures necessary to prevent the introduction of species, alien or new, into an international watercourse which may have effects detrimental to the ecosystem of the watercourse resulting in significant harm to other watercourse States.

Article 23
Protection and preservation of the marine environment

Watercourse States shall, individually and, where appropriate, in cooperation with other States, take all measures with respect to an international watercourse that are necessary to protect and preserve the marine environment, including estuaries, taking into account generally accepted international rules and standards.

Article 24
Management

1. Watercourse States shall, at the request of any of them, enter into consultations concerning the management of an international watercourse, which may include the establishment of a joint management mechanism.

2. For the purposes of this article, “management” refers, in particular, to:

(a) Planning the sustainable development of an international watercourse and providing for the implementation of any plans adopted; and

(b) Otherwise promoting the rational and optimal utilization, protection and control of the watercourse.

Article 25
Regulation

1. Watercourse States shall cooperate, where appropriate, to respond to needs or opportunities for regulation of the flow of the waters of an international watercourse.

2. Unless otherwise agreed, watercourse States shall participate on an equitable basis in the construction and maintenance or defrayal of the costs of such regulation works as they may have agreed to undertake.

3. For the purposes of this article, “regulation” means the use of hydraulic works or any other continuing measure to alter, vary or otherwise control the flow of the waters of an international watercourse.

Article 26
Installations

1. Watercourse States shall, within their respective territories, employ their best efforts to maintain and protect installations, facilities and other works related to an international watercourse.

2. Watercourse States shall, at the request of any of them which has reasonable grounds to believe that it may suffer significant adverse effects, enter into consultations with regard to:

(a) The safe operation and maintenance of installations, facilities or other works related to an international watercourse; and

(b) The protection of installations, facilities or other works from wilful or negligent acts or the forces of nature.

PART V.
HARMFUL CONDITIONS AND EMERGENCY SITUATIONS

Article 27
Prevention and mitigation of harmful conditions

Watercourse States shall, individually and, where appropriate, jointly, take all appropriate measures to prevent or mitigate conditions related to an international watercourse that may be harmful to other watercourse States, whether resulting from natural causes or human conduct, such as flood or ice conditions, water-borne diseases, siltation, erosion, salt-water intrusion, drought or desertification.

Article 28
Emergency situations

1. For the purposes of this article, “emergency” means a situation that causes, or poses an imminent threat of causing, serious harm to watercourse States or other States and that results suddenly from natural causes, such as floods, the breaking up of ice, landslides or earthquakes, or from human conduct, such as industrial accidents.

2. A watercourse State shall, without delay and by the most expeditious means available, notify other potentially affected States and competent international organizations of any emergency originating within its territory.

3. A watercourse State within whose territory an emergency originates shall, in cooperation with potentially affected States and, where appropriate, competent international organizations, immediately take all practicable measures necessitated by the circumstances to prevent, mitigate and eliminate harmful effects of the emergency.

4. When necessary, watercourse States shall jointly develop contingency plans for responding to emergencies, in cooperation, where appropriate, with other potentially affected States and competent international organizations.

PART VI.
MISCELLANEOUS PROVISIONS

Article 29
International watercourses and installations
in time of armed conflict

International watercourses and related installations, facilities and other works shall enjoy the protection accorded by the principles and rules of international law applicable in international and non-international armed conflict and shall not be used in violation of those principles and rules.

Article 30
Indirect procedures

In cases where there are serious obstacles to direct contacts between watercourse States, the States concerned shall fulfil their obligations of cooperation provided for in the present Convention, including exchange of data and information, notification, communication, consultations and negotiations, through any indirect procedure accepted by them.

Article 31
Data and information vital to national defence or security

Nothing in the present Convention obliges a watercourse State to provide data or information vital to its national defence or security. Nevertheless, that State shall cooperate in good faith with the other watercourse States with a view to providing as much information as possible under the circumstances.

Article 32
Non-discrimination

Unless the watercourse States concerned have agreed otherwise for the protection of the interests of persons, natural or juridical, who have suffered or are under a serious threat of suffering significant transboundary harm as a result of activities related to an international watercourse, a watercourse State shall not discriminate on the basis of nationality or residence or place where the injury occurred, in granting to such persons, in accordance with its legal system, access to judicial or other procedures, or a right to claim compensation or other relief in respect of significant harm caused by such activities carried on in its territory.

Article 33
Settlement of disputes

1. In the event of a dispute between two or more parties concerning the interpretation or application of the present Convention, the parties concerned shall, in the absence of an applicable

agreement between them, seek a settlement of the dispute by peaceful means in accordance with the following provisions.

2. If the parties concerned cannot reach agreement by negotiation requested by one of them, they may jointly seek the good offices of, or request mediation or conciliation by, a third party, or make use, as appropriate, of any joint watercourse institutions that may have been established by them or agree to submit the dispute to arbitration or to the International Court of Justice.

3. Subject to the operation of paragraph 10, if after six months from the time of the request for negotiations referred to in paragraph 2, the parties concerned have not been able to settle their dispute through negotiation or any other means referred to in paragraph 2, the dispute shall be submitted, at the request of any of the parties to the dispute, to impartial fact-finding in accordance with paragraphs 4 to 9, unless the parties otherwise agree.

4. A Fact-finding Commission shall be established, composed of one member nominated by each party concerned and in addition a member not having the nationality of any of the parties concerned chosen by the nominated members who shall serve as Chairman.

5. If the members nominated by the parties are unable to agree on a Chairman within three months of the request for the establishment of the Commission, any party concerned may request the Secretary-General of the United Nations to appoint the Chairman who shall not have the nationality of any of the parties to the dispute or of any riparian State of the watercourse concerned. If one of the parties fails to nominate a member within three months of the initial request pursuant to paragraph 3, any other party concerned may request the Secretary-General of the United Nations to appoint a person who shall not have the nationality of any of the parties to the dispute or of any riparian State of the watercourse concerned. The person so appointed shall constitute a single-member Commission.

6. The Commission shall determine its own procedure.

7. The parties concerned have the obligation to provide the Commission with such information as it may require and, on request, to permit the Commission to have access to their respective territory and to inspect any facilities, plant, equipment, construction or natural feature relevant for the purpose of its inquiry.

8. The Commission shall adopt its report by a majority vote, unless it is a single-member Commission, and shall submit that report to the parties concerned setting forth its findings and the reasons therefor and such recommendations as it deems appropriate for an equitable solution of the dispute, which the parties concerned shall consider in good faith.

9. The expenses of the Commission shall be borne equally by the parties concerned.

10. When ratifying, accepting, approving or acceding to the present Convention, or at any time thereafter, a party which is not a regional economic integration organization may declare in a written instrument submitted to the depositary that, in respect of any dispute not resolved in accordance with paragraph 2, it recognizes as compulsory ipso facto, and without special agreement in relation to any party accepting the same obligation:

- (a) Submission of the dispute to the International Court of Justice; and/or
- (b) Arbitration by an arbitral tribunal established and operating, unless the parties to the dispute otherwise agreed, in accordance with the procedure laid down in the annex to the present Convention.

A party which is a regional economic integration organization may make a declaration with like effect in relation to arbitration in accordance with subparagraph (b).

PART VII.
FINAL CLAUSES

Article 34
Signature

The present Convention shall be open for signature by all States and by regional economic integration organizations from 21 May 1997 until 20 May 2000 at United Nations Headquarters in New York.

Article 35
Ratification, acceptance, approval or accession

1. The present Convention is subject to ratification, acceptance, approval or accession by States and by regional economic integration organizations. The instruments of ratification, acceptance, approval or accession shall be deposited with the Secretary-General of the United Nations.

2. Any regional economic integration organization which becomes a Party to this Convention without any of its member States being a Party shall be bound by all the obligations under the Convention. In the case of such organizations, one or more of whose member States is a Party to this Convention, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under the Convention. In such cases, the organization and the member States shall not be entitled to exercise rights under the Convention concurrently.

3. In their instruments of ratification, acceptance, approval or accession, the regional economic integration organizations shall declare the extent of their competence with respect to the matters governed by the Convention. These organizations shall also inform the Secretary-General of the United Nations of any substantial modification in the extent of their competence.

Article 36
Entry into force

1. The present Convention shall enter into force on the ninetieth day following the date of deposit of the thirty-fifth instrument of ratification, acceptance, approval or accession with the Secretary-General of the United Nations.

2. For each State or regional economic integration organization that ratifies, accepts or approves the Convention or accedes thereto after the deposit of the thirty-fifth instrument of ratification,

acceptance, approval or accession, the Convention shall enter into force on the ninetieth day after the deposit by such State or regional economic integration organization of its instrument of ratification, acceptance, approval or accession.

3. For the purposes of paragraphs 1 and 2, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by States.

Article 37
Authentic texts

The original of the present Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

IN WITNESS WHEREOF the undersigned Plenipotentiaries, being duly authorized thereto, have signed this Convention.

DONE at New York, this twenty-first day of May one thousand nine hundred and ninety-seven.

ANNEX

ARBITRATION

Article 1

Unless the parties to the dispute otherwise agree, the arbitration pursuant to article 33 of the Convention shall take place in accordance with articles 2 to 14 of the present annex.

Article 2

The claimant party shall notify the respondent party that it is referring a dispute to arbitration pursuant to article 33 of the Convention. The notification shall state the subject matter of arbitration and include, in particular, the articles of the Convention, the interpretation or application of which are at issue. If the parties do not agree on the subject matter of the dispute, the arbitral tribunal shall determine the subject matter.

Article 3

1. In disputes between two parties, the arbitral tribunal shall consist of three members. Each of the parties to the dispute shall appoint an arbitrator and the two arbitrators so appointed shall designate by common agreement the third arbitrator, who shall be the Chairman of the tribunal. The latter shall not be a national of one of the parties to the dispute or of any riparian State of the watercourse concerned, nor have his or her usual place of residence in the territory of one of these parties or such riparian State, nor have dealt with the case in any other capacity.

2. In disputes between more than two parties, parties in the same interest shall appoint one arbitrator jointly by agreement.

3. Any vacancy shall be filled in the manner prescribed for the initial appointment.

Article 4

1. If the Chairman of the arbitral tribunal has not been designated within two months of the appointment of the second arbitrator, the President of the International Court of Justice shall, at the request of a party, designate the Chairman within a further two-month period.

2. If one of the parties to the dispute does not appoint an arbitrator within two months of receipt of the request, the other party may inform the President of the International Court of Justice, who shall make the designation within a further two-month period.

Article 5

The arbitral tribunal shall render its decisions in accordance with the provisions of this Convention and international law.

Article 6

Unless the parties to the dispute otherwise agree, the arbitral tribunal shall determine its own rules of procedure.

Article 7

The arbitral tribunal may, at the request of one of the parties, recommend essential interim measures of protection.

Article 8

1. The parties to the dispute shall facilitate the work of the arbitral tribunal and, in particular, using all means at their disposal, shall:

- (a) Provide it with all relevant documents, information and facilities; and
- (b) Enable it, when necessary, to call witnesses or experts and receive their evidence.

2. The parties and the arbitrators are under an obligation to protect the confidentiality of any information they receive in confidence during the proceedings of the arbitral tribunal.

Article 9

Unless the arbitral tribunal determines otherwise because of the particular circumstances of the case, the costs of the tribunal shall be borne by the parties to the dispute in equal shares. The tribunal shall keep a record of all its costs, and shall furnish a final statement thereof to the parties.

Article 10

Any party that has an interest of a legal nature in the subject matter of the dispute which may be affected by the decision in the case, may intervene in the proceedings with the consent of the tribunal.

Article 11

The tribunal may hear and determine counterclaims arising directly out of the subject matter of the dispute.

Article 12

Decisions both on procedure and substance of the arbitral tribunal shall be taken by a majority vote of its members.

Article 13

If one of the parties to the dispute does not appear before the arbitral tribunal or fails to defend its case, the other party may request the tribunal to continue the proceedings and to make its award. Absence of a party or a failure of a party to defend its case shall not constitute a bar to the proceedings. Before rendering its final decision, the arbitral tribunal must satisfy itself that the claim is well founded in fact and law.

Article 14

1. The tribunal shall render its final decision within five months of the date on which it is fully constituted unless it finds it necessary to extend the time limit for a period which should not exceed five more months.

2. The final decision of the arbitral tribunal shall be confined to the subject matter of the dispute and shall state the reasons on which it is based. It shall contain the names of the members who have participated and the date of the final decision. Any member of the tribunal may attach a separate or dissenting opinion to the final decision.

3. The award shall be binding on the parties to the dispute. It shall be without appeal unless the parties to the dispute have agreed in advance to an appellate procedure.

4. Any controversy which may arise between the parties to the dispute as regards the interpretation or manner of implementation of the final decision may be submitted by either party for decision to the arbitral tribunal which rendered it.

Operational Manual¹

OP 7.50 - Projects on International Waterways

These policies were prepared for use by World Bank staff and are not necessarily a complete treatment of the subject.

OP 7.50
June, 2001

This Operational Policy statement was revised in August 2004 to reflect the term “development policy lending” (formerly adjustment lending), in accordance with OP/BP 8.60, issued in August 2004.

Note: OP and BP 7.50 replace OP and BP 7.50, dated October 1994. Questions may be addressed to the Chief Counsel, Environmentally and Socially Sustainable Development and International Law.

Applicability of Policy

1. This policy applies to the following types of international waterways:

(a) any river, canal, lake, or similar body of water that forms a boundary between, or any river or body of surface water that flows through, two or more states, whether Bank² members or not;

(b) any tributary or other body of surface water that is a component of any waterway described in (a) above; and

(c) any bay, gulf, strait, or channel bounded by two or more states or, if within one state, recognized as a necessary channel of communication between the open sea and other states--and any river flowing into such waters.

2. This policy applies to the following types of projects:

(a) hydroelectric, irrigation, flood control, navigation, drainage, water and sewerage, industrial, and similar projects that involve the use or potential pollution of international waterways as described in para. 1 above; and

(b) detailed design and engineering studies of projects under para. 2(a) above, including those to be carried out by the Bank as executing agency or in any other capacity.

Agreements/Arrangements

¹ Source: The World Bank as found at <http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,print:Y~isCURL:Y~contentMDK:20064667~menuPK:64701637~pagePK:64709096~piPK:64709108~theSitePK:502184,00.html>

² “Bank” includes IBRD and IDA; “loans” include IDA credits and IDA grants; and “project” includes all projects financed under Bank loans or IDA credits, but does not include development policy lending programs supported under Bank loans and IDA credits; and “borrower” refers to the member country in whose territory the project is carried out, whether or not the country is the borrower or the guarantor.

3. Projects on international waterways may affect relations between the Bank and its borrowers and between states (whether members of the Bank or not). The Bank recognizes that the cooperation and goodwill of riparians is essential for the efficient use and protection of the waterway. Therefore, it attaches great importance to riparians' making appropriate agreements or arrangements for these purposes for the entire waterway or any part thereof. The Bank stands ready to assist riparians in achieving this end. In cases where differences remain unresolved between the state proposing the project (beneficiary state) and the other riparians, prior to financing the project the Bank normally urges the beneficiary state to offer to negotiate in good faith with the other riparians to reach appropriate agreements or arrangements.

Notification

4. The Bank ensures that the international aspects of a project on an international waterway are dealt with at the earliest possible opportunity. If such a project is proposed, the Bank requires the beneficiary state, if it has not already done so, formally to notify the other riparians of the proposed project and its Project Details (see BP 7.50, para. 3). If the prospective borrower indicates to the Bank that it does not wish to give notification, normally the Bank itself does so. If the borrower also objects to the Bank's doing so, the Bank discontinues processing of the project. The executive directors concerned are informed of these developments and any further steps taken.

5. The Bank ascertains whether the riparians have entered into agreements or arrangements or have established any institutional framework for the international waterway concerned. In the latter case, the Bank ascertains the scope of the institution's activities and functions and the status of its involvement in the proposed project, bearing in mind the possible need for notifying the institution.

6. Following notification, if the other riparians raise objections to the proposed project, the Bank in appropriate cases may appoint one or more independent experts to examine the issues in accordance with BP 7.50, paras. 8-12. Should the Bank decide to proceed with the project despite the objections of the other riparians, the Bank informs them of its decision.

Exceptions to Notification Requirement

7. The following exceptions are allowed to the Bank's requirement that the other riparian states be notified of the proposed project:

(a) For any ongoing schemes, projects involving additions or alterations that require rehabilitation, construction, or other changes that in the judgment of the Bank (i) will not adversely change the quality or quantity of water flows to the other riparians; and (ii) will not be adversely affected by the other riparians' possible water use. This exception applies only to minor additions or alterations to the ongoing scheme; it does not cover works and activities that would exceed the original scheme, change its nature, or so alter or expand its scope and extent as to make it appear a new or different scheme. In case of doubt regarding the extent to which a project meets the criteria of this exception, the executive directors representing the riparians concerned are informed and given at least two months to reply. Even if projects meet the criteria of this exception, the Bank tries to secure compliance with the requirements of any agreement or arrangement between the riparians.

(b) Water resource surveys and feasibility studies on or involving international waterways. However, the state proposing such activities includes in the terms of reference for the activities an examination of any potential riparian issues.

(c) Any project that relates to a tributary of an international waterway where the tributary runs exclusively in one state and the state is the lowest downstream riparian, unless there is concern that the project could cause appreciable harm to other states.

Presentation of Loans to the Executive Directors

8. The Project Appraisal Document (PAD) for a project on an international waterway deals with the international aspects of the project, and states that Bank staff have considered these aspects and are satisfied that

(a) the issues involved are covered by an appropriate agreement or arrangement between the beneficiary state and the other riparians; or

(b) the other riparians have given a positive response to the beneficiary state or Bank, in the form of consent, no objection, support to the project, or confirmation that the project will not harm their interests; or

(c) in all other cases, in the assessment of Bank staff, the project will not cause appreciable harm to the other riparians, and will not be appreciably harmed by the other riparians' possible water use. The PAD also contains in an annex the salient features of any objection and, where applicable, the report and conclusions of the independent experts.

THE CAMPIONE CONSOLIDATION OF THE ILA RULES
ON
INTERNATIONAL WATER RESOURCES

1966-1998*

CHAPTER I

GENERAL

Article 1

The general rules of international law as set forth in these Chapters apply to the use of the waters of an international drainage basin except as may be provided otherwise by convention, agreement, or binding custom among the basin States.

Article 2

1. An international drainage basin is a geographical area extending over two or more States determined by the watershed limits of the system of waters, including surface and ground waters flowing into a common terminus.
2. The waters of an aquifer that is intersected by the boundary between two or more States are international ground waters and such an aquifer with its waters forms an international basin or part thereof. Those States are basin States whether or not the aquifer and its waters form with surface waters part of a hydraulic system flowing into a common terminus.
3. As used in these Rules,
"aquifer" means all underground strata capable of yielding water on a practicable basis, including fissured or fractured rock formations and the structures containing deep, so-called "fossil waters";
"basin State" means a State the territory of which includes a portion of an international drainage basin.

CHAPTER II

GENERAL PRINCIPLES

Article 3

Each 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.

Article 4

1. What is a reasonable and equitable share within the meaning of Article 3 is to be determined in the light of all the relevant factors in each particular case.

1. Relevant factors which are to be considered include, but are not limited to:
 - a) the geography of the drainage basin, including in particular the extent of the drainage area in the territory of each basin State;
 - b) the hydrology of the basin, including in particular the contribution of water by each basin State;
 - c) the interdependence of the underground waters and other waters, including any interconnections between aquifers, and any leaching into aquifers caused by activities in areas under the jurisdiction of basin States;
 - d) the climate affecting the basin;
 - e) the population dependent on the waters of the basin in each basin State;
 - f) the economic and social needs of each basin State;
 - g) the past utilization of the waters of the basin, including in particular existing utilization;
 - h) the comparative costs of alternative means of satisfying the economic and social needs of each basin State;
 - i) the availability of other resources;
 - j) the avoidance of unnecessary waste in the utilization of waters of the basin;
 - k) the practicability of compensation to one or more of the co-basin States as a means of adjusting conflicts among uses; and
 - l) the degree to which the needs of a basin State may be satisfied, without causing substantial injury to a co-basin State.

3. The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is a reasonable and equitable share, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.

Article 5

A use or category of uses is not entitled to any inherent preference over any other use or category of uses.

Article 6

A basin State may not be denied the present reasonable use of the waters of an international drainage basin to reserve for another State a future use of such waters.

Article 7

1. An existing reasonable use of water may continue in operation unless the factors justifying its continuance are outweighed by other factors leading to the conclusion that it be modified or terminated so as to accommodate a competing incompatible use.
2. (a) A use that is in fact operational is deemed to have been an existing use from the time of the initiation of construction directly related to the use or, where such construction is not required, the undertaking of comparable acts of actual implementation.

(b) Such a use continues to be an existing use until such time as it is discontinued with the intention that it be abandoned.

3. A use will not be deemed an existing use if at the time of becoming operational it is incompatible with an already existing reasonable use.

Article 8

A basin State shall refrain from and prevent acts or omissions within its territory that will cause substantial injury to another basin State, provided that the application of the principle of equitable utilization as set forth in the above Articles does not justify an exception in a particular case.

Article 9

In the case of a breach of a State's international obligations relating to the waters of an international drainage basin, the State shall cease the wrongful conduct and shall pay compensation for the damage resulting therefrom.

Article 10

Consistent with the principle of equitable utilization, States shall, individually and, where appropriate, in cooperation with other basin States, take all reasonable measures to ensure stream flows adequate to protect the biological, chemical, and physical integrity of international watercourses, including their estuarine zones.

Article 11

Basin States shall cooperate in a spirit of good faith and good neighborliness in matters relating to the waters of the basin.

Article 12

The rights and obligations of States under the Chapters below are subject to the principle of equitable utilization set forth in the above Articles.

CHAPTER III

POLLUTION

Article 13

As used in this chapter:

"pollution" includes both continental sea-water pollution and water pollution;

"water pollution" means any detrimental change resulting from human conduct in the natural composition, content, or quality of the waters of an international drainage basin;

"continental sea-water pollution" means any detrimental change in the natural composition, content or quality of sea water resulting from human conduct taking place within the limits of the national jurisdiction of a State, including inter alia the discharge or introduction of substances directly into the sea from pipelines, extended outlets, or ships, or indirectly through rivers or other watercourses whether natural or artificial, or through atmospheric fall-out;

“damage” includes inter alia:

- a) loss of life or personal injury
- b) loss of or injury to property; and
- c) the costs of reasonable measures to prevent or minimize such loss of injury;

“damage to the environment” means:

- a) harm to the environment of an international drainage basin, the costs of reasonable measures to prevent or minimize this harm, and any other loss or damage caused by these measures; and
- b) the costs of reasonable measures of reinstatement or restoration of the environment of the drainage basin actually undertaken or to be undertaken; and

“person” means any natural or juridical person.

Article 14

1. Consistent with applicable international rules and standards, States in using the waters of an international drainage basin shall, insofar as technically and economically feasible, ensure that:
 - a) waste, pollutants, and hazardous substances are handled, treated, and disposed of in the manner that produces the least transboundary environmental harm;
 - b) the development and use of water resources within their jurisdiction do not cause substantial damage to the environment of other States or of areas beyond the limits of national jurisdiction;
 - c) the management of their natural resources (other than water) and other environmental elements located within their own boundaries does not cause substantial damage to the natural condition of the waters of other States;
 - d) activities within their territory do not create any new form of water pollution or any increase in the degree of existing water pollution in an international drainage basin that would cause substantial damage in the territory of another basin State or to any of its rights under international law, or to the marine environment, special attention being given to the long-term effects of the pollution of ground waters;
 - e) all reasonable measures are taken to abate existing water pollution in an international drainage basin to such an extent that no substantial damage of the kind described in paragraph d) is caused; and
 - f) further steps are taken to reduce any water pollution to the lowest level that is practicable and reasonable under the circumstances.
2. The provisions of this Article apply to pollution originating within or outside the territory of a State, if it is caused by that State’s conduct.

Article 15

Notwithstanding the provisions of Articles 11 and 14 above, States shall not discharge or permit the discharge of substances generally considered to be highly dangerous into the waters of an international drainage basin.

Article 16

States should establish, as soon as possible, international standards for the control of continental sea-water pollution, having regard to all relevant factors, including the following:

- a) the geography and hydrography of the area (inland waters, territorial sea, contiguous zone, and continental shelf);
- b) climatological conditions;
- c) quality and composition of affected sea waters;
- d) the conservation of the maritime environment (flora and fauna);
- e) the resources of the sea-bed and the subsoil and their economic value for present and potential users;
- f) the recreational facilities of the coastal area;
- g) the past, present and future utilization of the coastal area and sea water;
- h) the economic and social needs of the coastal States involved;
- i) the existence of alternative means for waste disposal;
- j) the adaptation of detrimental changes to beneficial human uses; and
- k) the avoidance of unnecessary waste-disposal.

Article 17

1. In order to ensure an effective system of prevention and abatement of water pollution of an international drainage basin, basin states should set up appropriate international administrative machinery for the entire basin. In any event, they should:
 - a) coordinate or pool their scientific and technical research programs to combat water pollution;
 - b) establish harmonized, coordinated, or unified networks for permanent observation and pollution control; and
 - c) establish joint water quality objectives and standards for the whole or part of the basin.
2. Basin States should consider establishing joint or parallel quality standards and environmental protection measures applicable to their international ground waters and aquifers in the basin for the purpose of preserving them from degradation and of protecting the geologic structure of the aquifers, including recharge areas, from impairment.

CHAPTER IV

NAVIGATION

Article 18

1. This Chapter refers to those rivers and lakes portions of which are both navigable and separate

or traverse the territories of two or more States.

2. Rivers or lakes are “navigable” if in their natural or canalized state they are currently used for commercial navigation or are capable by reason of their natural condition of being so used.
3. In this Chapter, the term “riparian State” refers to a State through or along which the navigable portion of a river flows or a lake lies.

Article 19

Subject to any limitations or qualifications referred to in these Rules, each riparian State is entitled to enjoy rights of free navigation on the entire course of a river or lake.

Article 20

“free navigation” used in this Chapter, includes the following freedoms for vessels of a riparian State on a basis of equality:

- a) freedom of movement on the entire navigable course of the river or lake;
- b) freedom to enter ports and to make use of plants and docks; and
- c) freedom to transport goods and passengers, either directly or through transshipment, between the territory of one riparian State and the territory of another riparian State and between the territory of a riparian State and the open sea.

Article 21

A riparian State may exercise rights of police, including but not limited to the protection of public safety and health, over that portion of the river or lake subject to its jurisdiction, provided that the exercise of these rights does not unreasonably interfere with the enjoyment of the rights of free navigation defined in Articles 19 and 20.

Article 22

Each riparian State may restrict or prohibit the loading by vessels of a foreign State of goods and passengers in its territory for discharge there.

Article 23

A riparian State may grant rights of navigation to nonriparian States on rivers or lakes within its territory.

Article 24

Each riparian State shall, to the extent of the means available or made available to it, maintain in good order that portion of the navigable course of a river or lake within its jurisdiction.

Article 25

The rules stated in this Chapter are not applicable to the navigation of vessels of war or of vessels performing police or administrative functions, or, in general, exercising any other form of public authority.

Article 26

In time of war, other armed conflict, or public emergency constituting a threat to the life of the State, a basin State may take measures derogating from its obligations under this Chapter to the extent strictly required by the exigencies of the situation, provided that such measures are not inconsistent with its other obligations under international law. The basin State shall in any case facilitate navigation for humanitarian purposes.

CHAPTER V

TIMBER FLOATING

Article 27

The floating of timber on an international river or lake is governed by the provisions of this Chapter except in cases in which the floating is governed by rules of navigation according to applicable law or custom binding upon the riparians.

Article 28

The States riparian to an international river or lake utilized for navigation may determine by common consent whether and under what conditions timber floating may be permitted upon that river or lake.

Article 29

1. Each State riparian to an international river or lake not used for navigation should, with due regard to other uses, authorize other riparian States to use that river or lake and its banks within its territory for the floating of timber.
2. This authorization should extend to all necessary work along the banks by the floating crew and to the installation of such facilities as may be required for the timber floating.

Article 30

If a riparian State requires a permanent installation for timber floating inside the territory of a co-riparian State or if it is necessary to regulate the flow of the waters, all questions connected with these installations and measures should be determined by agreement between the States concerned.

CHAPTER VI

FLOOD CONTROL

Article 31

As used in this Chapter,

“floods” means the rising of water levels that would have detrimental effects on life and property in co- basin States; and

“flood control” means the taking of all appropriate steps to protect land areas from floods or to minimize damage therefrom.

Article 32

Basin States shall co-operate in measures of flood control in a spirit of good neighborliness, having due regard to the interests and well-being of each other.

Article 33

Co-operation with respect to flood control may, by agreement between basin States, include among others:

- a) collection and exchange of relevant data;
- b) preparation of surveys, investigations, and studies, and their mutual exchange;
- c) planning and designing of relevant measures;
- d) execution of flood control measures;
- e) operation and maintenance of works;
- f) flood forecasting and communication of flood warnings; and
- g) setting up of a regular information service charged to transmit the height of water levels and the discharge quantities.

Article 34

1. Basin States should communicate amongst themselves as soon as possible on any occasion such as heavy rainfalls, sudden melting of snow or other events likely to create floods and dangerous rises of water levels in their territory.
2. Basin States should set up an effective system of transmission in order to fulfil the provisions contained in paragraph 1, and should ensure priority to the communication of flood warnings in emergency cases. If necessary a special system of translation should be built up between the basin States.

Article 35

1. The use of the channel of rivers and lakes for the discharge of excess waters shall be free and not subject to any limitation provided this is not incompatible with the object of flood control.
2. Basin States should maintain in good order their portions of water courses including works for flood control.

3. Basin States may undertake schemes of drainage, river draining, conservation of soil against erosion, and dredging, and the removal of stones, gravel, or sand from the beds of its portions of an international drainage basin, provided that, in executing any of these activities, they avoid any unreasonable interference with the object of flood control, and provided that the activities are not contrary to any legal restrictions that may exist otherwise.
4. Basin States should ensure the prompt execution of repairs or other emergency measures for minimization of damage by flooding during periods of high waters.

Article 36

A basin State is not liable to pay compensation for damage caused to another basin State by floods originating in that Basin State unless it has acted contrary to what could be reasonably expected under the circumstances, and unless the damage caused is substantial.

CHAPTER VII

PROTECTION OF WATER RESOURCES AND WATER
INSTALLATIONS IN TIMES OF ARMED CONFLICT

Article 37

Water which is indispensable for the health and survival of the civilian population should not be poisoned or rendered otherwise unfit for human consumption.

Article 38

Water supply installations that are indispensable for the minimum conditions of survival of the civilian population should not be cut off or destroyed.

Article 39

The diversion of waters for military purposes should be prohibited when it would cause disproportionate suffering to the civilian population or substantial damage to the ecological balance of the area concerned. A diversion that is carried out in order to damage or destroy the minimum conditions of survival of the civilian population or the basic ecological balance of the area concerned or in order to terrorize the population should also be prohibited.

Article 40

The destruction of water installations containing dangerous forces, such as dams and dikes, should be prohibited when it may involve grave dangers to the civilian population or substantial damage to the basic ecological balance.

Article 41

The causing of floods as well as any other interference with the hydrologic balance by means not mentioned in Articles 37 to 40 above should be prohibited when it involves grave dangers to the civilian population or substantial damage to the ecological balance of the area concerned.

Article 42

1. The prohibitions contained in Articles 38 to 41 above should be applied also in occupied enemy territories.
2. The occupying power should administer enemy property according to the indispensable requirements of the hydrologic balance.
3. In occupied territories, seizure, destruction, or intentional damage to water installations should be prohibited when their integral maintenance and effectiveness would be vital to the health and survival of the civilian population.

Articles 43

The effect of the outbreak of war on the validity of treaties or of parts thereof concerning the use of water resources should not be termination but only suspension. This suspension should take place only when the purpose of the war or military necessity imperatively demands the suspension and when the minimum requirements of subsistence for the civil population are safeguarded.

Article 44

1. It should be prohibited to deprive, by the provisions of a peace treaty or similar instrument, a people of its water resources to such an extent that a threat to the health or to the economic or physical conditions of survival is created.
2. When, as the result of the fixing of a new frontier, the hydraulic system in the territory of one State is dependent on works established within the territory of another State, arrangements should be made for the safeguarding of uninterrupted delivery of water supplies indispensable for the vital needs of the people.

CHAPTER VIII

ADMINISTRATION OF INTERNATIONAL WATER RESOURCES

Article 45

As used in this Chapter, "international water resources administration" means any form of institutional or other arrangement established by agreement among two or more basin States for the purpose of dealing with the conservation, development, and utilization of the waters of an international drainage basin.

Article 46

Basin States shall use their best efforts to achieve integrated management of the waters of their international drainage basins.

Article 47

1. When undertaking a joint management of the waters of an international drainage basin, States should settle all matters concerning this management by an agreement on the establishment of an international administration. When necessary, a joint agency or commission should be established and authorized to manage all relevant aspects of the management.
2. The establishment of an international water resources administration in accordance with paragraph 1 above is without prejudice to the existence or subsequent designation of any joint agency, conciliation commission, or tribunal formed or referred to by co-basin States in the case of a question or dispute relating to the present or future utilization of the waters of an international drainage basin.

Article 48

1. In order to provide for an effective international water resources administration, the agreement establishing that administration should expressly state, among other things, its objective or purpose, nature and composition, form and duration, legal status, area of operation, functions and powers, and its financial implications.
2. The Guidelines set forth in Annex A to these Rules should be taken into account when an international water resources administration is to be established.

Article 49

Unless otherwise agreed, each basin state party to an agreement establishing an international water resources administration shall bear a share of its costs proportionate to the benefits that it derives from that administration.

Article 50

Member States of an international water resources administration should in appropriate cases invite other States, including non-basin States or international organizations which by treaty, other instrument, or binding custom enjoy a right or have an interest in the use of the waters of an international drainage basin, to participate in the activities of the administration.

CHAPTER IX

REMEDIES

Article 51

1. States, individually or jointly, shall ensure the availability of prompt, adequate, and effective administrative and judicial remedies for persons in another State who suffer or may suffer substantial damage arising from the inequitable or unreasonable use of the waters of an international drainage basin in their territories.
2. For the purpose of giving effect to this obligation, States shall ensure cooperation between

their competent courts and authorities, and shall take measures to ensure that any persons who suffer or may suffer damage resulting from the use in another State of the waters of an international drainage basin shall have access to such information as is necessary to enable them to exercise their rights under these Articles in a prompt manner.

3. States should provide, by agreement or otherwise, for such matters as the jurisdiction of courts, the applicable law, and the enforcement of judgments.

Article 52

1. Any person who suffers or may suffer damage resulting from the use in another State of the waters of an international drainage basin shall be entitled in that State to the same extent and on the same conditions as a person in that State:
 - a) to participate in any environmental impact assessment procedure;
 - b) to institute proceedings before an appropriate court or administrative authority of that other State in order to determine whether the damaging use or activity should be permitted;
 - c) to obtain preventive remedies;
 - d) to obtain compensation; and
 - e) to obtain information necessary for the above purposes.
2. Public bodies and non-governmental associations established in a State which are or may be affected by damage, including damage to the environment, caused by the use of waters of an international drainage basin in another State shall be entitled on condition of reciprocity to initiate proceedings or participate in procedures in that other State to the same extent and on the same conditions as public bodies and non-governmental associations established there.

CHAPTER X

PROCEDURES FOR THE PREVENTION AND SETTLEMENT OF DISPUTES

Article 53

This Chapter relates to procedures for the prevention and settlement of international disputes as to the legal rights or other interests of basin States and of other States in the waters of an international drainage basin.

Article 54

Consistently with the Charter of the United Nations, States are under an obligation to settle international disputes as to their legal rights or other interests by peaceful means in such a manner that international peace and security, and justice are not endangered.

Article 55

1. States are under a primary obligation to resort to means of prevention and settlement of disputes stipulated in the applicable treaties binding upon them.
2. States are limited to the means of prevention and settlement of disputes stipulated in treaties binding upon them only to the extent provided by the applicable treaties.

Article 56

In using the waters of an international basin, States individually or jointly as appropriate shall ensure prior assessment of the impact of programmes or projects that may have a significant transboundary effect on the environment or on the sustainable use of the waters.

Article 57

1. With a view to preventing disputes from arising between basin States as to their legal rights or other interests, each basin State shall furnish relevant and reasonably available information to the other basin States concerning the waters of a drainage basin within its territory and its use of and activities with respect to these waters.
2. Expenses for the collection and exchange of information, including the preparation of surveys, investigations and studies, and for establishing a regular information service shall be borne jointly by the basin States cooperating in these matters.

Article 58

1. When a basin State, regardless of its location in a drainage basin, proposes to undertake, or to permit the undertaking of, a project that may substantially affect the interests of any co-basin State, it shall give that State notice of the project. The notice shall include information, data and specifications adequate for assessment of the effects of the project.
2. After having received the notice required by paragraph 1, a basin State shall have a reasonable period of time, which shall be not less than six months, to evaluate the project and to communicate its reasoned objection to the proposing State. During that period the proposing State shall not proceed with the project.
3. If a basin State does not object to the project within the time permitted under paragraph 2, the proposing State may proceed with the project in accordance with the notice.
4. If a basin State objects to the project, the States concerned shall make every effort expeditiously to settle the matter consistent with the procedures set forth in this Chapter. The proposing State shall not proceed with the project while these efforts are continuing, provided that they are not unduly protracted. If these efforts are unduly protracted, or an objecting State has refused to have resort to third party procedures for settlement of the remaining differences, the proposing State may, on its own responsibility, proceed with the project in accordance with the notice.
5. If a State has failed to give the notice referred to in paragraph 1 of this Article, the alteration by the State in the regime of the drainage basin shall not be given the weight normally accorded to temporal priority in use in the event of a determination of what is a reasonable and equitable share in the use of the waters of the basin.

6. The notice and other communications referred to in this Article shall be transmitted through appropriate official channels unless otherwise agreed.

Article 59

Basin States shall consult one another on actual or potential problems concerning the waters of the drainage basin so as to reach by methods of their own choice a solution consistent with their rights and duties under international law. This consultation, however, shall not unreasonably delay the implementation of plans that are the subject of the consultation.

Article 60

In case of a dispute between States as to their legal rights or other interests, as defined in Article 53 above, they shall promptly enter into negotiations with a view to reaching a solution that is equitable under the circumstances.

Article 61

1. If a question or dispute arises which relates to the present or future utilization of the waters of an international drainage basin, the basin States should refer the question or dispute to a joint agency and request the agency to survey the international drainage basin and to formulate plans or recommendations for the most efficient use thereof in the interests of all the States concerned.
2. The joint agency should be instructed to submit reports on all matters within its competence to the appropriate authorities of the States concerned.
3. The member States of the joint agency in appropriate cases should invite non-basin States that by treaty enjoy a right in the use of the waters of the basin, to associate themselves with the work of the joint agency, or permit them to appear before the agency.

Article 62

If a question or a dispute is one which is considered by the States concerned to be incapable of resolution in the manner set forth in Article 61, they should jointly seek the good offices or request the mediation of a third State, of a qualified international organization, or of a qualified person.

Article 63

1. If the States concerned have not been able to resolve their dispute through negotiation or have been unable to agree on the measures described in Articles 61 and 62, they should form a commission of inquiry or an ad hoc conciliation commission, which shall endeavor to find a solution, likely to be accepted by the States concerned, of any dispute as to their legal rights.
2. The conciliation commission should be constituted in the manner set forth in Annex B to these Rules.

Article 64

The States concerned should agree to submit their legal disputes to an ad hoc arbitral tribunal, to a permanent arbitral tribunal, or to the International Court of Justice if:

- a) a commission has not been formed as provided in Article 63, or
- b) a commission has not been able to recommend a solution, or
- c) a solution recommended by a commission has not been accepted by the States concerned, or
- d) an agreement has not been otherwise arrived at.

Article 65

In the event of arbitration, the States concerned should have recourse to the Model Rules on Arbitral Procedure prepared by the International Law Commission of the United Nations at its tenth session in 1958.

Article 66

Recourse to arbitration implies the undertaking by the States concerned to consider the award to be given as final and to submit in good faith to its execution.

Article 67

The means of settlement referred to in this Chapter are without prejudice to the utilization of means of settlement of disputes recommended to, or required of, members of regional arrangements or agencies and of other international organizations.

* The Articles that follow are a consolidation prepared by the Water Resources Committee at Campione d'Italia in June 1999 under the chairmanship of Professor Charles Bourne. These articles comprise the rules on international water resources as adopted by the International Law Association between 1966 and 1998.

The Water Resources Committee is now considering revision of these rules to reflect developments that have occurred since the original rules were adopted.

ANNEX A

GUIDELINES FOR THE ESTABLISHMENT OF AN INTERNATIONAL WATER RESOURCES ADMINISTRATION

(In implementation of Article 49, paragraph 2, on International Water Resources Administration)

In establishing an international water resources administration, member States should consider, on the basis of the requirements of each particular case, the elements contained in the following guidelines:

1. Form and duration of an international water resources administration will depend on all relevant factors identified in these guidelines, including:
 - a) its duration, which may be ad hoc or permanent, and
 - b) its constitution, which may take the form of:
 - i. separate national commissions or agencies;
 - ii. a joint commission or agency composed of national representatives, interest groups or representatives of users;
 - iii. a mixed commission or agency;
 - iv. a commission or agency vested with super national decision-making powers.
2. Procedures for decision-making will include:
 - a) a quorum (for the validity of the meeting) which will depend on the importance of the decision to be taken;
 - b) the principle of either unanimity, simple or qualified majority, or another combined form of decision-making.
3. The legal status of an international water resources administration vis-a-vis both its member States and other States not parties to the administration as well as vis-a-vis international and other organizations should be defined. Such legal status will cover:
 - a) the managing body;
 - b) the staff;
 - c) assets, equipment and other properties;
 - d) the whole administration as such, including the power to sue and to be sued.
4. The territorial competence (ratione loci) of an international water resources administration should be defined. The choice will depend on a number of factors, such as: the extent of the drainage area with respect to each member State; the contribution of water by each basin State to the hydrology of the basin; the economic and social requirements of the basin States; local interests; the other relevant factors to be considered in each particular case, having regard to Article V of the Helsinki Rules.

Territorial competence may include:

 - a) the whole drainage basin, including surface water, underground waters, or both;
 - b) more than one basin (multi-basin);
 - c) part of a drainage basin (sub-basin);
 - d) an area otherwise defined and clearly delimited;
 - e) all or part of boundary waters.
5. The functions and powers of an international water resources administration should be defined. These may vary from case to case, depending upon various factors including:
 - a) (a) the kind of co-operation envisaged;
 - b) (b) the desired degree of involvement in international administration;
 - c) (c) the specific fields for which it is proposed to establish the administration.

Such functions and powers may include, without being limited to, one or more of the following:

 - a) Advisory, consultative, co-ordinating, or policy-making functions. In these cases, the agreement should specify the procedural rules for deciding on conflicting rights and interests, including notification, objections and timing.
 - b) Executive function, which may include carrying out of studies, exploration, investigation and surveys, preparation of feasibility reports, inspection and control of construction, operation, maintenance or financing.
 - c) Regulatory function, the implementation of the decisions of the administration, as well as law-making. Decisions in these matters may take effect directly or after acceptance by member States.
 - d) Judicial function, which may include arbitration or final dispute settlement.
6. As regards the objects and purposes (ratione materiae) of an international water resources administration, these may include one or more of the following:
 - a) collection and exchange of hydrological, technical and other data, which may be undertaken by member States separately or jointly, and their standardization;
 - b) plan formulation, which may include the exchange of plans prepared separately by member States or jointly formulated plans;
 - c) co-ordination of plans;
 - d) construction of waterworks, which may be undertaken by member States separately or jointly, or which may be entrusted to a non-member State or to some organization;
 - e) waterworks operation and maintenance, which may be entrusted to each member State concerned separately or to a joint administration;
 - f) control of one or more beneficial uses of water which may include:
 - i. domestic and community uses;
 - ii. agricultural uses, including the watering of animals and agro-allied

industrial uses, including cooling; hydropower generation and transmission; navigation; timber floating; fishing; and other beneficial uses of common interest;

- g) control of one or more harmful effects of water which may include:
- i. flood control measures, which may imply flow regulations and training;
 - ii. embankment construction and maintenance;
 - iii. drought warning, prevention, reduction, and control;
 - iv. soil erosion control;
 - v. land reclamation, including salinity control and drainage;
 - vi. dredging, maintenance and improvement of the navigable section of an international watercourse;
 - vii. siltation control;
 - viii. other harmful effects of common interests;
- h) water quality control, including such coastal sea areas of the member States which may be adversely affected, and which may include:
- i. prevention and abatement of water pollution resulting from one or more beneficial uses, and harmful effects, and the measures to be taken separately or jointly by member States;
 - ii. health preservation, including human beings and genetic resources (animals and plants), and the measures to be taken separately or jointly by member States;
 - iii. environmental protection with reference to the waters of the basin, including minimum standards and measures to be taken separately or jointly by member States.
7. In establishing an international resources administration, one or more of the following financial and economic matters should be considered:
- a) internal financing of the administration, including cost sharing and sharing criteria;
 - b) development financing of projects and works, in particular including:
 - i. cost sharing and criteria for sharing (based on at-site benefit analysis, system development);
 - ii. procedures and criteria for compensation;
 - iii. sharing of benefits including the assessment and collection of revenues and criteria for sharing;
 - c) external financing, with particular reference to the powers of the administration necessary to enter into agreements for this purpose.
8. The agreement establishing an international water resources administration should contain provisions for the settlement of disputes arising out of its interpretation and implementation.

ANNEX B

MODEL RULES FOR THE CONSTITUTION OF THE CONCILIATION COMMISSION FOR THE SETTLEMENT OF A DISPUTE

(In implementation of Article 62, paragraph 2)

Article 1

The members of the Commission, including the President, shall be appointed by the States concerned.

Article 2

If the States concerned cannot agree on these, each State shall appoint two members. The members thus appointed shall choose one more member who shall be the President of the Commission. If the appointed members do not agree, the member-president shall be appointed, at the request of any State concerned, by the President of the International Court of Justice or, if he does not make the appointment, by the Secretary-General of the United Nations.

Article 3

The membership of the Commission should include persons who, by reason of their special competence, are qualified to deal with disputes concerning international drainage basins.

Article 4

If a member of the Commission abstains from performing his office or is unable to discharge his responsibilities, he shall be replaced by the procedure set out in Article 1 or 2 of this Annex, according to the manner in which he was originally appointed. If, in the case of:

1. a member originally appointed under Article 1, the States fail to agree as to replacement, or
2. a member originally appointed under Article 2, the State involved fails to replace the member,

a replacement shall be chosen, at the request of any State concerned, by the President of the International Court of Justice or, if he does not choose the replacement, by the Secretary-General of the United Nations.

Article 5

In the absence of agreement to the contrary between the parties, the Conciliation Commission shall determine the place of its meetings and shall lay down its own procedure.

Abstract from Commentary to the Helsinki Rules on the Uses of the Waters of International Rivers

ILA Report of the Fifty—Second Conference, Helsinki 1966, at 484, 484-505 (1966, 1987): Arts. J-XI 4.

(a) General. This Article (equitable and reasonable utilization) reflects the key principle of international law that every basin State in an international drainage basin has the right to the reasonable use of the waters of the drainage basin. It rejects the unlimited sovereignty position, exemplified by the “Harmon Doctrine” which has been cited as supporting the proposition that a State has the unqualified right to utilize and dispose of the waters of an international river flowing through its territory; such a position imports its logical corollary, that a State has no right to demand continued flow from co-basin States.

The Harmon Doctrine has never had a wide following among States and has been rejected by virtually all States which have had an occasion to speak out on this point.

This Article recognizes that each basin State has rights equal in kind and correlative with those of each co-basin State. Of course, equal and correlative rights of use among the co-basin States does not mean that each such State will receive an identical share in the uses of the waters. Those will depend upon the weighing of factors considered in Article V.

A use of a basin State must take into consideration the economic and social needs of its co-basin States for use of the waters, and vice-versa. This consideration may result in one co basin State receiving the right to use water in quantitatively greater amounts than its neighbors in the basin. The idea of equitable sharing is to provide the maximum benefit to each basin State from the uses of the waters with the minimum detriment to:

(b) Beneficial Use. To be worthy of protection a use must be “beneficial” that is to say, it must be economically or socially valuable, as opposed, for example, to a diversion of waters by one State merely for the purpose of harassing another.

A “beneficial use” need not be the most productive use to which the water may be put, nor need it utilize the most efficient methods known in order to avoid waste and insure maximum utilization. As to the former, to provide otherwise would dislocate numerous productive and, indeed, essential portions of national economies; the latter, while a patently imperfect solution, reflects the financial limitations of many States; in its application, the present rule is not designed to foster waste but to hold States to a duty of efficiency which is commensurate with their financial resources. Of course, the ability of a State to obtain international financing will be considered in this context. Thus, State A, an economically advanced and prosperous state which utilizes the inundation method of irrigation, might be required to develop a more efficient and less wasteful system forthwith, while State B, an underdeveloped State using the same method might be permitted additional time to obtain the means to make the required improvements.

Comment to Article V

(a) General. This Article provides the express, but flexible guide lines essential to insuring the protection of the “equal right” of all basin States to share the waters. Under the rules set forth “all the relevant factors” must be considered. An exhaustive list of factors cannot readily be compiled, for there would

likely be others applicable to particular cases.

This Article states some of the factors to be considered in determining what is a reasonable and equitable share.

Stated somewhat more generally, the factor-analysis approach seeks primarily to determine whether (i) the various uses are compatible, (ii) any of the uses is essential to human life, (iii) the uses are socially and economically valuable, (iv) other resources are available, (v) any of the uses is "existing" within the meaning of Article VII, (vi) it is feasible to modify competing uses in order to accommodate all to some degree, (vii) financial contributions by one or more of the interested basin States for the construction of works could result in the accommodation of competing uses, (viii) the burden could be adjusted by the payment of compensation to one or more co-basin States, and (ix) overall efficiency of water utilization could be improved in order to increase the amount of available water.

In short, no factor has a fixed weight nor will all factors be relevant in all cases. Each factor is given such weight as it merits relevant to the other factors. And no factor occupies a position of pre-eminence per se with respect to any other factor. Further, to be relevant, a factor must aid in the determination or satisfaction of the social and economic needs of the co-basin States.

By way of example, suppose that State A, a lower co-basin State, has, for many years, used the waters of an international river for irrigation purposes. State B upstream now wishes to utilize the waters for hydro-electric power production. The uses for hydro-electric power and irrigation purposes are in partial conflict because the storage period for the hydro-electric use overlaps the growing season. Neither State uses, or wishes to use, the water for any other purpose at this point in time. State A, while having made substantial economic progress and enjoying prosperity, continues, as it always has, to use the inundation method of irrigation. A study of the basin indicates that the hydro-electric use would be more valuable than irrigation and the resulting dam would permit the introduction of conservation measures through the control of seasonal flooding, thus providing incidental benefit to all users. Study indicates that change to modern agricultural irrigation coupled with flow control afforded by the dam would permit, after a period of adjustment, reasonable agricultural productivity in State A, although probably less than prevailing before. Moreover, while at one time several million people in State A depended upon the agricultural products produced in the basin area for survival, there are now alternative sources for obtaining food, at approximately the same cost, although not sufficient to satisfy fully all needs. A recent geological survey indicates the presence of substantial underground waters in the territory of State A. The contemplated uses in State B would benefit a new community of several hundred thousand people. Power would be obtained from other resources but at a greater cost. On these facts, the following factors are relevant to a determination of an equitable sharing: an existing reasonable use; dependence upon the waters; population; geographic, climatic and weather conditions; the existence of alternative sources of food supply; inefficient utilization; and the financial status of the respective co-basin States.

An existing reasonable use is entitled to significant weight as a factor and, as indicated in Article V, consideration must be given to protecting it. However, it is but one factor. In the foregoing illustration, there are other important factors: irrigation is not the more valuable of the competing uses in this instance; there are, moreover, alternative sources of food available; the availability of sources of underground water indicate that the need for water by State A may be satisfied from them, while State

A has nevertheless continued to draw off the same amount of water from the international river utilizing an outmoded and wasteful process; the economic climate in State A favors growth. As regards State B, a key factor is that there are alternative sources of power.

A careful analysis shows that, despite the usual desirability of protecting existing reasonable uses, the competing factors indicate that some modification of the existing use is called for. The existence of alternative sources of agricultural products, the conservation benefits to the co-basin States, the employment of a wasteful and antiquated method of utilization and its potential for replacement by a less wasteful method within the financial ability of State A and the potential value of the proposed use all dictate modification and accommodation.

Armed with this information, it may be possible to reconcile the conflicting uses. For example, reduction in appropriation for irrigation to the extent of the availability of usable water from the underground sources, or the abandonment of inundation in favor of a more efficient method, or the utilization of alternate sources of food supply (to the extent that it can reasonably do so) or any combination of these may be required of State A. On the other hand, State B may be required to bear some of the cost necessary to develop a modern irrigation system in State A, or in obtaining alternative food or water supplies for State A. If State A were required to abandon any portion of a permanent installation, some compensation by State B might be appropriate.

The employment of any one or some combination of the above measures may suffice to reconcile the conflict. If no other solution can be found, however, one of the uses may necessarily have to prevail to the impairment of the other use; the amount of and kind of compensation, if any, to the State deprived of its use would then be determined. Irrigation, although an existing use, may nevertheless be required to give way since the weight of the factors favours the hydro-electric use. Under these facts, State B would, in all likelihood, be required to pay State A in part for discontinuance or impairment of the use.

There are alternative sources of electricity available to State B, but at a higher cost. State A may be required to compensate State B for all or a part of the cost differential, if the use of the waters for the production of power is precluded or limited.

This illustration shows how the several factors relevant to the particular case are to be considered and how the principle of equitable utilization is applied in order to achieve a fair and just settlement.

* * *

Comment to Article X

(a) General. International law imposes general limitations upon action that one State may take which would cause injury in the territory of another State. In the Corfu Channel Case, the International Court of Justice stated that international law obliges every State "not to allow knowingly its territory to be used for acts contrary to the rights of other States." [I.C.J. Rep. 4, 22. The Secretary General of the United Nations has expressed the view that "There has been general recognition of the rule that a State must not permit the use of its territory for purposes injurious to the interest of other States in a manner contrary to international law". [Survey of International Law 34 (U.N.Doc. A/CN.411 Rev. 1) 1949]] This statement is no more than a reflection of the principle *sic utere tuo ut alienum non laedas* "one must so use his own as not to do injury to another". The same general thread of principle runs throughout the range of State-to-State relationships.

As to the law of water pollution, recently this general principle was favourably referred to in the Lake Lanoux Arbitration between France and Spain, [Int'l.L.Rep. 101, 123 (1957).] In discussing the division of waters of Lake Lanoux and possible bases of any France's responsibility, the Tribunal stated: "It could have been argued that the works would bring about a definite pollution of the waters of the Canal or that the returned waters would have a chemical composition or a temperature or some other characteristic were which could injure Spanish interests."

Although not involving pollution of water, the Trail Smelter Arbitration between the United States and Canada illustrates the general international principle upon which the rules of this article are based. [Decision of the Tribunal, March 11, 1941 (United States—Canada), 3 U.N.Rep.Int'l.Arb.Awards 1905 (1949), 35 Am.J.Int'l.L. 684 (1941).] There, Canada was held responsible for the then injury and damage resulting in the United States from fumes emitted from a smelter located in British Columbia and deposited over a large area of the State of Washington. [The Tribunal concluded ' that under the principles of international law, as well as of 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 property of persons therein [U.N.Rep.Int'l.Arb.Awards at 1965, 35 Am.J.Int'l.L. at 716. See also Missouri v. Illinois, 200 U.S. 496, 26 S.Ct. 268, 50 L.Ed. 572 (1906); New York v. New Jersey, 256 U.S. 296, 41 S.Ct. 492, 65 L.Ed. 937 (1921); New Jersey v. City of New York, 283 U.S. 473, 51 S.Ct. 519, 75 L.Ed. 1176 (1931).]

The Supreme Court of Italy has had occasion to state: If this [State] in the exercise of its sovereign rights is in a position to establish any regime that it deems most appropriate over the watercourse, it cannot escape the international duty... to avoid that, as a consequence of such a regime, other (co-riparian) States are deprived of the possibility of utilizing the watercourse for their in own national needs." [Societe Energie Electrique v. Campagnia the Imprese Elettriche Liguri 64 Foro Italiano, I, 1036, 9 Ann.Dig. 120 (Italy, Court of Cassation, 1939).]

Water treaties often incorporate provisions dealing with the pollution of waters by the signatory States.

(b) Equitable utilization. The optimum goal of international drainage basin development is to accommodate the multiple and diverse uses of the co-basin States. The concept of equitable utilization of the waters of an international drainage basin has the purpose of promoting such an accommodation. Thus, uses of the waters by a basin State that cause pollution resulting in injury in a co-basin State must be considered from the overall perspective of what constitutes an equitable utilization.

Any use of water by a basin State, whether upper or lower, that denies an equitable sharing of uses by a co-basin State conflicts with the community of interests of all basin States in obtaining maximum benefit from the common resource. Certainly, a diversion of water that denies a co-basin State an equitable share is in violation of international law. A use that causes pollution to the extent of depriving a co-basin State of an equitable share stands on the same basis. By parallel reasoning, a State that engages in a use or uses causing pollution is not required to take measures with respect to such pollution that would deprive it of equitable utilization.

The rules stated in this Article are not confined to cases of pollution that interfere with or deny an equitable sharing by a co basin State, but may also apply to cases of pollution that cause other types of injury in such a State.

Cross reference: See comment (e) infra.

The rules stated in this Article place a duty upon a basin State, consistent with that State's right to an equitable utilization, to take the specified measures respecting pollution of water. Thus, the international duty stated in this Article regarding abatement or the taking of reasonable measures is not an absolute one. This duty, therefore, does not apply to a State whose use of the waters is consistent with the equitable utilization of the drainage basin.

The principle of equitable utilization of the waters of an international drainage basin may require, in a particular case, that the several co-basin states participate jointly in the financing of pollution control measures.

* * *

(c) Substantial injury. Pollution as that term is used in this Chapter may be the result of reasonable and otherwise lawful use of the waters of an international basin. For example, the normal process of irrigation for the reclamation of arid or semi-arid land usually causes an increase in the salinity of the downstream waters. Modern industrial processes of a very valuable and useful nature may result in the discharge of deleterious wastes that pollute the water. Frequently rivers are the most efficient means of sewage disposal, thereby causing pollution of waters. Thus, as pollution may be a by-product of an otherwise beneficial use of the waters of an international drainage basin, the rule of international law stated in this Article does not prohibit pollution per se. [Cf. 2 Jiménez de Aréchaga, *Curso de Derecho Internacional Publico*, 529— 530 (1961); Fenwick, *international Law*, 363—365 (4th ed.1965).]

However, where the effect of the pollution is such that it is not consistent with the equitable utilization of the drainage basin and causes "substantial injury" in the territory of another State, the conduct causing the pollution gives rise to a duty, as stated in this Article, on the part of the State responsible for the pollution.

Not every injury is substantial. Generally, an injury is considered "substantial" if it materially interferes with or prevents a reasonable use of the water. On the other hand, to be "substantial" an injury in the territory of a State need not be connected with that State's use of the waters. For example, the pollution of water could result in "substantial injury" in the territory of another State by the transmission, through the evaporative process, of organisms that cause disease.

(d) Conduct for which State responsible. As stated in this Article, under international law a State's duty may arise in varying factual contexts.

The rule stated in this Article engages the responsibility of a State to take action with respect to all pollution causing substantial injury in the territory of a co-basin State regardless of whether the pollution results from public activity of the State itself, within or outside its territory, or from conduct of private parties within its territory.

* * *

Under the rule stated in this Article, a State is also responsible for its conduct occurring outside its territory causing substantial injury in the territory of a co-basin State. Thus, the criterion of State responsibility is its conduct and not the situs of that conduct.

* * *

(e) Danger to human life. If the activity or conduct causes pollution that endangers human life in another State, such activity or conduct would probably be deemed inconsistent with the principle of equitable utilization and the duty referred to in paragraph 1(b) of this Article "to take all reasonable measures" could become an absolute duty to abate the pollution.

CONVENTION ON THE PROTECTION AND USE OF TRANSBOUNDARY WATERCOURSES AND INTERNATIONAL LAKES

done at Helsinki, on 17 March 1992

PREAMBLE

The Parties to this Convention,

Mindful that the protection and use of transboundary watercourses and international lakes are important and urgent tasks, the effective accomplishment of which can only be ensured by enhanced cooperation,

Concerned over the existence and threats of adverse effects, in the short or long term, of changes in the conditions of transboundary watercourses and international lakes on the environment, economies and well-being of the member countries of the Economic Commission for Europe (ECE),

Emphasizing the need for strengthened national and international measures to prevent, control and reduce the release of hazardous substances into the aquatic environment and to abate eutrophication and acidification, as well as pollution of the marine environment, in particular coastal areas, from land-based sources,

Commending the efforts already undertaken by the ECE Governments to strengthen cooperation, on bilateral and multilateral levels, for the prevention, control and reduction of transboundary pollution, sustainable water management, conservation of water resources and environmental protection,

Recalling the pertinent provisions and principles of the Declaration of the Stockholm Conference on the Human Environment, the Final Act of the Conference on Security and Cooperation in Europe (CSCE), the Concluding Documents of the Madrid and Vienna Meetings of Representatives of the Participating States of the CSCE, and the Regional Strategy for Environmental Protection and Rational Use of Natural Resources in ECE Member Countries covering the Period up to the Year 2000 and Beyond,

Conscious of the role of the United Nations Economic Commission for Europe in promoting international cooperation for the prevention, control and reduction of transboundary water pollution and sustainable use of transboundary waters, and in this regard recalling the ECE Declaration of Policy on Prevention and Control of Water Pollution, including Transboundary Pollution; the ECE Declaration of Policy on the Rational Use of Water; the ECE Principles Regarding Cooperation in the Field of Transboundary Waters; the ECE Charter on Groundwater Management; and the Code of Conduct on Accidental Pollution of Transboundary Inland Waters,

Referring to decisions I (42) and I (44) adopted by the Economic Commission for Europe at its forty-second and forty-fourth sessions, respectively, and the outcome of the CSCE Meeting on the Protection of the Environment (Sofia, Bulgaria, 16 October - 3 November 1989),

Emphasizing that cooperation between member countries in regard to the protection and use of transboundary waters shall be implemented primarily through the elaboration of agreements between countries bordering the same waters, especially where no such agreements have yet been reached,

Have agreed as follows:

Article 1

DEFINITIONS

For the purposes of this Convention,

1. “Transboundary waters” means any surface or ground waters which mark, cross or are located on boundaries between two or more States; wherever transboundary waters flow directly into the sea, these transboundary waters end at a straight line across their respective mouths between points on the low-water line of their banks;
2. “Transboundary impact” means any significant adverse effect on the environment resulting from a change in the conditions of transboundary waters caused by a human activity, the physical origin of which is situated wholly or in part within an area under the jurisdiction of a Party, within an area under the jurisdiction of another Party. Such effects on the environment include effects on human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interaction among these factors; they also include effects on the cultural heritage or socio-economic conditions resulting from alterations to those factors;
3. “Party” means, unless the text otherwise indicates, a Contracting Party to this Convention;
4. “Riparian Parties” means the Parties bordering the same transboundary waters;
5. “Joint body” means any bilateral or multilateral commission or other appropriate institutional arrangements for cooperation between the Riparian Parties;
6. “Hazardous substances” means substances which are toxic, carcinogenic, mutagenic, teratogenic or bio-accumulative, especially when they are persistent;
7. “Best available technology” (the definition is contained in annex I to this Convention).

PART I PROVISIONS RELATING TO ALL PARTIES

Article 2

GENERAL PROVISIONS

1. The Parties shall take all appropriate measures to prevent, control and reduce any transboundary impact.
2. The Parties shall, in particular, take all appropriate measures:
 - (a) To prevent, control and reduce pollution of waters causing or likely to cause transboundary impact;
 - (b) To ensure that transboundary waters are used with the aim of ecologically sound and rational water management, conservation of water resources and environmental protection;
 - (c) To ensure that transboundary waters are used in a reasonable and equitable way, taking into particular account their transboundary character, in the case of activities which cause or are likely to cause transboundary impact;
 - (d) To ensure conservation and, where necessary, restoration of ecosystems.
3. Measures for the prevention, control and reduction of water pollution shall be taken, where possible, at source.
4. These measures shall not directly or indirectly result in a transfer of pollution to other parts of the environment.
5. In taking the measures referred to in paragraphs 1 and 2 of this article, the Parties shall be guided by the following principles:
 - (a) The precautionary principle, by virtue of which action to avoid the potential transboundary impact of the release of hazardous substances shall not be postponed on the ground that scientific research has not fully proved a causal link between those substances, on the one hand, and the potential transboundary impact, on the other hand;
 - (b) The polluter-pays principle, by virtue of which costs of pollution prevention, control and reduction measures shall be borne by the polluter;
 - (c) Water resources shall be managed so that the needs of the present generation are met without compromising the ability of future generations to meet their own needs.

6. The Riparian Parties shall cooperate on the basis of equality and reciprocity, in particular through bilateral and multilateral agreements, in order to develop harmonized policies, programmes and strategies covering the relevant catchment areas, or parts thereof, aimed at the prevention, control and reduction of transboundary impact and aimed at the protection of the environment of transboundary waters or the environment influenced by such waters, including the marine environment.

7. The application of this Convention shall not lead to the deterioration of environmental conditions nor lead to increased transboundary impact.

8. The provisions of this Convention shall not affect the right of Parties individually or jointly to adopt and implement more stringent measures than those set down in this Convention.

Article 3

PREVENTION, CONTROL AND REDUCTION

1. To prevent, control and reduce transboundary impact, the Parties shall develop, adopt, implement and, as far as possible, render compatible relevant legal, administrative, economic, financial and technical measures, in order to ensure, inter alia, that:

- (a) The emission of pollutants is prevented, controlled and reduced at source through the application of, inter alia, low- and non-waste technology;
- (b) Transboundary waters are protected against pollution from point sources through the prior licensing of waste-water discharges by the competent national authorities, and that the authorized discharges are monitored and controlled;
- (c) Limits for waste-water discharges stated in permits are based on the best available technology for discharges of hazardous substances;
- (d) Stricter requirements, even leading to prohibition in individual cases, are imposed when the quality of the receiving water or the ecosystem so requires;
- (e) At least biological treatment or equivalent processes are applied to municipal waste water, where necessary in a step-by-step approach;
- (f) Appropriate measures are taken, such as the application of the best available technology, in order to reduce nutrient inputs from industrial and municipal sources;
- (g) Appropriate measures and best environmental practices are developed and implemented for the reduction of inputs of nutrients and hazardous substances from diffuse sources, especially where the main sources are from agriculture (guidelines for developing best environmental practices are given in annex II to this Convention);

(h) Environmental impact assessment and other means of assessment are applied; (i) Sustainable water-resources management, including the application of the ecosystems approach, is promoted;

(j) Contingency planning is developed;

(k) Additional specific measures are taken to prevent the pollution of groundwaters;

(l) The risk of accidental pollution is minimized.

2. To this end, each Party shall set emission limits for discharges from point sources into surface waters based on the best available technology, which are specifically applicable to individual industrial sectors or industries from which hazardous substances derive. The appropriate measures mentioned in paragraph 1 of this article to prevent, control and reduce the input of hazardous substances from point and diffuse sources into waters, may, inter alia, include total or partial prohibition of the production or use of such substances. Existing lists of such industrial sectors or industries and of such hazardous substances in international conventions or regulations, which are applicable in the area covered by this Convention, shall be taken into account.

3. In addition, each Party shall define, where appropriate, water-quality objectives and adopt water-quality criteria for the purpose of preventing, controlling and reducing transboundary impact. General guidance for developing such objectives and criteria is given in annex III to this Convention. When necessary, the Parties shall endeavour to update this annex.

Article 4

MONITORING

The Parties shall establish programmes for monitoring the conditions of transboundary waters.

Article 5

RESEARCH AND DEVELOPMENT

The Parties shall cooperate in the conduct of research into and development of effective techniques for the prevention, control and reduction of transboundary impact. To this effect, the Parties shall, on a bilateral and/or multilateral basis, taking into account research activities pursued in relevant international forums, endeavour to initiate or intensify specific research programmes, where necessary, aimed, inter alia, at:

- (a) Methods for the assessment of the toxicity of hazardous substances and the noxiousness of pollutants;
- (b) Improved knowledge on the occurrence, distribution and environmental effects of pollutants and the processes involved;

- (c) The development and application of environmentally sound technologies, production and consumption patterns;
- (d) The phasing out and/or substitution of substances likely to have transboundary impact;
- (e) Environmentally sound methods of disposal of hazardous substances;
- (f) Special methods for improving the conditions of transboundary waters;
- (g) The development of environmentally sound water-construction works and water regulation techniques;
- (h) The physical and financial assessment of damage resulting from transboundary impact.

The results of these research programmes shall be exchanged among the Parties in accordance with article 6 of this Convention.

Article 6

EXCHANGE OF INFORMATION

The Parties shall provide for the widest exchange of information, as early as possible, on issues covered by the provisions of this Convention.

Article 7

RESPONSIBILITY AND LIABILITY

The Parties shall support appropriate international efforts to elaborate rules, criteria and procedures in the field of responsibility and liability.

Article 8

PROTECTION OF INFORMATION

The provisions of this Convention shall not affect the rights or the obligations of Parties in accordance with their national legal systems and applicable supranational regulations to protect information related to industrial and commercial secrecy, including intellectual property, or national security.

PART II

PROVISIONS RELATING TO RIPARIAN PARTIES

Article 9

BILATERAL AND MULTILATERAL COOPERATION

1. The Riparian Parties shall on the basis of equality and reciprocity enter into bilateral or multilateral agreements or other arrangements, where these do not yet exist, or adapt existing ones, where necessary to eliminate the contradictions with the basic principles of this Convention, in order to define their mutual relations and conduct regarding the prevention, control and reduction of transboundary impact. The Riparian Parties shall specify the catchment area, or part(s) thereof, subject to cooperation. These agreements or arrangements shall embrace relevant issues covered by this Convention, as well as any other issues on which the Riparian Parties may deem it necessary to cooperate.
2. The agreements or arrangements mentioned in paragraph 1 of this article shall provide for the establishment of joint bodies. The tasks of these joint bodies shall be, inter alia, and without prejudice to relevant existing agreements or arrangements, the following:
 - (a) To collect, compile and evaluate data in order to identify pollution sources likely to cause transboundary impact;
 - (b) To elaborate joint monitoring programmes concerning water quality and quantity;
 - (c) To draw up inventories and exchange information on the pollution sources mentioned in paragraph 2 (a) of this article;
 - (d) To elaborate emission limits for waste water and evaluate the effectiveness of control programmes;
 - (e) To elaborate joint water-quality objectives and criteria having regard to the provisions of article 3, paragraph 3 of this Convention, and to propose relevant measures for maintaining and, where necessary, improving the existing water quality;
 - (f) To develop concerted action programmes for the reduction of pollution loads from both point sources (e.g. municipal and industrial sources) and diffuse sources (particularly from agriculture);
 - (g) To establish warning and alarm procedures;
 - (h) To serve as a forum for the exchange of information on existing and planned uses of water and related installations that are likely to cause transboundary impact;

(i) To promote cooperation and exchange of information on the best available technology in accordance with the provisions of article 13 of this Convention, as well as to encourage cooperation in scientific research programmes;

(j) To participate in the implementation of environmental impact assessments relating to transboundary waters, in accordance with appropriate international regulations.

3. In cases where a coastal State, being Party to this Convention, is directly and significantly affected by transboundary impact, the Riparian Parties can, if they all so agree, invite that coastal State to be involved in an appropriate manner in the activities of multilateral joint bodies established by Parties riparian to such transboundary waters.

4. Joint bodies according to this Convention shall invite joint bodies, established by coastal States for the protection of the marine environment directly affected by transboundary impact, to cooperate in order to harmonize their work and to prevent, control and reduce the transboundary impact.

5. Where two or more joint bodies exist in the same catchment area, they shall endeavour to coordinate their activities in order to strengthen the prevention, control and reduction of transboundary impact within that catchment area.

Article 10

CONSULTATIONS

Consultations shall be held between the Riparian Parties on the basis of reciprocity, good faith and good-neighbourliness, at the request of any such Party. Such consultations shall aim at cooperation regarding the issues covered by the provisions of this Convention. Any such consultations shall be conducted through a joint body established under article 9 of this Convention, where one exists.

Article 11

JOINT MONITORING AND ASSESSMENT

1. In the framework of general cooperation mentioned in article 9 of this Convention, or specific arrangements, the Riparian Parties shall establish and implement joint programmes for monitoring the conditions of transboundary waters, including floods and ice drifts, as well as transboundary impact.

2. The Riparian Parties shall agree upon pollution parameters and pollutants whose discharges and concentration in transboundary waters shall be regularly monitored.

3. The Riparian Parties shall, at regular intervals, carry out joint or coordinated assessments of the conditions of transboundary waters and the effectiveness of measures taken for the prevention, control and reduction of transboundary impact. The results of these assessments shall be made available to the public in accordance with the provisions set out in article 16 of this Convention.

4. For these purposes, the Riparian Parties shall harmonize rules for the setting up and operation of monitoring programmes, measurement systems, devices, analytical techniques, data processing and evaluation procedures, and methods for the registration of pollutants discharged.

Article 12

COMMON RESEARCH AND DEVELOPMENT

In the framework of general cooperation mentioned in article 9 of this Convention, or specific arrangements, the Riparian Parties shall undertake specific research and development activities in support of achieving and maintaining the water-quality objectives and criteria which they have agreed to set and adopt.

Article 13

EXCHANGE OF INFORMATION BETWEEN RIPARIAN PARTIES

1. The Riparian Parties shall, within the framework of relevant agreements or other arrangements according to article 9 of this Convention, exchange reasonably available data, inter alia, on:

(a) Environmental conditions of transboundary waters;

(b) Experience gained in the application and operation of best available technology and results of research and development;

(c) Emission and monitoring data;

(d) Measures taken and planned to be taken to prevent, control and reduce transboundary impact;

(e) Permits or regulations for waste-water discharges issued by the competent authority or appropriate body.

2. In order to harmonize emission limits, the Riparian Parties shall undertake the exchange of information on their national regulations.

3. If a Riparian Party is requested by another Riparian Party to provide data or information that is not available, the former shall endeavour to comply with the request but may condition its compliance upon the payment, by the requesting Party, of reasonable charges for collecting and, where appropriate, processing such data or information.

4. For the purposes of the implementation of this Convention, the Riparian Parties shall facilitate the exchange of best available technology, particularly through the promotion of: the commercial exchange of available technology; direct industrial contacts and cooperation, including joint ventures; the exchange of information and experience; and the provision of technical assistance. The Riparian Parties shall also under-

take joint training programmes and the organization of relevant seminars and meetings.

Article 14

WARNING AND ALARM SYSTEMS

The Riparian Parties shall without delay inform each other about any critical situation that may have transboundary impact. The Riparian Parties shall set up, where appropriate, and operate coordinated or joint communication, warning and alarm systems with the aim of obtaining and transmitting information. These systems shall operate on the basis of compatible data transmission and treatment procedures and facilities to be agreed upon by the Riparian Parties. The Riparian Parties shall inform each other about competent authorities or points of contact designated for this purpose.

Article 15

MUTUAL ASSISTANCE

1. If a critical situation should arise, the Riparian Parties shall provide mutual assistance upon request, following procedures to be established in accordance with paragraph 2 of this article.
2. The Riparian Parties shall elaborate and agree upon procedures for mutual assistance addressing, inter alia, the following issues:
 - (a) The direction, control, coordination and supervision of assistance;
 - (b) Local facilities and services to be rendered by the Party requesting assistance, including, where necessary, the facilitation of border-crossing formalities;
 - (c) Arrangements for holding harmless, indemnifying and/or compensating the assisting Party and/or its personnel, as well as for transit through territories of third Parties, where necessary;
 - (d) Methods of reimbursing assistance services.

Article 16

PUBLIC INFORMATION

1. The Riparian Parties shall ensure that information on the conditions of transboundary waters, measures taken or planned to be taken to prevent, control and reduce transboundary impact, and the effectiveness of those measures, is made available to the public. For this purpose, the Riparian Parties shall ensure that the following information is made available to the public:
 - (a) Water-quality objectives;

(b) Permits issued and the conditions required to be met;

(c) Results of water and effluent sampling carried out for the purposes of monitoring and assessment, as well as results of checking compliance with the water-quality objectives or the permit conditions.

2. The Riparian Parties shall ensure that this information shall be available to the public at all reasonable times for inspection free of charge, and shall provide members of the public with reasonable facilities for obtaining from the Riparian Parties, on payment of reasonable charges, copies of such information.

PART III

INSTITUTIONAL AND FINAL PROVISIONS

Article 17

MEETING OF PARTIES

1. The first meeting of the Parties shall be convened no later than one year after the date of the entry into force of this Convention. Thereafter, ordinary meetings shall be held every three years, or at shorter intervals as laid down in the rules of procedure. The Parties shall hold an extraordinary meeting if they so decide in the course of an ordinary meeting or at the written request of any Party, provided that, within six months of it being communicated to all Parties, the said request is supported by at least one third of the Parties.
2. At their meetings, the Parties shall keep under continuous review the implementation of this Convention, and, with this purpose in mind, shall:
 - (a) Review the policies for and methodological approaches to the protection and use of transboundary waters of the Parties with a view to further improving the protection and use of transboundary waters;
 - (b) Exchange information regarding experience gained in concluding and implementing bilateral and multilateral agreements or other arrangements regarding the protection and use of transboundary waters to which one or more of the Parties are party;
 - (c) Seek, where appropriate, the services of relevant ECE bodies as well as other competent international bodies and specific committees in all aspects pertinent to the achievement of the purposes of this Convention;
 - (d) At their first meeting, consider and by consensus adopt rules of procedure for their meetings;
 - (e) Consider and adopt proposals for amendments to this Convention;
 - (f) Consider and undertake any additional action that may be required for the achievement of the purposes of this Convention.

Article 18

RIGHT TO VOTE

1. Except as provided for in paragraph 2 of this article, each Party to this Convention shall have one vote.
2. Regional economic integration organizations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States which are Parties to this Convention. Such organizations shall not exercise their right to vote if their member States exercise theirs, and vice versa.

Article 19

SECRETARIAT

The Executive Secretary of the Economic Commission for Europe shall carry out the following secretariat functions:

- (a) The convening and preparing of meetings of the Parties;
- (b) The transmission to the Parties of reports and other information received in accordance with the provisions of this Convention;
- (c) The performance of such other functions as may be determined by the Parties.

Article 20

ANNEXES

Annexes to this Convention shall constitute an integral part thereof.

Article 21

AMENDMENTS TO THE CONVENTION

1. Any Party may propose amendments to this Convention.
2. Proposals for amendments to this Convention shall be considered at a meeting of the Parties.
3. The text of any proposed amendment to this Convention shall be submitted in writing to the Executive Secretary of the Economic Commission for Europe, who shall communicate it to all Parties at least ninety days before the meeting at which it is proposed for adoption.

4. An amendment to the present Convention shall be adopted by consensus of the representatives of the Parties to this Convention present at a meeting of the Parties, and shall enter into force for the Parties to the Convention which have accepted it on the ninetieth day after the date on which two thirds of those Parties have deposited with the Depositary their instruments of acceptance of the amendment. The amendment shall enter into force for any other Party on the ninetieth day after the date on which that Party deposits its instrument of acceptance of the amendment.

Article 22

SETTLEMENT OF DISPUTES

1. If a dispute arises between two or more Parties about the interpretation or application of this Convention, they shall seek a solution by negotiation or by any other means of dispute settlement acceptable to the parties to the dispute.
2. When signing, ratifying, accepting, approving or acceding to this Convention, or at any time thereafter, a Party may declare in writing to the Depositary that, for a dispute not resolved in accordance with paragraph 1 of this article, it accepts one or both of the following means of dispute settlement as compulsory in relation to any Party accepting the same obligation:
 - (a) Submission of the dispute to the International Court of Justice;
 - (b) Arbitration in accordance with the procedure set out in annex IV.
3. If the parties to the dispute have accepted both means of dispute settlement referred to in paragraph 2 of this article, the dispute may be submitted only to the International Court of Justice, unless the parties agree otherwise.

Article 23

SIGNATURE

This Convention shall be open for signature at Helsinki from 17 to 18 March 1992 inclusive, and thereafter at United Nations Headquarters in New York until 18 September 1992, by States members of the Economic Commission for Europe as well as States having consultative status with the Economic Commission for Europe pursuant to paragraph 8 of Economic and Social Council resolution 36 (IV) of 28 March 1947, and by regional economic integration organizations constituted by sovereign States members of the Economic Commission for Europe to which their member States have transferred competence over matters governed by this Convention, including the competence to enter into treaties in respect of these matters.

Article 24

DEPOSITARY

The Secretary-General of the United Nations shall act as the Depositary of this Convention.

Article 25

RATIFICATION, ACCEPTANCE, APPROVAL AND ACCESSION

1. This Convention shall be subject to ratification, acceptance or approval by signatory States and regional economic integration organizations.
2. This Convention shall be open for accession by the States and organizations referred to in article 23.
3. Any organization referred to in article 23 which becomes a Party to this Convention without any of its member States being a Party shall be bound by all the obligations under this Convention. In the case of such organizations, one or more of whose member States is a Party.

to this Convention, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under this Convention. In such cases, the organization and the member States shall not be entitled to exercise rights under this Convention concurrently.

4. In their instruments of ratification, acceptance, approval or accession, the regional economic integration organizations referred to in article 23 shall declare the extent of their competence with respect to the matters governed by this Convention. These organizations shall also inform the Depositary of any substantial modification to the extent of their competence.

Article 26

ENTRY INTO FORCE

1. This Convention shall enter into force on the ninetieth day after the date of deposit of the sixteenth instrument of ratification, acceptance, approval or accession.
2. For the purposes of paragraph 1 of this article, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by States members of such an organization.
3. For each State or organization referred to in article 23 which ratifies, accepts or approves this Convention or accedes thereto after the deposit of the sixteenth instrument of ratification, acceptance, approval or accession, the Convention shall enter into force on the ninetieth day after the date of deposit by such State or organization of its instrument of ratification, acceptance, approval or accession.

Article 27

WITHDRAWAL

At any time after three years from the date on which this Convention has come into force with respect to a Party, that Party may withdraw from the Convention by giving written notification to the Depositary. Any such withdrawal shall take effect on the ninetieth day after the date of its receipt by the Depositary.

Article 28

AUTHENTIC TEXTS

The original of this Convention, of which the English, French and Russian texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

IN WITNESS WHEREOF the undersigned, being duly authorized thereto, have signed this Convention.

DONE at Helsinki, this seventeenth day of March one thousand nine hundred and ninety-two.

ANNEX I

DEFINITION OF THE TERM "BEST AVAILABLE TECHNOLOGY"

1. The term "best available technology" is taken to mean the latest stage of development of processes, facilities or methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste. In determining whether a set of processes, facilities and methods of operation constitute the best available technology in general or individual cases, special consideration is given to:
 - (a) Comparable processes, facilities or methods of operation which have recently been successfully tried out;
 - (b) Technological advances and changes in scientific knowledge and understanding;
 - (c) The economic feasibility of such technology;
 - (d) Time limits for installation in both new and existing plants;
 - (e) The nature and volume of the discharges and effluents concerned;

(f) Low- and non-waste technology.

2. It therefore follows that what is “best available technology” for a particular process will change with time in the light of technological advances, economic and social factors, as well as in the light of changes in scientific knowledge and understanding.

ANNEX II

GUIDELINES FOR DEVELOPING BEST ENVIRONMENTAL PRACTICES

1. In selecting for individual cases the most appropriate combination of measures which may constitute the best environmental practice, the following graduated range of measures should be considered:

- (a) Provision of information and education to the public and to users about the environmental consequences of the choice of particular activities and products, their use and ultimate disposal;
- (b) The development and application of codes of good environmental practice which cover all aspects of the product’s life;
- (c) Labels informing users of environmental risks related to a product, its use and ultimate disposal;
- (d) Collection and disposal systems available to the public;
- (e) Recycling, recovery and reuse;
- (f) Application of economic instruments to activities, products or groups of products;
- (g) A system of licensing, which involves a range of restrictions or a ban.

2. In determining what combination of measures constitute best environmental practices, in general or in individual cases, particular consideration should be given to:

- (a) The environmental hazard of:
 - i) The product;
 - ii) The product’s production;
 - iii) The product’s use;
 - iv) The product’s ultimate disposal;
- (b) Substitution by less polluting processes or substances;
- (c) Scale of use;

(d) Potential environmental benefit or penalty of substitute materials or activities;

(e) Advances and changes in scientific knowledge and understanding;

(f) Time limits for implementation;

(g) Social and economic implications.

3. It therefore follows that best environmental practices for a particular source will change with time in the light of technological advances, economic and social factors, as well as in the light of changes in scientific knowledge and understanding.

ANNEX III

GUIDELINES FOR DEVELOPING WATER-QUALITY OBJECTIVES AND CRITERIA

Water-quality objectives and criteria shall:

- (a) Take into account the aim of maintaining and, where necessary, improving the existing water quality;
- (b) Aim at the reduction of average pollution loads (in particular hazardous substances) to a certain degree within a certain period of time;
- (c) Take into account specific water-quality requirements (raw water for drinking-water purposes, irrigation, etc.);
- (d) Take into account specific requirements regarding sensitive and specially protected waters and their environment, e.g. lakes and groundwater resources;
- (e) Be based on the application of ecological classification methods and chemical indices for the medium- and long-term review of water-quality maintenance and improvement;
- (f) Take into account the degree to which objectives are reached and the additional protective measures, based on emission limits, which may be required in individual cases.

ANNEX IV ARBITRATION

1. In the event of a dispute being submitted for arbitration pursuant to article 22, paragraph 2 of this Convention, a party or parties shall notify the secretariat of the subject-matter of arbitration and indicate, in particular, the articles of this Convention whose interpretation or application is at issue. The secretariat shall forward the information received to all Parties to this Convention.

2. The arbitral tribunal shall consist of three members. Both the claimant party or parties and the other party or parties to the dispute shall appoint an arbitrator, and the two arbitrators so appointed shall designate by common agreement the third arbitrator, who shall be the president of the arbitral tribunal. The latter shall not be a national of one of the parties to the dispute, nor have his or her usual place of residence in the territory of one of these parties, nor be employed by any of them, nor have dealt with the case in any other capacity.

3. If the president of the arbitral tribunal has not been designated within two months of the appointment of the second arbitrator, the Executive Secretary of the Economic Commission for Europe shall, at the request of either party to the dispute, designate the president within a further two-month period.

4. If one of the parties to the dispute does not appoint an arbitrator within two months of the receipt of the request, the other party may so inform the Executive Secretary of the Economic Commission for Europe, who shall designate the president of the arbitral tribunal within a further two-month period. Upon designation, the president of the arbitral tribunal shall request the party which has not appointed an arbitrator to do so within two months. If it fails to do so within that period, the president shall so inform the Executive Secretary of the Economic Commission for Europe, who shall make this appointment within a further two-month period.

5. The arbitral tribunal shall render its decision in accordance with international law and the provisions of this Convention.

6. Any arbitral tribunal constituted under the provisions set out in this annex shall draw up its own rules of procedure.

7. The decisions of the arbitral tribunal, both on procedure and on substance, shall be taken by majority vote of its members.

8. The tribunal may take all appropriate measures to establish the facts.

9. The parties to the dispute shall facilitate the work of the arbitral tribunal and, in

particular, using all means at their disposal, shall:

(a) Provide it with all relevant documents, facilities and information;

(b) Enable it, where necessary, to call witnesses or experts and receive their evidence.

10. The parties and the arbitrators shall protect the confidentiality of any information they receive in confidence during the proceedings of the arbitral tribunal.

11. The arbitral tribunal may, at the request of one of the parties, recommend interim measures of protection.

12. If one of the parties to the dispute does not appear before the arbitral tribunal or fails to defend its case, the other party may request the tribunal to continue the proceedings and to render its final decision. Absence of a party or failure of a party to defend its case shall not constitute a bar to the proceedings.

13. The arbitral tribunal may hear and determine counter-claims arising directly out of the subject-matter of the dispute.

14. Unless the arbitral tribunal determines otherwise because of the particular circumstances of the case, the expenses of the tribunal, including the remuneration of its members, shall be borne by the parties to the dispute in equal shares. The tribunal shall keep a record of all its expenses, and shall furnish a final statement thereof to the parties.

15. Any Party to this Convention which has an interest of a legal nature in the subject-matter of the dispute, and which may be affected by a decision in the case, may intervene in the proceedings with the consent of the tribunal.

16. The arbitral tribunal shall render its award within five months of the date on which it is established, unless it finds it necessary to extend the time limit for a period which should not exceed five months.

17. The award of the arbitral tribunal shall be accompanied by a statement of reasons. It shall be final and binding upon all parties to the dispute. The award will be transmitted by the arbitral tribunal to the parties to the dispute and to the secretariat. The secretariat will forward the information received to all Parties to this Convention.

18. Any dispute which may arise between the parties concerning the interpretation or execution of the award may be submitted by either party to the arbitral tribunal which made the award or, if the latter cannot be seized thereof, to another tribunal constituted for this purpose in the same manner as the first.

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BEYOND INTERNATIONAL WATER LAW: SUCCESSFULLY NEGOTIATING MUTUAL GAINS
AGREEMENTS FOR INTERNATIONAL WATERCOURSES [\[FN1\]](#)

Alex **Grzybowski**, Stephen C. McCaffrey, [Richard K. Paisley](#) [\[FNaa1\]](#)

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Abstract

Water, energy, and agricultural issues are often found inextricably linked in the more than 260 international watercourses in the world. International water law provides an important foundation from which agreements regarding the conservation and management of international watercourses can be successfully negotiated. A mutual gains approach towards successfully negotiating agreements for international watercourses is presented and illustrated by various examples. The approach is a process model, based on experimental findings and hundreds of real-world cases, that facilitates negotiating better outcomes while protecting relationships and reputation. A central tenet of the approach, and the robust theory that underlies it, is that a vast majority of negotiations in the real world involve parties who have more than one goal or concern in mind and more than one issue that can be addressed in the agreement they reach. The approach allows parties to improve their chances of creating an agreement superior to existing alternatives. Application of the approach in an international watercourse context moves beyond merely meeting international legal rights and obligations.

I. Introduction

Water, energy, and agricultural issues are often found inextricably linked in the more than 260 international watercourses and countless international aquifers which cross the political boundaries of two or more countries. Water for agriculture is so fundamental that the term "water" is often used to indicate arrangements necessary to support agriculture, as in the first water agreements negotiated some 5000 years ago. Water for energy includes water for hydropower and biofuels, both of which increase with the demand for energy generally. Water for energy may also have environmental and social impacts. For example, hydropower production and transmission may conflict with food production that utilizes energy. Energy for water includes the pumping of water for extraction and conveying uphill and over what can be very long distances. Energy for water also includes energy for desalinization--a particularly energy-intensive process - and energy for wastewater treatment. [\[FN1\]](#) According to Tony Allan, a recognized expert in the field, "[i]f water and energy are available as free or very cheap goods then they are used in ways that seriously hurt the collective good." [\[FN2\]](#)

As demand for water and energy rise, so will the importance of paying attention to protecting social and environmental values, which often fall victim to hurried efforts to produce water and energy. This is particularly true in relation to international watercourses.

II. International Watercourses and International Law

International watercourses cover 45.3% of the land surface of the earth, are relied upon by about 40% of the world's population, and account for approximately 80% of global river flows. [\[FN3\]](#)

International watercourses have certain characteristics that make their conservation and management particularly challenging, the most notable of which is the tendency for regional politics to regularly exacerbate the already difficult task of understanding and managing complex natural systems. [\[FN4\]](#) The law governing international watercourses will take either of two general forms: treaty law or customary international law. [\[FN5\]](#)

If the states sharing an international freshwater resource are not parties to an applicable treaty, their rights and obligations are governed by customary international law. [\[FN6\]](#) Currently, the best known multilateral international water law agreement is the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses. Although not yet in force, this Convention is generally regarded as reflecting the fundamental rules of customary international law applicable in the field. [\[FN7\]](#) Other key international agreements include the 1992 United Nations Economic Commission for Europe's Convention on the Protection and Use of Transboundary Watercourses and International Lakes, [\[FN8\]](#) and the historically important 1966 Helsinki Rules and associated commentary. [\[FN9\]](#)

There are several rules of international law of a general and fundamental nature that govern the conduct of states in relation to international watercourses. [\[FN10\]](#) The most basic of these are the following:

- States are to use an international watercourse in a way that is “equitable and reasonable” [\[FN11\]](#) vis-à-vis other states sharing the watercourse.
- States are to take “all appropriate measures” [\[FN12\]](#) to prevent causing “significant harm” [\[FN13\]](#) to co-riparian states.
- States are to “consult” [\[FN14\]](#) with the other international watercourse states and provide prior, “timely notification” [\[FN15\]](#) about any new use or change in an existing use of an international watercourse that could have significant adverse effects on co-riparian states, along with relevant technical information.

There is no rule of international law concerning the use of international watercourses more fundamental than that of equitable and reasonable utilization. [\[FN16\]](#) In the Gabčíkovo-Nagymaros Project case the International Court referred to a riparian state's “basic right to an equitable and reasonable sharing of the resources of an international watercourse.” [\[FN17\]](#) This rule requires each riparian state to ensure, in an ongoing manner, that its use is equitable and reasonable vis-à-vis other riparian states. What is equitable and reasonable in any given case may be determined only by taking into account all relevant factors and circumstances-- both natural (e.g. climate, hydrography) and human-related (e.g. social and economic needs of the riparian states, effects of uses in one state on co-riparians, existing and potential uses). [\[FN18\]](#)

Another fundamental rule of international watercourse law is that one state should not cause “significant harm” to another. [\[FN19\]](#) This principle has been recognized in several important decisions in international cases. [\[FN20\]](#) However, the application of the principle to international watercourses can be controversial. [\[FN21\]](#) While it is clear that one state may not intentionally cause harm to another through, for example, flooding or deliberate releases of toxic pollution, questions are sometimes raised about whether one state's use that reduces the available supply in another state is prohibited by this norm. The better view is that the latter situation is governed first and foremost by the principle of equitable utilization: if harm is caused through a pattern of utilization that is otherwise equitable and reasonable, it should not be prohibited. [\[FN22\]](#)

Although it has been controversial in the past, today there is little doubt that customary international law also requires a state planning a new use to provide notice thereof to other states that the use might adversely affect. This rule applies to all projects (including both new uses and changes in existing uses) that have the potential to change

the regime of the watercourse in a way that would be prejudicial to other riparian states. More recently, it has been recognized that adverse legal effects should also be covered by the rule--for example, if a large downstream project could foreclose, or at least curtail the extent of, future uses in an upstream state by altering the equitable balance of uses and making downstream uses more susceptible to being harmed by new projects upstream, then notice should be given. [\[FN23\]](#)

III. A Mutual Gains Approach to Negotiating International Watercourse Agreements [\[FN24\]](#)

The fundamental tenets of international water law described above provide an overall basis for transboundary water use and management between states. [\[FN25\]](#) Beyond customary international legal obligations lie treaties and other agreements that are negotiated between states in an effort to address particular watercourse management issues, to clarify how customary obligations will be met, and in some cases to jointly develop opportunities that neither state could fully capitalize on if acting independently. It is this latter type of circumstance - the opportunity for mutual gain through cooperation--that arguably provides the most powerful, positive and sustainable incentives to cooperate. [\[FN26\]](#)

The Mutual Gains Approach to negotiation is a process model, based on experimental findings and hundreds of real-world cases, that lays out various steps for negotiating better outcomes, often including equitable sharing of benefits, while protecting relationships and reputation. A central tenet of the model, and the robust theory that underlies it, is that a vast majority of negotiations in the real world involve parties who have more than one goal or concern in mind and more than one issue that can be addressed in the agreement they reach. The model allows parties to improve their chances of creating an agreement superior to existing alternatives.

When states identify and develop opportunities with reciprocal sharing of benefits, they position themselves to sustain their agreements on the basis of the ongoing benefits from doing so. Rather than simply reflecting the legal principles summarized above--avoiding significant harm, sharing in a reasonable and equitable manner, providing timely notification of changes and developments--opportunities for mutual gain expand the potential rewards associated with cooperation. Mutual gains arrangements shed a whole new light on the implications of cooperation. The focus of negotiation can shift away from limiting impacts on sovereignty, to planning and devising ways and means of maximizing benefits.

Contrast the following hypothetical--but not unrealistic--negotiation scenarios where the focus shifts from limiting impacts on sovereignty (“Narrow”) to seeking opportunities for mutual gain (“Open”).

Scenario # 1:

A “Narrow” negotiation bogs down in trying to grapple with the definitions section of a treaty where country A is seeking to limit the definition of “tributary” in an international watercourse to first order streams. The underlying interest of A is to reduce explicit obligations to consult with riparian neighbors B and C regarding significant hydropower developments that A is planning on secondary and tertiary tributaries. This position flies in the face of the general principles of both integrated water resources management and international law, which apply to the entire watercourse system. B and C protest that the proposed approach makes no sense from a technical watershed management, or international legal, perspective and eventually discussions and negotiations get to the real issues, which are related to the extent to which consultation obligations create unnecessary transaction costs, requirements to adjust plans in response to legitimate concerns regarding harm, or in a subtle manner, establish a veto for other states. All of this dialogue is set in a context of uneasy suspicion about hidden motives and concern about the political implications of appearing to sacrifice independence to neighboring states. After considerable time and expense, compromises are eventually reached, and obligations are set out that are not dissimilar to the customary international legal obligations, and more practically speaking, with the requirements of international funding institutions from which financing may be required.

Scenario # 2:

An “Open” negotiation starts by recognizing that international legal obligations are what they are, and that time and effort should be spent exploring potential opportunities for mutual gain through cooperative development of water resources. Country A has considerable potential for hydropower production and water storage. Country B has untapped agricultural potential that requires irrigation and a favorable flow regime. It also lies between A and international markets for electricity, and is committed to shifting away from coal fired generation plants as a source of domestic energy supply. It needs a source of cleaner, cheaper electricity and A may be able to provide it. Country C needs flood control in order to develop agricultural and tourism opportunities on a delta downstream from A, as well as more energy for domestic and industrial use.

Country representatives from A, B, and C engage in extensive technical discussions of alternative scenarios that attempt to maximize benefits for all countries through hydropower development, energy transmission and trade, flow regime management, and agricultural trade. These discussions require explicit commitment that ideas and information are exchanged on a “without prejudice” and confidential basis in order to create opportunities to safely consider a wide range of options without implying any commitments. Country representatives dispense with excessive formalities and collaboratively define potential opportunities. If it turns out that there are no opportunities for mutual gain through cooperation (a highly unlikely prospect) then the fall-back is a simple acknowledgement of international legal principles. After considerable negotiation, fueled by detailed analysis of various options, an agreement is reached that involves joint investment in infrastructure needed to facilitate development opportunities that would not be possible without cooperation. A develops hydropower facilities and sells electricity to B and C. B and C get flow regime commitments needed to facilitate development of agricultural and opportunities in the delta. B sells transmission rights through its territory to A. As in the “Narrow” scenario, the negotiations take time and money to complete but the resulting stream of benefits associated with the final agreement is quite different.

The contrasts between these scenarios are obvious. If co-riparians are not going to get beyond what is already customary international law, then why bother negotiating a transboundary water agreement? It is not as if treaty obligations are backed up by strong enforcement provisions. Consider how few international water disputes have actually found their way to the International Court of Justice, recognizing of course that this requires the agreement of all states concerned, either as part of the treaty (a very rare occurrence), or at the time of the dispute (an even rarer occurrence).

Having articulated this criticism, there is a persuasive argument to be made that such “basic” treaties do create a foundation and institutional structures that foster good relationships and make meeting international legal obligations easier to achieve.

Basic treaties can also attract considerable investment by international funding organizations with the consequential economic benefits from expenditure of those investments—some of which are on projects that result in sustainable developments on the ground. While these may be the benefits of a “Narrow” type approach to treaty negotiation, it is notable that co-riparians that pursue and actually implement an “Open” approach can achieve all of these benefits set within the context of economic returns that are sustained by the developments facilitated through the treaty which may have been impossible to achieve acting independently or through a “Narrow” negotiation. In this circumstance, good relations are founded in, and reinforced by, mutual gain, and the institutional arrangements are sustained by the desire to maintain the stream of benefits created by the associated developments. This is very different than commitments to do what customary international law and International Financial Institution (“IFI”) rules already require with institutional arrangements that are funded by external sources that are unlikely to be sustained over the long term. Closely related to the “Narrow” and “Open” scenarios are very different approaches to negotiation that alternately make the process awkward and inefficient with respect to finding solutions, or make it constructive and creative. The first approach is Positional and lacks coordinated and impartial administrative, technical, legal and mediation support. In contrast, the second approach is Interest-based, and has coordinated and impartial admin-

istrative, technical, legal and mediation support. The Positional approach suffers from all of the inefficiencies associated with applying positional negotiations in a context where it is relatively easy to miss opportunities for mutual gain because the underlying interests and their synergies are not well understood. The parties are focused on maintaining positions rather than exploring alternatives that may integrate their respective interests. If administrative support is viewed as biased, the negotiation platform itself can become tangled up in the negotiation, as parties bring process issues to the negotiating table while substantive issues are being addressed. If technical and legal advice are not provided through an impartial mechanism that ensures transparent understanding of conflicting perspectives, then the negotiation can be diverted into a dialogue or conflict between experts as opposed to focusing on how well national interests are being addressed. Finally, if mediation and facilitation support is either separated from these other functions, or nonexistent, then the opportunities for these resources to maximize the potential for productive outcomes are hard to deliver.

An Interest-based approach is significantly different. Administrative, technical, legal, and mediation support is coordinated, and process design issues are worked through and agreed upon separately from substantive matters. The process is designed to maximize opportunities for safe and constructive discussion of alternatives that may deliver valuable outcomes for all riparian parties. Technical and legal advice is provided in response to issues raised through investigation of alternative solutions. They are not driving the discussion; they are supporting it. Mediation support provides the capacity to both manage the process for success for all parties, and to investigate alternatives where direct discussions may be difficult or impossible.

In summary, if the process is interest based and well supported, then time is spent on constructive problem solving and relationship building, rather than on unproductive exchanges of positions and negotiation tactics that have little or no relationship to the mutually beneficial opportunities that may well exist.

In practice, there are a growing number of Open type international agreements, which provide for the return, either in kind or in cash, of an equitable share of the benefits resulting from cooperation. Some examples are described below.

(1) The Treaty of Versailles, 1919; Article 358 of the Treaty of Versailles, 1919, gave France the exclusive right to use the waters of the Rhine for power production, subject to France paying Germany one-half the value of the energy produced. [\[FN27\]](#)

(2) The Barcelona Convention, 1921; The Barcelona Convention, 1921, Article X, contains the idea of sharing downstream and even upstream benefits, providing that where a state is obliged under the Convention to take steps to improve the river or is put to expense to maintain it for navigation, it is entitled to demand a reasonable contribution to the costs involved. [\[FN28\]](#)

(3) The Kunene River Agreement (South Africa and Portugal) 1926; The agreement between South Africa and Portugal, regulating the use of the waters of the Kunene River, gave South Africa the right to build a dam upstream in Angola and certain diversion works. Article XII further provided as follows:

No charge shall be made for the water diverted from the Kunene River for the purpose of providing means of subsistence for the Native Tribes in the Mandated Territory; but should it be desired to utilise a portion of the water referred to in Article six above [one half of the flood water of the river] for any other purposes, being for purposes of gain, . . . South Africa . . . shall pay, for such portion of the water so utilised, to . . . [Portugal] such compensation as may be mutually agreed upon. [\[FN29\]](#)

(4) The Cunene River Basin Agreement (South Africa and Portugal), 1969; A more recent treaty between Portugal and South Africa for the Kunene River (under the name of the Cunene River), sees one watercourse state paying another for benefits received by it as a result of developments of the watercourse in the other state. Under this agreement Portugal was to construct the Gove dam and South Africa agreed to participate in the financing of the dam in respect of components forming part of the storage function, but excluding costs incurred for hydro-power generation purely in the interest of the Portuguese government. In return, Portugal agreed not to extract more than fifty percent of the resulting regulated flow of the river, and to operate the dam so as to provide a regulated flow. [\[FN30\]](#) The treaty also provided for the construction and operation

of works for the diversion by means of pumping water from the Cunene River for human (including irrigation) and animal requirements in southwest Africa. South Africa agreed to pay for the construction and operation of the works, which would be done by the Portuguese authorities; South Africa was also to pay a fixed amount for the ground occupied and for the flooding caused by these works. [\[FN31\]](#)

(5) The Rhine Chlorides Agreement, 1977; The Rhine Chlorides agreement provides that the Netherlands is to pay a substantial share of the cost to France of disposing of waste salts from the Mines de Potasse d'Alsace in ways other than discharging them into the Rhine. Thus, in this example the downstream state pays the upstream state for the conferral of a benefit (freedom from pollution harm). [\[FN32\]](#)

(6) The Lesotho Highlands Project Treaty, 1986; The Lesotho Highlands Project Treaty is a treaty pursuant to which the downstream state, South Africa, was to pay a substantial share of the cost of constructing the project in Lesotho in return for the downstream benefits it would receive from the project. [\[FN33\]](#)

(7) Gabčíkovo-Nagymaros Treaty (Czechoslovakia (Slovakia) and Hungary), 1977; The 1977 Treaty between Czechoslovakia (now Slovakia) and Hungary which gave rise to the 1997 Gabčíkovo -Nagymaros ICJ case provided for the development of a series of dams and a hydroelectric plant, chiefly on a stretch of the Danube that forms the border between the two countries. Under the Treaty, this project was to produce the bulk of the electricity on a bypass canal wholly within what is now Slovakia. The majority of Danube water is diverted into that canal then rejoins the bed of the Danube. Under the Treaty, Hungary was to receive power from that plant as well as flood control and navigation benefits; all, at least in part, downstream benefits. [\[FN34\]](#)

IV. Detailed International Experiences

A. The Columbia River Basin [\[FN35\]](#)

The widely acknowledged situation with regard to the equitable sharing of downstream benefits in relation to the Columbia River aptly illustrates both the existence, and the practical application, of a mutual gains approach leading to the equitable sharing of downstream benefits. [\[FN36\]](#)

The Columbia River is shared between Canada and the United States and is governed by the Columbia River Treaty. [\[FN37\]](#) The Treaty explicitly recognizes that the construction and operation of three Treaty projects upstream in Canada increases both the useable energy and dependable capacity of power plants downstream in the United States, as well as providing irrigation and flood control benefits in the United States. All of these would not be possible at the same cost without the three Treaty projects in Canada. [\[FN38\]](#)

In return for building the three Treaty projects in Canada, the Treaty entitled Canada to a lump sum payment for irrigation and flood control benefits, as well as one half of the additional power generated by power plants in the United States that resulted from storage across the border in Canada. [\[FN39\]](#)

There are three basic principles which govern the apportionment of power benefits under the Treaty, as well as the responsibility for the costs associated with production of those benefits:

1. the power benefits generated as a result of the cooperative development of Canada and the United States are to be shared on a substantially equal basis, provided that an equal division will result in an advantage to each country as compared with the alternatives available to it;
2. when an equal division of power benefits will not result in an advantage to each country, the countries must then negotiate and agree upon such other division of benefits as will be equitable to both countries and make cooperative development feasible; and
3. each country is to bear all capital and operating costs for facilities it will provide in its own territory to carry out the cooperative development mandated by the Treaty.

According to Sanderson:

These deceptively simple principles contain considerable wisdom, a wisdom that I believe helps explain the Treaty's success in delivering the value that the Parties hoped it would in 1960. The principles effectively balance the theoretical potential of international cooperation on the one hand and the need to serve sovereign ambitions on the other. . . .

The practical affect of the principles was to cause each nation to determine the benefits it believed were attainable through cooperation. A bi-national structure was then developed to provide a mechanism to create those benefits. The principles provided that the benefits would normally be divided 50/50 and each party would bear its own costs. This benefit sharing formula would be adjusted if the normal approach did not provide a benefit to one of the Parties equal to or greater than what it thought it could obtain acting unilaterally.

The great attraction of this approach was and is that it focuses on gross benefits and eliminates the need for each country to calculate net benefits. It recognizes that determining what the net benefits and costs of a particular project might be in a way that is acceptable to both countries will often be impossible. The wisdom of finessing the need for the Parties to agree on valuing intangible attributes such as species at risk or reconciliation with First Nations is amply demonstrated by the difficulty the entities had in agreeing to the quantification of the CE spelled out in the Treaty. By allowing each Party to assess its own benefits and costs, the Treaty provides a solution which recognizes this limitation and leaves both countries to seize opportunities that make them better off than they would have otherwise been according to their own values and thus in a position to enthusiastically support whatever initiative is being undertaken.

Put simply, the power of the principles which gave rise to the sharing of benefits under the Treaty lies in the fact that those principles recognize the benefits in one country, and the costs in the other, without requiring a comparison of the two. Rather, they permit the development of a framework which facilitates a negotiation process that recognizes the legitimacy of the concerns in each country, and introduces a formula which will enable both countries to reap benefits from the development. [\[FN40\]](#)

B. The Nile River Basin

The Nile is a paradigmatic example of how the upstream-downstream dynamic can produce a zero-sum game in the absence of benefit-sharing. The Nile Basin spans portions of the territories of ten countries: Burundi, the Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda. It is said to be the longest river in the world, flowing some 4,000 miles from its source in the Lake Victoria basin to the Mediterranean Sea. But this is only one branch of the great river, the White Nile. The other branch is the Blue Nile, which flows from Lake Tana, in the Ethiopian highlands, through a deep gorge to Khartoum where it joins the White Nile to form the Nile proper. The flow of the Blue Nile is around twice that of the White Nile and is characterized by seasonal torrents, accounting for the historic Nile floods and associated flood-recession agriculture in Egypt.

Egypt contributes virtually no water to the Nile and is almost entirely dependent upon it. It therefore decided to capture the flow of the Nile behind the Aswan High Dam (Sadd el Aali Dam), completed in 1970, in the Lake Nasser reservoir, with a storage capacity of about twice the Nile's average annual flow. [\[FN41\]](#) Egypt uses this water for both irrigation and hydroelectric power production, but suffers losses of some fifteen percent of the reservoir's water from evaporation. [\[FN42\]](#) Early British studies had concluded that storage in the upper basin would offer a technically preferable solution, [\[FN43\]](#) but for Egypt the massive dam and reservoir symbolized its post-World War II nationalism and were considered necessary to Egypt's water security in view of the country's dependence on the Nile.

As is typical throughout the world, Egypt, the ultimate downstream state on the Nile, developed its water resources far earlier, by thousands of years, than any of the upstream riparians. Egypt's use of Nile water is so intensive that little actually flows into the Mediterranean Sea. This has led Egyptian leaders to threaten military action against Ethiopia if that country "touch[es] the waters of the Nile." [\[FN44\]](#) Thus the zero-sum game: whatever Ethiopia (or, theoretically, upstream states on the White Nile) uses, Egypt loses. Ethiopia has emphasized that it has a right to utilize Nile waters in a manner that is equitable and reasonable vis-à-vis Sudan and Egypt. Indeed, equitable

utilization theoretically avoids the harm to an upper riparian state that would result from locking in quantities used historically by a lower riparian. This is, however, of little comfort to Egypt, which continues to develop Nile water resources, [\[FN45\]](#) utilizing virtually all of the water that enters her territory. Egypt tends to rely more heavily on the “no-harm” principle as support for its argument that it is entitled to the same quantity of Nile water it has used historically and is currently using. [\[FN46\]](#)

It is apparent that reconciling Egypt's insistence on continuing to receive present quantities with Ethiopia's development plans cannot be accomplished through apportionment of water alone. The two countries have therefore been discussing possibilities for benefit-sharing within the framework of the Nile Basin Initiative (NBI), a development program supported by the World Bank and various bilateral donors. [\[FN47\]](#)

In 2002, Nile Basin states established the NBI as an international organization with its headquarters in Entebbe, Uganda. Nile Basin countries developed a Benefit Sharing Framework at a meeting in June 2009 and Egypt, Ethiopia, and Sudan continue to work on identification of benefit-sharing projects relating to their sub-basin through the Eastern Nile Subsidiary Action Program, one of two Investment Programs under the umbrella of the NBI. An example of these projects is the Eastern Nile Regional Power Trade Investment Program, whose objective is: “[t]o promote regional power trade through coordinated planning and development of power projects and transmission interconnection in the context of multi-purpose water resources development.” [\[FN48\]](#) As with the basin as a whole, major investment in the Eastern Nile will have to await approval of the Nile Basin Cooperative Framework Agreement, the first basin-wide treaty governing the Nile, on which the riparian states have been working since the late 1990s. At their meeting in Alexandria, 27-28 July 2009, the Nile Council of Ministers in charge of water affairs decided to allow a period of six months for the conclusion of an inclusive Cooperative Framework Agreement-- i.e., one that is participated in by all nine Nile Basin states that have taken part in the negotiations. [\[FN49\]](#) It is hoped that these final negotiations will meet with success.

C. The Senegal River Basin

The management of the Senegal River offers a unique example of benefit sharing between the riparian states. The river rises in Guinea and drains portions of that country, Mali, Mauritania, and Senegal. The most recent agreement concluded by the riparians is the 2002 Senegal Water Charter, [\[FN50\]](#) which responded to problems created by the construction of two dams pursuant to earlier agreements. These are the Manantali hydroelectric dam in Mali, completed in 1988, and the Diama saltwater intrusion barrier, near the mouth of the river where it forms the border between Mauritania and Senegal, completed in 1986. [\[FN51\]](#)

The dams had given rise to a number of problems in the downstream portion of the basin, including the degradation of ecosystems, the elimination of traditional flood-recession agriculture, and a variety of public health problems (including malaria, diarrhea, and schistosomiasis (bilharzia). [\[FN52\]](#) In adopting the Senegal River Water Charter, the riparians made the decision to alter the flow regime to mimic natural, pre-dam conditions to some extent, by creating artificial floods through releases from the Manantali Dam. [\[FN53\]](#) While this was done at the cost of some hydropower, benefits were gained by the amelioration, and possible elimination, of the conditions that gave rise to the problems that had beset the lower Senegal. This cooperative solution was made possible in part by the fact that the works constructed on the Senegal are jointly owned, pursuant to a 1978 treaty. [\[FN54\]](#) The Water Charter seeks to allocate water equitably among the different sectors, chiefly agriculture, fishing, navigation, and power production. It also contains the following innovative provision, one of a number of progressive features of the agreement: “The guiding principles of any distribution of the River's water will guarantee to the populations of the riparian States the full enjoyment of the resource, with respect for the safety of the people and the works, as well as the basic human right to clean water, in the perspective of sustainable development.” [\[FN55\]](#)

This provision of the Water Charter brings the focus back to the people who are affected by the large projects on the river. It clearly signals the intent of the parties to remedy the unforeseen problems mentioned earlier. It is especially interesting that the provision invokes the human right to water, the first time a treaty concerning international

watercourses has done so.

V. Conclusion

International water law provides an important foundation from which agreements regarding the conservation and management of international watercourses can be successfully negotiated. However, there is much to be said for applying a “mutual gains” approach towards negotiating mutually beneficial agreements for international watercourses, often including equitable sharing of benefits, which move beyond merely meeting international legal rights and obligations. In support of such an approach, a number of case studies have been presented including more detailed analysis of the Columbia, Nile, and Senegal international river basins.

Why are there not more of these types of agreements given the obvious benefits they appear to provide? One reason for this is that states are often more concerned with how they can protect and maintain their independence and sovereignty than they are with how they may be able to cooperate to maximize mutual benefits. This starts negotiations off in a narrow context with negotiators that have strict instructions “not to give anything away while supporting and maintaining good relations.” Another reason for the lack of open type negotiations is the absence of independent and coordinated institutional support. Institutional support is often provided by international funding organizations as part of a project of the organization for which an agreement is a deliverable. This can create a challenging dynamic within the process as those that are responsible for providing institutional support struggle to maintain neutrality while also delivering an agreement. This can undermine co-riparian confidence that the process will support them whether or not they choose to agree. It is only in recent years that the UN has begun to develop a more systematic mediation support service for transboundary water negotiations and this is still in its very early stages. [\[FN56\]](#) Also, while the theory of value creation that underpins a mutual gains approach appears to be easily recognized and understood by participants across various cultures, it is often less clear that the communication strategies that also underpin the approach, and which can vary in significant ways across cultures because of different social norms that govern individual and organization behavior, are as transferable.

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[\[FN1\]](#). Interview with Scott Slater, Partner, Hatch & Parent, Sacramento, Cal. (Feb. 17, 2009) (on file with Stephen C. McCaffrey) (each day, the Hyperion Treatment Plant sends an amount of water the equivalent of the USA's fifth largest river into the ocean). See also City of Los Angeles Stormwater Program, Hyperion Treatment Plant, <http://www.lastormwater.org/siteorg/general/hypern1.htm> (last visited Dec. 23, 2009).

[\[FN2\]](#). John Anthony Allan, Distinguished Guest Lecturer at the Royal Society of Chemistry, Lecture at the University of Saskatchewan: Water and Energy: Three Weddings and Avoiding Two Funerals (Sept. 10, 2009).

[FN3]. Aaron T. Wolf, Jeffrey A. Natharius, Jeffrey J. Danielson, Brian S. Ward & Jan K. Pender, *International River Basins of the World*, 15 *Int'l J. of Water Res. Dev.*, 387, 392 (1999); Stephen C. McCaffrey, *The Law of International Watercourses* 16 (2nd ed. 2007).

[FN4]. James Kraska, *Sustainable Dev. is Security: The Role of Transboundary River Agreements as Confidence Building Measure (CBM) in South Asia*, 28 *Yale J. Int'l L.* 465, 490 (2003) (competition over freshwater resources often exacerbates international tension).

[FN5]. Richard Kyle Paisley & Timothy L. McDaniels, *International Water Law, Acceptable Pollution Risk and the Tatshenshini River*, 35 *Nat. Res. J.* 111, 117-118 (1995) (international treaty law consists of explicit agreements between international bodies while customary international law consists of the practices of international bodies that are relatively uniform, generally accepted and enforced by a relevant community of states). See generally McCaffrey, *supra* note 3, at 16.

[FN6]. Ian Brownlie, *Principles of Public International Law* 2 (7th ed. 2008).

[FN7]. United Nations: Convention on the Law of the Non-Navigational Uses of International Watercourses, opened for signature May 21, 1997, [36 I.L.M. 700](#) (not yet in force) [hereinafter UN Watercourses Convention]. See McCaffrey, *supra* note 3, at 375-77.

[FN8]. The Convention on the Protection and Use of Transboundary Watercourses and International Lakes, March 17, 1992, available at <http://www.unece.org/env/water/pdf/watercon.pdf> (the UNECE Water Convention, which was adopted in Helsinki in 1992 shortly before the Rio conference and entered into force in 1996, provides a legal framework for regional cooperation on shared water resources like rivers, lakes, and groundwaters).

[FN9]. International Law Association, *Helsinki Rules on the Uses of the Waters of International Rivers*, 52 *Int'l L. Ass'n Rep. Conf.* 484, (Aug. 1966), available at http://web-world.unesco.org/water/wwap/pccp/cd/pdf/educational_tools/course_modules/reference_documents/internationalregionconventions/helsinkirules.pdf [hereinafter Helsinki Rules].

[FN10]. See McCaffrey, *supra* note 3, at 375-77; see also Richard Kyle Paisley, *International Watercourses / River Basins Including Law, Negotiation, Conflict Resolution and Simulation Training Exercises* (2008).

[FN11]. UN Watercourses Convention, *supra* note 7, at art. 5.

[FN12]. *Id.* at art. 7(1).

[FN13]. *Id.*

[FN14]. *Id.* at art. 11.

[FN15]. *Id.* at art. 12.

[FN16]. See Richard Paisley, *Adversaries Into Partners: International Water Law and the Equitable Sharing of Downstream Benefits*, 3 *Melb. J. of Int'l L.* 280, 283 (2003); and McCaffrey, *supra* note 3, at 365-67.

[FN17]. *Gab?ikovo-Nagymaros Project (Hung. v Slovk.)*, 1997 *I.C.J.* 7, 54 (Sept. 26).

[FN18]. McCaffrey, *supra* note 3, at 363, 384-405.

[FN19]. UN Watercourses Convention, *supra* note 7, at art. 7(1).

[FN20]. See, e.g., *Gab?ikovo-Nagymaros Project (Hung. v Slovk.)*, 1997 *I.C.J.* 7 (Sept. 26).

[FN21]. See Paisley, *Adversaries*, *supra* note 16, at 283 n.10. See generally McCaffrey, *supra* note 3.

[FN22]. Paisley, *Adversaries*, *supra* note 16, at 283 n.10; McCaffrey, *supra* note 3, at 365-67, 436.

[FN23]. This possibility is recognized by World Bank, *Operational Manual, OP 7.50- Projects on International Waterways, Operational Policies* (2009), available at <http://www.worldbank.org>; see generally McCaffrey, *supra* note 3, at 407.

[FN24]. Mutual Gains bargaining is an approach to collective bargaining intended to reach win-win outcomes for the negotiating parties. Instead of the traditional adversarial (win-lose) approach (aka positional bargaining), the mutual gains approach is similar to that first described by Roger Fisher (in his book *Getting to YES*), where the goal is to reach a sustainable agreement that all parties in a multi-party negotiation can live with and support.

[FN25]. See McCaffrey, *supra* note 3.

[FN26]. See Shlomi Dinar, *Power Asymmetry and Negotiations in International River Basins*, 14 *Int'l Negotiation* 329 (2009) (stating that, "Cooperation, in general, materializes when both states, but particularly the stronger state, realize that benefits can accrue from coordination and joint action. In other words, to harness the river in an efficient manner, cooperation must ensue and the downstream state's participation is important. Even when the benefits to cooperation are not clear, i.e. when the upstream riparian does not foresee immediate economic incentives to cooperation, coordination may still be attained through the manipulation of incentives (or strategic interaction)..."); see also Neda A. Zawahri & Andrea K. Gerlak, *Navigating International River Disputes to Avert Conflict*, 14 *Int'l Negotiation* 211 (2009).

[FN27]. Treaty of Peace Between the Allied and Associated Powers of Germany, June 28, 1919, 3 U.S.T. 3714, [hereinafter Treaty of Versailles].

[FN28]. Convention and Statute on the Regime of Navigable Waterways of International Concern, Apr. 20, 1921, 7 L.N.T.S. 35 [hereinafter Barcelona Convention].

[FN29]. Agreement Between the Government of the Republic of South Africa and the Government of the Republic of Portugal Regulating the Use of the Waters of the Kunene River for the Purposes of Generating Hydraulic Power and of Inundation and Irrigation in the Mandated Territory of South West Africa, Port.-S. Afr., July 1, 1926, 70 L.N.T.S. 316 [hereinafter Kunene River Agreement].

[FN30]. Agreement between the Government of the Republic of South Africa and the Government of Portugal in Regard to the First Phase of Development of the Water Resources of the Kunene River Basin, Port.-S. Afr., arts. 4.1.11, 4.1.12, Jan. 21, 1969, LEX-FAOC015963, available at <http://faolex.fao.org/docs/texts/saf15963.doc>.

[FN31]. *Id.* at arts. 4.2.6.9, 4.2.8.

[FN32]. Convention on the Protection of the Rhine Against Pollution by Chlorides, Dec. 3, 1976, 16 *I.L.M.* 265 [hereinafter Rhine Chlorides Agreement].

[FN33]. Treaty on the Lesotho Highlands Water Project Between the Government of the Kingdom of Lesotho and the Government of the Republic of South Africa, Lesotho-S. Afr., Oct. 24, 1986, available at <http://www.fao.org/docrep/w7414b/w7414b0w.htm>.

[FN34]. See Gab?ikovo-Nagymaros Project, *supra* note 20, at 18; for an analysis of the case see McCaffrey, *supra* note 3, at 210-21.

[FN35]. See Leonard Ortolano et al., World Comm'n on Dams, Grand Coulee Dam and the Columbia Basin Project USA (2000); Nigel Bankes, The Columbia Basin and the Columbia River Treaty: Canadian Perspectives in the 1990s (1996); Nwcouncil.org, Columbia River: Description, Creation, and Discovery, <http://www.nwcouncil.org/history/ColumbiaRiver.asp> (last visited Dec. 23, 2009).

[FN36]. Treaty Between Canada and the United States of America Relating to Cooperative Development of the Water Resources of the Columbia River Basin, U.S.-Can., Jan. 17, 1961, 542 U.N.T.S. 244 (1964).

[FN37]. *Id.*

[FN38]. *Id.*

[FN39]. *Id.*

[FN40]. Chris Sanderson, Partner at Lawson and Lundell LLP, Paper Prepared for Transboundary River Governance in the Face of Uncertainty: The Columbia River Treaty, 2014: The Columbia River Treaty After 2004 16 (Apr. 2, 2009).

[FN41]. See generally McCaffrey, *supra* note 3, at 358-61.

[FN42]. *Id.*

[FN43]. See, e.g., Sir William Garstin, Report upon the Basin of the Upper Nile 194-95 (1904).

[FN44]. Robert O. Collins, The Nile 214 (2002) (quoting Anwar el-Sadat). See also John Waterbury, The Nile Basin 71, 83 (2002).

[FN45]. The development is on the "Peace Canal," under the Suez Canal to the Sinai, and the "New Valley" or Toshka project, which pumps water from Lake Nasser west to the desert. See Waterbury, *supra* note 44, at 70-71, 84.

[FN46]. Egypt also relies on a 1929 treaty with Great Britain which it says is now binding on the Nile riparian states that were British colonies at the time, including Sudan, Kenya, Tanzania and Uganda. See McCaffrey, *supra* note 3, at 265. The latter three states contest this assertion; the relations between Egypt and Sudan are governed by the Agreement between the United Arab Republic and the Republic of Sudan for the Full Utilization of Nile Waters, Nov. 8, 1959, 453 U.N.T.S. 51.

[FN47]. See generally Nile Basin Initiative, Nile Basin Initiative, <http://www.nilebasin.org/> (last visited Dec. 23, 2009).

[FN48]. Nile Basin Initiative Subsidiary Action Program, ENSAP--Eastern Nile Regional Power Trade Investment

Program (2009), http://ensap.nilebasin.org/index.php?Itemid=127&id=41&option=com_content&task=view.

[FN49]. Nile Basin Initiative, 17th Nile Council of Ministers in Charge of Water Affairs Reaffirm Basin-Wide Cooperation (2009), http://www.nilebasin.org/index.php?option=com_content&task=view&id=137&Itemid=70. Eritrea is the one Nile Basin state that has not participated in the negotiations. It participates in meetings of the Council of Ministers as an observer. *Id.*

[FN50]. Charte des Eaux du Fleuve Sénégal [Senegal River Water Charter], 18 May 2002, OMVS Resolution 005, art. 24, available at <http://bd.stp.gov.ml/padelia/pdf/CHARTEDESEAUXDUFLEUVESENEGAL.pdf>. For a discussion of the earlier treaties concerning the Senegal River Basin, see Margaret J. Vick, The [Senegal River Basin: A Retrospective and Prospective Look at the Legal Regime](#), 46 *Nat. Res. J.* 211 (2006).

[FN51]. Vick, *supra* note 50, at 216.

[FN52]. See Int'l Dev. Ass'n, World Bank, Regional Cooperation and Benefit Sharing in the Senegal River Basin, available at http://siteresources.worldbank.org/EXTWAT/Resources/Senegal_River_Bain_Feature_Story.pdf (last visited Dec. 23, 2009); McCaffrey, *supra* note 3, at 274.

[FN53]. Int'l Dev. Ass'n, *supra* note 52.

[FN54]. Convention Relative au Statut Juridique des Ouvrages Communs [Convention concerning the Legal Status of Jointly-Owned Structures], Dec. 12, 1978, available at <http://faolex.fao.org/docs/texts/mul16005.doc>; supplemented by the Convention Relative aux Financements des Ouvrages Communs (Convention concerning the Financing of Jointly-Owned Structures), Mar. 12, 1982).

[FN55]. Senegal River Water Charter, *supra* note 50, at art. 4.

[FN56]. See Press Release, United Nations, United Nations Announces New "On-Call" Mediation Team (Mar. 5, 2008), available at <http://www.un.org/News/Press/docs/2008/pa1.doc.htm>.

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Role of Custom in International Water Resource Law¹

General principles and rules of customary international law of fresh water resources play a very important role when there is no agreement governing the relations of states sharing an international river, lake, or drainage basin. In fact, they also play an important role when such agreement exists.

When an international river agreement is recorded in writing, problems of interpretation of general clauses, of reservations, or of ambiguous provisions may arise for which the treaty does not provide a solution. In the practice of applying specific treaty provisions, recourse may thus be necessary to general principles underlying the treaty, or rules which are extraneous to the operative text of the treaty. Questions may also arise as to whether an agreement ever came into force or, indeed, is still in force. Here, rules of international law regulating the formulation, modification, termination, and construction of treaties must be brought into play.

More important still from the standpoint of customary rules of international water resources law, states sharing an international river or drainage basin may be confronted with problems which are beyond the reach of existing agreements among them. Most international "river treaties" have tended, and will probably tend, to deal only with certain water use or management issues. As the utilization of the waters of international rivers or drainage basins increases in quantity and complexity, however, the rules agreed to in the "river treaties" in force may become inadequate or simply insufficient. In the absence of treaty coverage on such matters, recourse must be made to the unwritten rules, if any exist, governing the development, conservation, and use of shared rivers and drainage basins.

The important point is that any international drainage basin treaty is not something standing alone, but is supported by, limited by, and tested against its set of general international law standards, the content and the validity of which are not determined by the agreement in question.

The conventional law of any international drainage basin can be effectively applied only with the aid of principles and rules drawn from the larger international legal system, including any sub system of the region or basin community.

Finally, for those international streams without even a partial treaty regime with respect to water use, there is no immediate alternative but to fall back on the applicable rules of customary international law.

Evolution of Customary Rules

The integrating tendencies which call for more efficient use of water within the national borders operate also within the politically divided basin. Here the pull of geographical unity has been reinforced by the realization that damage caused by a beneficial use or a harmful effect of water does not stop at the political boundary. The steadily, though slowly, growing capacity to inflict damage at ever-increasing distances through water use and exploitation has forced a cooperation between co-basin states and may eventually lead to the obliteration of differences between the rules that govern water use and exploitation within state borders, and those that pertain to the transfrontier effects of such use.

¹ Dante A. Caponera, "The Role of Customary International Water Law," in *Water Resources Policy for Asia* 365, 367-68, 372, 380-81 (M. Ali, G. Radosevich & A. Khan eds., 1985).

SUMMARY STATEMENT OF KEY PRINCIPLES

The present state of general international law on shared water resources development, conservation, and use can be summed up by the three key principles as follows:

1. Duty Not to Cause Substantial Injury.

States sharing an international watercourse or basin are under obligation not to cause each other substantial injury, in regard to both water quantity and quality aspects. This principle stems from the broader proposition that a state may not use or allow to use its territory in such a way that harm is caused to the territory or interests of another state. The effect or harm, however, must be appreciable, that is, it must have an impact of some consequence in order to constitute transgression of an interest protected at international law. The complementary doctrine of good neighbourship, in fact, requires states to tolerate inconsequential, or minor interferences.

2. Right to an Equitable and Reasonable Share in the Utilization of the Waters of an International Watercourse or Basin.

Subject to the overarching principle mentioned above, states sharing an international watercourse or basin have the right to use the waters therein. This right being an attribute of sovereignty, each sharing state's own right is equal to the right of the other sharing states. When the circumstances are such that all the sharing states' equal rights cannot be satisfied to their full extent, some adjustment or accommodation is necessary. In the absence of specific conventional rules, such adjustment is done on the basis of equity. In sum, there is probably no more widely accepted principle of international water resources law than that each state "is entitled, within its territory, to a reasonable and equitable share of the beneficial uses of the waters" of an international river, lake, or basin.

3. Duty to Inform, Consult, and Engage in Good Faith Negotiations.

The fundamental duty of states to refrain from using the waters of an international river, lake, or basin in such a way as to cause appreciable harm to another state on the same watercourse or in the same basin entails in practice that states must inform one another in advance of water development plans and projects which may have an appreciable detrimental impact on their respective interests. Whereas one state cannot claim a veto power over another state wishing to alter the status quo in an international river, lake, or basin, it must nevertheless be afforded access to information and opportunities to evaluate the situation and to suggest adjustments if the proposed alteration may harm appreciably its legitimate interests. In turn, the state proposing the alteration must give proper consideration to the objecting state's representations, and both proposing and objecting state are under a duty to engage in good-faith negotiations with a view to finding a suitable accommodation of their respective interests.

It is fair to state, in sum, "that the duty to inform and to consult, and then to work out a solution that obviates the expected appreciable harm is now cardinal in the field of shared water resources".



Beyond the river: the benefits of cooperation on international rivers

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Abstract

International rivers can elicit cooperation or conflict. The choice between the two will in large part be determined by perceptions of their relative benefits. In this paper, we explore the dynamics that drive the choice between conflict and cooperation, and present a simple framework for examining the extent of potential benefits that could underlie these choices. The paper seeks to broaden the range of perceived benefits, as some are obvious and some are much less apparent. The framework categorizes four types of cooperative benefits. First, cooperation will enable better management of ecosystems, providing *benefits to the river*, and underpinning all other benefits that can be derived. Second, efficient, cooperative management and development of shared rivers can yield major *benefits from the river*, in increased food and energy production, for example. Third, cooperation on an international river will result in the *reduction of costs because of the river*, as tensions between co-riparian states will always be present, to a greater or lesser extent, and those tensions will generate costs. And finally, as international rivers can be catalytic agents, cooperation that yields benefits from the river and reduces costs because of the river can pave the way to much greater cooperation between states, even economic integration among states, generating *benefits beyond the river*. While each of these four types of benefits could potentially be obtained in all international river basins, the extent and relative importance of each type will vary greatly between basins, reflecting a wide range of political, geographic, economic and cultural circumstances. In some cases, the scale of benefits may not justify the costs of cooperative actions, in others the sum of benefits could be very high. The paper concludes that identifying and understanding the range of often inter-related benefits derived from the cooperative management and development of international rivers is central both to better management of the world's rivers, and to relations among the nations sharing those rivers.

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Keywords: International rivers; Water resources management; Cooperation and conflict; Economic cooperation; Regional integration; Water wars

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1. Introduction

Rivers¹ are extraordinary phenomena, with physical, cultural and psychological expression in human societies; they bring life and death, civilization and devastation, opportunity and risk. Managing rivers effectively has always been a goal of human societies and nation states. Under Roman law, documented in the 3rd Century Roman Digest, *aqua profluens* (flowing water) was a common good, neither public nor private, emphasizing equity and society-wide ownership. Managing rivers for the common good remains today a societal goal in countries around the world. To achieve this goal a range of instruments is being adopted: river basin organizations are bringing stakeholders together to internalize the politics of allocation, market mechanisms are widely used to rationalize the economics of allocation, and legislation is enacted and enforced to ensure the regulation of allocation. One fundamental lesson of universal experience is that a river is best managed as a basin unit, as any action in one part of the basin has impacts in another.

The management of rivers is complicated by the fact that they cross political boundaries indiscriminately. Rivers intersect or even form borders between the many different users that must share their water. River basins wholly within a nation invariably give rise to debate and discord, to a greater or lesser extent, among users with conflicting demands and management preferences. Strong national institutions can deal effectively with such differences, although in federal nations with strong state legislatures (as in the US, India or Australia) management planning of, and user disputes over, inter-state rivers often present major challenges. However, in all these cases, there remains a national legislative structure with ultimate authority. There is rarely an institution of equivalent authority, however, where rivers flow between, and disputes arise among, sovereign nations. There are about 260 rivers that cross or form international borders; their basins cover almost half of the world's land surface and include about 40% of the world's population (Wolf, 1998). As water everywhere becomes increasingly scarce relative to demand, conflicting expectations of international rivers will grow, with only limited and little-tested supra-national legal and institutional instruments available for nations to look to in order to allocate and conserve the water of the rivers that they share.

There has been much written recently in the economic, political and scientific literature about international rivers, with a sharp focus on 'water wars'. Some write of water wars, both in the past, and, more importantly, in the future. Others argue that no war in history has ever been

¹ Some clarity over terms is necessary. In this paper, freshwater flows (whether surface water or groundwater), and the lakes and wetlands which some of these flows may pass through, derive from or terminate within, are described, very loosely and evocatively, as 'rivers'. The term 'international rivers' is used in this text to refer to freshwaters whose basins are situated within the borders of more than one state. We recognize that there is a long-standing, formal debate over such terminology. Some believe that the use of the word 'international' is incorrect as it implies that the waters (as in seas) do not belong to any state, whereas only the basin states have rights to an international river. Some use 'transboundary rivers', which confuses others as many river channels form international borders without crossing them (although in these cases the river basins themselves will almost certainly be transboundary). Furthermore, transboundary rivers include those that cross intra-national (e.g. state) borders—not only international borders. Others use 'shared rivers', which is disputed by some who do not perceive the use of such waters as 'shared'. Again, others use the term 'watercourse', which is rejected by some who believe that it does not include the full extent of the hydrologic basin and all its water sources. This often heated and rarely conclusive debate serves to emphasize the importance of achieving a common understanding on the issues of 'international rivers'—an understanding best reached through recognizing the benefits of cooperation. This is the subject of this paper.

fought over water, and that international rivers tend to induce cooperation. There is a case for both positions, although, in this paper, we align ourselves with neither, and instead take a somewhat different approach.

All international rivers, without exception, create some degree of tension among the societies that they bind.² There are consequences of these tensions, and of the cooperative or non-cooperative responses they elicit, that can reach far 'beyond the river'. These tensions, and their responses, are bundled with many other factors—historic, cultural, environmental and economic—that affect relations between neighboring nations. Within these bundled dynamics, international rivers can in some cases become a powerful catalyst for conflict, or a powerful catalyst for cooperation. Fully unbundling water's role from the complex dynamics of relationships between states is not possible. Control of international rivers is inextricably entwined with economic opportunity, national security, society and culture. Water—narrowly defined—is unlikely to be or have been the sole source of any war, just as, we believe, war is unlikely to be or have been fought for any single interest or purpose. The management of shared water can be a force for peace, or a force for war, but politics—as a proxy for the full bundle of relationships, and associated tensions, that arise between states—will determine whether cooperation or conflict is chosen.

In this paper, we draw upon World Bank experience in different parts of the world and we outline a framework, which is proving relevant and useful in considering cooperation on international rivers. In setting the scene for this framework, we need to consider the nature of a river and its roles in the environment and in the economic endeavors and political relationships of human society.

2. The ubiquitous river

Rivers are a central feature of the ecology of the planet. Crustal processes build mountains and create deep basins. Rain falls, is captured in rivers, erodes mountains, and deposit sediments in lowlands, infilling basins. Rivers play a dominant role in sculpting landscapes and sustaining ecosystems. All life needs water and the presence of water gives life, within the river itself, within associated wetlands, lakes and riverine vegetation, and within the landscape sustained by the river. While the river sustains life and ecological systems, so also do these systems sustain the river, providing natural regulation of water quantity and quality.

Rivers have always been and remain a central feature of the economic environment. Human settlement has almost always been close to water, because of the essential role water plays in human life and economic endeavor. Only in the past century has technology allowed permanent human settlement far from water. It is no coincidence that many of the world's great cities are found along the banks of rivers. Rivers provide water for drinking, for food production, for energy and for transport and have played a role in the development of human civilization—nowhere more so than in the major alluvial basins of the world, such as the Mekong, the Indus, the Euphrates and the Nile basins. People who settled in the floodplain had great opportunity to grow crops along the river, as the annual flood receded, leaving fresh silt and high water levels

² The word rival has the same root as river, derived from the riparian concept of dwellers on opposite riverbanks.

which boosted production, and to use the river as a transport route to trade that production. In fact, the need to ensure navigation along rivers provided the incentive for some of the earliest recorded institutions and agreements on international rivers. The relationship between the flow of rivers and the economy has long been recognized; the early Egyptians built Nilometers some 5000 years ago to measure the flow of the River Nile at Aswan in order to determine annual taxes for farmers.

Rivers have also, less obviously, long been a feature of the political environment. History shows us that they have played a part in defining the structure of human societies in many parts of the world and in many ways. While early societies in alluvial basins had great opportunities, they also faced great risk, for, if seasonal flood was high, or if it failed, then life was at risk. Harnessing the flood took ingenuity and physical structures (with levees, dykes and canals) requiring the organization of large numbers of people, as well as rules and institutions for water allocation. From this emerged bureaucracies, hierarchies and innovations which helped strengthen civilizations and cities.³ Societies in upland headwaters did not face the same imperatives, and historically appear to have more often been characterized by smaller, less structured social groupings. On the plains, proximity to rivers has been both a source and a reward of strength. Stronger and wealthier societies tend to live close to rivers, while weaker, poorer ones are forced away from rivers, where water is harder and more costly to obtain, and food supplies are less secure. Similarly, in the less developed parts of the world today, stronger and wealthier groups tend to live close to abundant clean water sources or water supply systems, while the poorest are forced to travel significant distances to obtain water of generally lesser quality at greater cost. Rivers are thus as closely linked with the economic and political fabric of human society as they are with the landscape.

Today's international rivers are also interwoven with the geo-political map. Many rivers have always been natural barriers and have defined boundaries (the Roman Empire reached but did not cross the Rhine and Danube rivers). Similarly, the boundaries of watersheds are borders in many parts of the world today, as they formed natural lines where there was no dispute over water. In recent times, however, the drawing of lines on maps to form borders has ignored the significance of hydrology. Africa is a case in point; lines drawn on maps in London, Paris, Berlin and Lisbon have left over 60 rivers crossing national borders, with more river basins per country and more countries per river basin in Africa than in any other continent.

Rivers are thus extraordinary, multi-dimensional systems. They are ecological systems, with critical life- and landscape-sustaining functions. Cooperation on an international river could enable better management of these ecosystems, providing *benefits to the river*, and underpinning all other benefits that can be derived. Rivers are physical and economic systems, whose efficient, cooperative management and development can yield major *benefits from the river*, in increased food and energy production, for example. Rivers have political significance—particularly so when they are shared between states; non-cooperation on an international river will result in tensions between states that will always be present, to a greater or lesser extent, and those tensions will

³See Wittfogel in *Oriental Despotism* (1957). Wittfogel argued that control of water for irrigation was central to the Asian system of economic production, and had a profound impact on the organization of what he termed 'hydraulic societies'. The control of water was therefore a source of power that could be exploited by a central bureaucracy—a theory that came to be known as 'hydraulic monopoly'.

Table 1
Types of cooperation and benefits on international rivers

Type	The challenge	The opportunities
<i>Type 1: increasing benefits to the river</i>	Degraded water quality, watersheds, wetlands, and biodiversity	Improved water quality, river flow characteristics, soil conservation, biodiversity and overall sustainability
<i>Type 2: increasing benefits from the river</i>	Increasing demands for water, sub-optimal water resources management and development	Improved water resources management for hydropower and agricultural production, flood-drought management, navigation, environmental conservation, water quality and recreation
<i>Type 3: reducing costs because of the river</i>	Tense regional relations and political economy impacts	Policy shift to cooperation and development, away from dispute/conflict; from food (and energy) self-sufficiency to food (and energy) security; reduced dispute/conflict risk and military expenditure
<i>Type 4: increasing benefits beyond the river</i>	Regional fragmentation	Integration of regional infrastructure, markets and trade

generate costs; significant benefits could be derived by *reducing costs arising because of the river*. International rivers can be catalytic agents, as cooperation that yields benefits from the river and reduces costs because of the river can pave the way to much greater cooperation between states, even economic integration among states, resulting in *benefits beyond the river*. We will explore these four types of benefits, set out in Table 1, as a framework for our discussion, while recognizing that they feed into each other inextricably and that they are integrated elements of a much broader, even more complex system that cannot be un-bundled.

3. The ecological river: benefits accorded 'to the river'

Cooperation across borders in the sustainable management of a river ecosystem, according to *benefits to the river*, can be a valuable and unthreatening place for international cooperation to start. Environmental management is a cornerstone of river basin management and development and can bring benefits to all river uses and users. While there is a growing debate over the 'preferred' ecological state of a river—from 'pristine' to 'engineered', modern river basin management typically incorporates a conscious design process to ensure a 'healthy' river system, however defined, which accounts in some way for the inevitable tradeoffs of river development. A healthy river is typically one with: protected watersheds, preserving soil fertility and reducing contaminant and sediment soil transport; conserved wetlands, floodplains and groundwater

recharge areas, to maintain their natural capacity to buffer river flow and water quality variations; protected aquatic and riverine terrestrial biodiversity; and controlled water abstraction and wastewater discharge, to manage river flows and water quality.

Although rivers are resilient ecological systems that can recover from natural and anthropogenic shock, growing populations and industrializing societies almost invariably cause environmental damage to rivers, by, for example, reducing flows, eroding water quality and destroying fish stocks. Organizing affirmative action to protect the river within a nation state has proved complex and is costly if left until major damage is done and remedial action is needed, as many industrial nations have discovered. The US Superfund is a case in point, where tens of billions of dollars are being invested to restore surface and ground water systems, and particularly the latter, as groundwater clean up is invariably difficult.

The challenge of the protection of international waterways is much greater still, although there are recent examples of major cooperative efforts to restore and protect shared water systems. Initiatives in the Baltic and Red seas, and in the Danube basin, all supported by the Global Environment Facility, are good examples of this, bringing ‘benefits to the river’. Cooperation among the eight Rhine riparian states is another interesting example. Cooperation on the Rhine goes back over a thousand years to navigation agreements. In the mid-19th century salmon production was an important economic activity in the Rhine. Growing populations and industries led to a complete extinction of salmon in the Rhine by the 1920s—with over half of the world’s chemical production occurring along the Rhine by the 1950s, when the Rhine was known as ‘the sewer of Europe’. In 1987, ministers of the Rhine countries launched the Rhine Action Plan, with the symbolic goal of ‘Salmon 2000’—a readily understood objective which popularized the much more complex goal of reducing chemical contaminants to a level that would bring life back to the river. Following intensive international cooperation, major investment and widespread public support, by 2000 salmon were swimming up the river as far as Mannheim to breed once more, signifying a healthy river again. Today, much wider Rhine cooperation is planned—such as in the area of flood control.

In poorer regions of the world, there may appear to be fewer incentives for, and therefore less interest in, the management of the ecosystems of rivers. Yet, rivers are balanced systems and upsetting this environmental balance by unmanaged development can have major social and economic impacts. As populations and pressures on land grow in less developed nations, the poorest of the poor are forced into more and more marginal lands. In river basin headwaters, these are vulnerable uplands, often with high slopes and vulnerable soils. Forests are cut down, wetlands drained and slopes are cultivated. Soils are eroded, resulting in reduced crop yields and, eventually, unsustainable livelihoods. More insidiously, groundwater recharge is reduced and levels lowered, river flows become much more flashy and downstream flood and drought impacts can be greatly enhanced. In these circumstances, watershed management can be one key to sustainable development. There are a growing number of countries where this is recognized, with funds channeled to rural people for development programs, recognizing that they act as guardians of the watersheds that feed cities and industries downstream. This is much more difficult to organize in international river basins, where upstream nations are the guardians of the watersheds for downstream nations.

Take the case of Southern Africa, where there are numerous international rivers. Drought in the early 1990s had massive economic and social impacts with, for example, a 45% decline in

agricultural production in Zimbabwe in 1992. In 2000 and 2001 flooding of the Save and Limpopo rivers also had major impacts, particularly on the poor living in the most vulnerable parts of the floodplains in Mozambique, a downstream riparian state on eight international rivers. Smallholder settlement on vulnerable headwaters upstream, coupled with recurring drought and flood, has led to serious soil erosion and altered hydrologic regimes, with impacts throughout the river basins of the region. In the case of Mozambique, managing floods and droughts requires actions in the watersheds of upstream states. Unintentionally, the settlement of vulnerable watersheds in one country, often by the very poor, can thus have major impacts on a downstream country—and often on the very poor settled in the floodplains. There can be no reasonable solution without international cooperation.

It is clear that cooperation in the management of land and water within a basin ecosystem, according *benefits to the river*, can bring benefits to all—and may even be a pre-requisite for deriving *benefits from the river*.

4. The economic river: benefits to be reaped ‘from the river’

Cooperative management of the water flowing in an international river can reap benefits *from the river*. Managing a river basin from a system-wide perspective can increase the quality, the available quantity, and the economic productivity of river flows. River basin development seeks to promote this integrated, system-wide perspective, where the full range of water use opportunities and the various inter-relationships of individual water uses can be considered. River flows and water uses can be optimized to yield, inter alia, more food, more power, and more navigational opportunities, while sustaining environmental integrity. There will often be difficult tradeoffs to be assessed between environmental conservation and river development, with these assessments best made at the basin scale. This is always difficult, even within national boundaries. In international river basins, this system-wide perspective is much more difficult to obtain, and this can only be achieved through cooperation. The gains that result from this shift in planning perspective, are the most obvious and direct economic gains to be made from the cooperative management of shared waters.

There is a widespread perception that water allocation is a zero-sum game, that water resources are finite and that one use will always preclude another. While physical water resources are, indeed, finite, the quantity of *available* water resources can be influenced by management actions. This is particularly true where rainfall is low and highly variable. Good water management practices can effectively increase the available water resources in a system by, for example, protecting watersheds to minimize erosion, maximize infiltration and extend the period of run-off; providing over-year storage to buffer rainfall variability and reserve water in abundant years that would otherwise be lost; and by locating storage in areas of the basin that minimize evaporation and environmental disruption. In semi-arid Spain, for example, effective water management practices have increased water availability from 8% of total flow to 60%. There are also many non-consumptive uses of water, such as hydropower generation, navigation and recreation. The ‘use’ of water for these purposes will not necessarily diminish the water available in the system for other uses.

Focusing on the benefits⁴ derived from the use of water in a river system, rather than the physical water itself, is another way to broaden the perspective of basin planners. The allocation of water, particularly in international systems, is often contentious. However, the underlying interest of many involved, often not recognized, is commonly not the water itself—but rather the benefits and opportunities they hope to obtain from access to that water (i.e. not cubic meters but dollars). A focus on the benefits derived from water use may provide greater scope, and hence greater flexibility, in defining cooperative management arrangements that are acceptable to all parties.

Just as good water resource management practices can increase the availability of water in a river system, integrated planning that maximizes the benefits derived from water can clearly increase the overall productivity of a river system. The positive-sum nature of international cooperation in this context is more intuitive, because of the interaction of economic activities and the integrity of the ecosystem. Basin-wide configurations of consumptive and non-consumptive water uses can be explored to optimize benefits. In some cases, potential non-consumptive benefits may exist that could provide significant additional benefits to a basin without any change in the pattern of water extractions.

There are many good examples of cooperation reaping economic benefits from the river. In the case of the Senegal river, Mali, Mauritania and Senegal are cooperating to regulate river flows and generate hydropower, with a legal and institutional framework and co-owned infrastructure assets, including the Manantali dam that is located 300 km inside Mali. In another case, Lesotho and South Africa are cooperating in the construction of infrastructure on the Orange River in the Lesotho Highlands Project, providing least cost water supply to South Africa's industrial heartland and royalties to Lesotho amounting to 5% of GDP.

Major (joint or several) development, such as the construction of dams and major abstractions for irrigation, present special challenges due to the need to assess options and tradeoffs and to apply environmental and social safeguards effectively and reasonably across international borders and jurisdictions. Again, both the Senegal river and Orange river cases illustrate this, with ongoing debates on environmental issues made more complex by their international nature.

Yet, even significant gains to cooperation in a river system may not be sufficient motivation for cooperation if the distribution of those gains is, or is perceived as, inequitable. It is possible, for example, that a cooperative river management scheme which generates significant gains to the group as a whole might provide fewer benefits to one particular riparian than an alternative non-cooperative scheme. That particular riparian would therefore have little incentive to cooperate. Even if all states benefit more from cooperation than non-cooperation, the relative distribution of gains could inhibit cooperation. Concepts such as Tedd Gurr's 'relative deprivation' or William Baumol's 'envy' suggest that parties are not indifferent to the gains of others, and that some might choose to forgo their own potential gains in order to bar other parties from receiving relatively greater, or preferred, gains.⁵ In such cases, a cooperative arrangement may not be agreed without redistribution or compensation.

⁴Economic benefits here can include anything to which societies attach value.

⁵In addition to equity concerns, the spatial and political relationships between riparians may make relative gains relevant to regional development, integration and relations. Water resource management affects economic and demographic development patterns, enabling or undermining the growth of economic activities and human settlements.

An equitable benefit sharing arrangement may well require some form of redistribution or compensation. The form that compensation takes will be highly situation specific, but could involve monetary transfers, granting of rights to use water, financing of investments, or the provision of non-related goods and services. The range of benefits under discussion is also a critical issue. The broader the range of benefits under discussion, the more likely the riparians will be able to find a configuration of benefits that is mutually acceptable. While some benefits are difficult to share or compensate,⁶ in general the optimization of benefits should be more robust and more flexible than the optimization of physical water resources, because benefits tend to be more easily monetized and compensated and they have less political and psychological significance.

A body of international water law has evolved that focuses on the river as a physical system. Cooperative international management of water resources falls within a legal framework that focuses on water rights. Early principles still cited in the context of international water negotiations are those of 'prior appropriations' or 'first in time—first in right', often cited by a downstream riparian state, and that of 'absolute sovereignty', where water within a nation state is considered to belong to that state, often cited by an upstream state.⁷ After decades of consideration, important principles have been codified in 1997 in the 'UN Convention for the Non-navigational Uses of Shared Watercourses', which has yet to be ratified by a sufficient number of states to enter into force. The key principles of the Convention are those of 'equitable utilization', which emphasizes equity for all riparians, and 'no significant harm', which emphasizes protection for all riparian interests.

However, the application of these principles is fraught with difficulty and they risk opposing each other. The embrace of the first principle by many upstream states and the second by downstream states is a consequence of this. It must be recognized that both principles apply upstream and downstream equally. It is obvious that upstream users must recognize the dependence (sometimes total) on the river of downstream states and the risks of causing significant harm by reducing river flows. It is also true, though much less obvious, that downstream development can generate harm upstream by effectively foreclosing future opportunities for upstream use. Clearly upstream extraction generates externalities downstream by diminishing flows physically. On the other hand, downstream extraction can generate externalities upstream by diminishing future available flows upstream because of downstream claims of acquired rights to that water.

International water law is commonly interpreted as focusing on the allocation of water, resulting in riparian disputes being perceived as zero-sum prospects. International law provides guidance but no clear hierarchy for competing claims on shared waters. The law does provide important principles for developing a sound framework for cooperation between nations. However, there will also always be political motives for, and consequences of, non-cooperation that derive not *from the river* directly, but *because of the river*.

(footnote continued)

The growth, decline or character of nearby industrial and urban developments, for example, could have real impacts, both positive and negative, on market opportunities and environmental quality in neighboring states.

⁶For example, those benefits derived from environmental or social values may not be substitutable or easily compensated.

⁷Memorably cited by Judge Harman in 1895, in the case of the Rio Grande, shared by the US and Mexico.

5. The political river: costs arising ‘because of the river’

Far-reaching gains from cooperation in international rivers may accrue as savings of the costs of non-cooperation arising *because of the river*. The control of rivers and river flows has long been—and to some extent always is in all international rivers—a source of tension and dispute; and an issue of sovereignty, strategic necessity, and national pride. Such tensions (often inextricably linked to, and perhaps even indistinguishable from, other tensions) may reach the point where they color the geo-political relationships between states within a basin and become obstacles to growth by constraining the regional political economy and diverting resources from economic development.

International cooperation can ease tensions over shared waters, and provide gains in the form of the savings that can be achieved, or the costs of non-cooperation or dispute that can be averted. These tensions and costs will always be present to some degree in all river basins; in some basins they may be insignificant, in others they may be very high and may present enormous challenges. In particular, this occurs where water quantity is the major issue—as is likely to be the case with rivers flowing through arid areas, where contesting claimants commonly (but often not correctly) perceive a zero-sum game. Good examples of such cases include the Jordan, Nile, Euphrates and Indus basins, where relations between riparian states are significantly influenced by the waters that they share and are characterized by dispute.

Tensions arising because of the river, particularly where they are acute or long-standing, can thus significantly strain broader relations between states and impact the political economy of a region. Strained international relations tend to inhibit regional integration and manifest themselves in the fragmentation of markets, infrastructure, telecommunications, transport connections, labor flows, financial systems, etc. This fragmentation compromises all of the affected economies by denying them the benefits of regional integration that are potentially extremely important, particularly for small or developing economies. In some international river basins, little flows between the basin countries except the river itself—no labor, power, transport, or trade.

Tense regional relations may encourage the adoption of policies that focus on self-sufficiency, rather than on trade and integration. In the agriculture and power sectors, for example, this could mean the promotion of food and power self-sufficiency, which emphasizes the need to produce, in-country, all the food and power the country demands, even if the cost of doing so is greater than the cost of imports. Generally it is more economically efficient to promote food and power security, which focuses on a state’s capacity to secure its food supply either through trade or production—whichever is most cost effective.

In extreme cases, tensions arising because of the river may result in diversion of strategic human resources and policy focus from economic development to security concerns related to water and a diversion of financial resources to military preparedness. If these tensions contribute to conflict, then the human and financial costs can be extremely high. While these costs because of the river are not readily seen or quantified, they can be very real and substantial, and can compound other tensions leading to higher costs still.

We have referred to the extensive debate in the literature on the specter of ‘water war’. The reality is likely to lie somewhere between those that contend that water is a source of increasing tension and a potential flashpoint for conflict, and those that argue that there has never been a

water war and that the issue is less explosive than it seems. Clearly, as water becomes increasingly scarce relative to demand there will be competing claims on its use, which may increase geo-political tensions. Where these tensions are high, they may be one of many underlying issues that contribute to souring relationships, and catalyze conflict. It is reasonably argued that there has rarely been a ‘water war’, where water is the sole cause of conflict. However, it is probably the case that there has never been a single cause for any war, and resource conflicts—land, water, minerals—are clearly common contributory factors to many past and present (and future) conflicts.

It is difficult to unbundle the importance of shared waters in the dynamics between riparian states from other contributory factors in conflict. From our experience, water plays a significant part in a number of recent and current disputes, even conflicts, around the world, especially where climate variability and water scarcity, coupled with major transboundary flows, create high levels of perceived threats to national water security. By the same token, cooperation with regard to shared waters contributes to strengthening relations between countries, and catalyzing broader cooperation, integration and stability. It is for this reason that the debate in the literature over whether there have been or will be ‘water wars’ is misguided; shared water has always and will always be one contributory factor in determining relations between states. The challenge is for international rivers to enhance relationships through shared opportunities, contributing to the benefits of cooperation and integration *beyond the river*.

6. The catalytic river: benefits enabled ‘beyond the river’

Cooperation in the management and development of international rivers may contribute to, or even result in, political processes and institutional capacities that themselves open the door to other collective actions, enabling cross-border cooperation *beyond the river*. Increasing the benefits from the river and decreasing the costs arising because of the river enable broader economic growth and regional integration that can generate benefits even in apparently unrelated sectors. Improved river basin management can increase the productivity of a river system, which may then generate additional opportunities in other sectors through forward linkages in the economy. The easing of tensions among riparian states may also enable cooperative ventures unrelated to water that would not have been feasible under strained relations. Flows other than the river—such as improved communications and trade—may grow. Thus, progress in cooperation on shared river management can enable and catalyze benefits ‘beyond the river’, more directly through forward linkages in the economy and less directly through diminished tensions and improved relationships.

The forward linkage effects of generating benefits from the river, for example in food and energy production and trade, are relatively obvious. Agricultural surpluses may spur growth in agro-processing or trade. Enhanced hydropower production and interconnection could both expand productive opportunities and increase the profitability and competitiveness of existing power-using enterprises. This may lead to additional investments in industry or infrastructure, and strengthened trade relations. Investments, improved infrastructure networks and trade relations can in turn generate additional growth opportunities, and so on. These types of forward

linkages could be national, supporting growth and development within basin states, or international, promoting exchange, trade and interconnection among basin states.

It is less obvious that diminishing the tensions that arise because of the river will enable greater economic integration among basin riparians and help to redress the regional fragmentation that may exist as a consequence, at least in part, of tensions arising because of the river. Easing these tensions could enable cooperation among countries by diminishing formal and informal restrictions on the movement of goods, labor and finance between countries, increasing integration even in apparently unrelated sectors such as transport, telecommunications or tourism. Regional infrastructure systems can be of particular importance. The fragmentation of regional infrastructure, especially in the case of small, landlocked economies, can be a major obstacle to growth. Where cooperation on international rivers can contribute to increased integration of infrastructure systems, development impacts can be significant.

The Mekong basin, shared by Cambodia, China, Laos, Myanmar, Thailand, and Vietnam, where relationships among the riparians have been turbulent for decades, provides an interesting case. While there have not been major disputes arising over the Mekong itself (and thus relatively small costs ‘because of the river’), significant benefits have been derived ‘from the river’ through cooperative management. Sharing the Mekong’s benefits has proved to be an important stabilizing factor in the region, bringing substantial benefits ‘beyond the river’, both directly from forward linkages and indirectly from diminishing tensions. During years of conflict between Laos and Thailand, for example, Laos always provided hydroelectricity to Thailand, and Thailand always paid. Similarly, the Government of Thailand has followed an explicit strategy of increasing regional stability by creating mutual dependency and thus purchases gas from Myanmar and Malaysia and hydropower from Laos and China, in part because these are low-cost supplies and in part because they create ties that bind the countries in a web of mutual dependency.

Cooperation with regard to river systems may therefore facilitate the political processes needed to enable cooperation on other ‘systems’ within and beyond the river basin, such as labor flows, markets and infrastructure. These economic ‘systems’ may extend well beyond the river, yet tensions because of the river system can be barriers to their development. Developing and integrating these broader economic systems can make each individual economy stronger and more competitive, and more easily integrated into the global economy.

7. The cooperative river: the dynamics of multi-type benefits

The cooperative river can therefore be seen to generate benefits of multiple types, although the potential sum of these benefits in different basins will vary greatly. The first type are the benefits accorded to the river by cooperative basin-wide environmental management, the second are those benefits to be reaped from the river by cooperative development of the basin, the third are the savings that can be made by diminishing the costs of non-cooperation arising because of the river, and the fourth are broader opportunities that are catalyzed beyond the river.

The relative importance of each type of benefit, and the dynamics among the types will be unique to each basin and the states which share it, reflecting, for example, history, hydrology, economics, politics and culture. While it is likely that in all basins there will be some potential benefits of each of these types, the value of these benefits, individually and in total, will vary

significantly among river basins. These potential benefits must be weighed against the generally high costs of establishing and maintaining multi-country river basin institutions, and may not everywhere justify cooperative efforts.

Seen another way, non-cooperation will have costs in terms of foregone opportunities of each of these types. Opportunities and gains may be highly visible, or extremely subtle. Cooperation on an international river may even be a necessary (but clearly not sufficient) condition for stable international relations and trade between basin states. Thus, it is quite possible that the greatest gains associated with cooperation on international rivers will derive from apparently unrelated development that would never have been considered had tensions over shared waters remained between nations. This relationship needs to be more widely understood and recognized, to increase the incentives for cooperation on international rivers.

Some river basins have the potential to generate significant benefits of multiple types; the Nile is a good example. Ten countries share the Nile; five are among the 10 poorest countries in the world; four are landlocked; and seven are, or recently have been, involved in internal or international conflicts. All of the riparians rely to a greater or lesser extent on the waters of the Nile for their basic needs and economic growth. For some, the waters of the Nile are perceived as central to their very survival. It is not surprising, therefore, that for centuries the Nile nations have been concerned by the actions of other riparians. This has been the basis, supplemented by many other factors, for tensions between riparian states. It is clear that Type 3 costs ‘because of the river’ are high. Environmental management is also a challenge. The Nile is the world’s longest river, it covers one-tenth of Africa’s total land mass and is home to Lake Victoria, the second largest freshwater lake, and the Sudd swamps, a wetland the size of Belgium. To effectively preserve the vast Nile ecosystem and bring Type 1 benefits ‘to the river’, cooperation is needed. The potential for Type 2 economic gains ‘from the river’ are significant, for example, through the cooperative management of river flows to mitigate against endemic floods and droughts, and coordinate hydropower and agricultural production, with major opportunities to construct shared infrastructure. Finally, cooperation on the management of the river can catalyze flows other than water between the countries, by diminishing regional tensions, increasing production, and promoting broader regional integration and cooperation ‘beyond the river’, bringing Type 4 benefits. The 10 Nile riparians are currently engaged in a cooperative effort, the Nile Basin Initiative, which explicitly seeks to develop and share all four types of benefits.

Table 2 explores the dynamics of cooperation on international rivers. The incentives for cooperation suggest *why* cooperation takes place, often due to concerns over problems, such as climate (and associated river flow) variability or recognition of opportunities, such as economic potentials. The catalysts for cooperation suggest *how* cooperation is fostered and promoted, often through improved communications and dialogue at many different levels. The linkages show the dynamics between the different types of cooperation, and to some extent suggest *when* cooperation of each type may take place. The linkages between types of cooperation suggest that making a start in environmental (Type 1) or direct economic cooperation (Type 2) can lead to growing political (Type 3) and indirect economic cooperation (Type 4)—or vice versa. The dynamics between types might be positive or negative. For example, while Type 3 cooperation may help further advance Type 1 and Type 2 cooperation, setbacks in Type 3 relations may impede cooperation of Types 1 and 2.

Table 2
Dynamics of cooperation on international rivers

Type	Incentives	Catalysts	Linkages
<i>Type 1 (environmental): increasing benefits to the river</i>	Concerns over river flows (including flood and drought) and pollution Ecosystem sustainability	Public awareness Joint environmental diagnostic analysis	Type 1 actions underpin sustainable Type 2 and 4 development Type 1 action builds Type 3 trust (inaction fuels Type 3 tensions)
<i>Type 2 (direct economic): increasing benefits from the river</i>	Recognized economic growth and business opportunities High variability of river flows, giving unreliable supplies and flood and drought risk Growing water scarcity	Joint analysis of optimized river development Fora for engagement of key actors (e.g. water and power industries, farmers, agri-business) Identification of win-win investments	Type 2 actions motivate Type 1 joint stewardship of resources Type 2 actions ease Type 3 tensions (unilateral actions fuel Type 3 tensions) Type 2 actions may generate production surpluses (agriculture, power) for Type 4 integration
<i>Type 3 (political): reducing costs because of the river</i>	Concern for improved international relations and peace given increasing water demands Need to ensure long-term river flows and benefits from flows Recognition of opportunities lost by policy focus on non-cooperation	Improved communications (infrastructure, telecoms, media, etc) Specific political dialogue (possibly mediated) Broader regional/global political initiatives and agreements	Type 3 gains facilitated by Type 1 actions that build trust Type 3 dialogue and engagement promoted by Type 2 actions and shared benefits (unilateral actions to capture benefits will increase tensions) Type 3 gains enable further Type 1 and 2 actions and Type 4 opportunities
<i>Type 4 (indirect economic): benefits increasing beyond the river</i>	Recognized gains from economic cooperation (particularly for small and/or landlocked economies)	Broad analysis of economic cooperation barriers and opportunities Civil society and private sector exchange Broader regional/global economic initiatives and agreements	Type 4 gains sustained by Type 1 actions Type 4 opportunities arise from tradable surpluses generated by Type 2 actions Type 4 integration enabled by Type 3 gains in policy shift to regional cooperation, lowering barriers to trade and communication

8. Conclusions

We have proposed in this paper an analytic framework describing four types of benefits (environmental, direct economic, political and indirect economic) from cooperation on international rivers. While there is enormous variation among the numerous international rivers of the world, we submit that costs of non-cooperation, and benefits of cooperation of all four types will manifest in all international river systems, to a greater or lesser extent. However, although these types of cooperation can be recognized, they are closely interwoven with each other. Furthermore, cooperation—and non-cooperation—between states on international rivers feeds into, and is fed by, a much broader bundle of international relations, from which it cannot be isolated. Thus conflict is unlikely to result over international rivers alone, but international rivers can be one significant cause of conflict. Similarly, joint management of international rivers will not be the sole area of cooperation between states, but it can be a significant catalyst for peace and economic integration.

The international rivers of the world are coming under growing pressure from increasing water demand and water quality deterioration. It is important to understand what the benefits of cooperation on international rivers may be, why cooperation may occur and how it may be fostered. Greater cooperation on an international river will lead to better management and development of the river itself, and, in many cases, it may also promote economic integration and regional security, beyond the river.

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The contribution of the UN Convention on the law of the non-navigational uses of international watercourses

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Abstract: The 1997 UN Convention on international watercourses helps to clarify the basic standards governing the non-navigational uses of internationally shared fresh water resources. Generally the Convention does not seek to push the law beyond its present contours, but reflects a general consensus regarding the principles that are universally applicable in the field. It provides a starting point for the negotiation of agreements relating to specific watercourses and, in the absence of an agreement, sets basic parameters governing the conduct of riparian states relative to those watercourses. Even where there is an applicable agreement, the Convention may play an important role in the interpretation of that agreement, as in the *Gabcikovo-Nagymaros* case. For these reasons, the success of the Convention does not depend on whether it enters into force. Its influence is more likely to derive from its status as the most authoritative statement of general principles and rules governing the non-navigational uses of international watercourses.

Keywords: Environmental protection; equitable utilisation; Harmon doctrine; international watercourse; non-navigational uses of water; no significant harm; planned measures; water law.

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1 Introduction

The Convention of the law of the non-navigational uses of international watercourses was adopted by the United Nations General Assembly on 21 May, 1997 [1]. It had been negotiated in the Sixth (Legal) Committee of the General Assembly, convening itself for this purpose as a 'Working group of the Whole', on the basis of draft articles adopted by the UN International Law Commission (ILC) [2] after 20 years' work on the project [3]. The Convention is a general, framework agreement containing 37 articles which are divided into seven parts. Its most important substantive and procedural provisions are contained in Part II, General Principles, Part III, Planned Measures and Part IV, Protection, Preservation and Management. Also important is Article 33 on the Settlement of Disputes. In the following overview, I will pay particular attention to issues that may be of special significance for this Symposium Issue. In the final section I will briefly consider the extent to which the Convention reflects customary international law.

2 The definition of 'international watercourse'

Perhaps the most logical starting place is the Convention's definition of the term 'international watercourse'. It is natural to think of this expression as being synonymous with 'international river', but as used in the Convention it is much broader. The definition takes into account the fact that most fresh water is underground, and that most of this groundwater is related to, or interacts with, surface water [4]. Therefore, pollution of surface water can contaminate groundwater, and vice versa, just as withdrawals of groundwater can affect surface water flows. Article 2 therefore defines 'watercourse' as "a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole ...". This definition calls the attention of states to the interrelationship between all parts of the system of surface and underground waters that form an international watercourse. Thus it should be clear immediately that an effect on one part of the system will generally be transmitted to other parts. Let us assume, for example, that an aquifer is intersected by the border between states A and B. Mining of the groundwater in that aquifer in country A can affect groundwater levels in state B. It may also affect surface flows in state B to the extent that the aquifer contributes to those flows. Nevertheless, the inclusion of groundwater in the Convention was cited as a reason for the abstentions of two states from the vote on the Convention [5]. Finally, it should be noted in this connection that so-called 'confined' transboundary aquifers are not within the scope of the Convention. The ILC had decided to exclude such groundwater, which is not related to surface water, from its draft articles. Instead, the Commission adopted a 'Resolution on confined transboundary groundwater' which recommended that states "be guided by the principles contained in the draft articles ..., where appropriate, in regulating

transboundary groundwater, ..." [6]. It seems probable that the ILC refrained from including such groundwater within the scope of its draft because most members did not feel there was sufficient state practice relating to this form of groundwater to serve as the basis of legal regulation.

3 The relationship of the Convention to other agreements

The relationship of the Convention to agreements concerning specific watercourses is addressed within Articles 3 and 4 of the Convention. Article 3 generally encourages states sharing watercourses to enter into agreements that apply and adjust the provisions of the Convention to the particular characteristics of the watercourse concerned. This is consistent with the 'framework' character of the Convention. While existing agreements remain unaffected by the Convention, parties are called up to 'consider harmonising' those agreements with its 'basic principles' [7]. Not surprisingly, some delegations, such as Ethiopia's, took the position that harmonisation should be required. But given the vast number and variety of existing agreements, such a requirement would have been impractical. However, this does not mean that the principles reflected in the Convention will be insignificant in the *interpretation* of existing agreements.

Article 3 also addresses two further situations. First, where less than all of the states sharing a watercourse enter into an agreement concerning its use, the agreement may not adversely affect use by other states on that watercourse without their consent. The second situation is one in which a riparian state believes the principles of the Convention should govern the watercourse it shares with another state or states. Article 3 provides that in such a case, the states sharing the watercourse must enter into consultations "with a view to negotiating in good faith for the purpose of concluding a watercourse agreement".

Article 4 deals with the rights of riparian states to participate in specific agreements that apply to an entire international watercourse and those that apply "only to a part of the watercourse or to a particular project, program or use". If an agreement is to apply to an entire international watercourse, all states on the watercourse are entitled to participate in the negotiation of, and to become a party to the agreement. Regarding agreements concerning only a part of a watercourse or particular project, a riparian state whose use of the watercourse may be affected by the implementation of a prospective agreement of this kind may participate in consultations relating to the agreement, 'and, where appropriate, in the negotiation thereof in good faith with a view to becoming a party thereto, to the extent that its use is thereby affected'.

4 General principles

Part II, General Principles, is the core of the Convention. It is introduced by Article 5, Equitable and Reasonable Utilisation and Participation. This article states what many regard as the cornerstone of the law of international watercourses; namely, the principle that a state must use an international watercourse in a manner that is equitable and reasonable vis-à-vis other states sharing the watercourse. Indeed, the International Court of Justice, in its recent decision in the case concerning the Gabcikov-Nagymaros Project, emphasised the importance of implementing "the multi-purpose programme ... for the use, development and protection of the watercourse [involved in the case] ...in an

equitable and reasonable manner” [8]. According to Article 5, to be equitable and reasonable, the use must also be consistent with adequate *protection* of the watercourse from pollution and other forms of degradation.

But how does upstream State A, for example, know whether its use of an international watercourse is equitable and reasonable vis-à-vis downstream States B and C? This may be very difficult for State A to determine, in the absence of a joint mechanism with States B and C, or a very close working relationship with them. Article 6 of the Convention sets forth a non-exhaustive list of factors to be taken into account in making the determination, and Article 9 requires riparian states to exchange data and information concerning the condition of the watercourse on a regular basis. The Article 6 factors will doubtless be useful to State A in determining equitable utilisation as will the data and information in Article 9; indeed, its use was equitable without data and information from other riparian states. However, it would be nearly impossible for a state to ensure the principle of equitable and reasonable utilisation is more appropriate for implementation through a very close cooperation between the states concerned: ideally through a joint commission, or by a court or other third party, as the doctrine had its origins in decisions of the United States Supreme Court in water disputes between US states. It appears that there is no other general principle that can take into account adequately the wide spectrum of factors that may come into play with regard to international watercourse throughout the world.

This underlines the importance of *cooperation* between riparian states with a view to achieving a regime of equitable and reasonable utilisation and participation for an international watercourse system as a whole. Article 8 of the Convention lays down a general obligation to cooperate “in order to attain optimal utilisation and adequate protection of an international watercourse”. It is interesting to note that the delegations negotiating the Convention attached such significance to cooperation *through joint mechanisms* that they added a paragraph to the ILC’s text of Article 8, calling for states to “consider the establishment of [such] mechanisms or commissions ...”

Returning for a moment to Article 5 that provision also introduces the new concept of equitable *participation*. The basic idea behind this concept is that in order to achieve a regime of equitable and reasonable utilisation, riparian states must often cooperate with each other by taking *affirmative* steps, individually or jointly, with regard to the watercourse. While this notion is, in effect, a feature of some well-developed cooperative relationships between river basin countries, it had not been reflected as such in attempts to codify the law in this field until the International Law Commission included it in Article 5. Its acceptance as a part of the Convention is welcome because it helps to convey the message that a regime of equitable utilisation of an international watercourse system, together with the protection and preservation of its ecosystems, cannot be achieved solely through individual action by each riparian state acting in isolation; again, affirmative cooperation will often be necessary. The use of this concept is illustrated by the fact that in its judgement in the Gabcikovo-Nagymaros case the ICJ quoted Article 5, paragraph 2, setting forth the obligation of equitable participation, in support of its decision that the joint regime be re-established as suggested by the treaty involved in the case [9].

The most controversial provision of the entire Convention is undoubtedly the obligation not to cause significant harm, which is set forth in Article 7. This was treated as being closely linked with Articles 5 and 6 throughout the negotiations in the UN. The

three-article package was finally adopted by a vote of 38 to 4, with 22 abstentions.

Initially it seems clear that one state should not cause significant harm to another state, whether through its use of a watercourse or otherwise. However, in the case of international watercourses, it is not so simple. Suppose, for example (as is often the case) that upstream State A has not significantly developed its water resources because of its mountainous terrain. The topography of the downstream states on the watercourse, B and C, is flatter, and they have used the watercourse for irrigation extensively for centuries, if not millennia. State A now wishes to develop its water resources for hydroelectric and agricultural purposes. States B and C object, on the basis that this would significantly harm their established uses. How should the positions of State A, on the one hand, and States B and C, on the other, neither of which seems unreasonable, be reconciled?

This question is at the heart of the controversy over Article 7 and its relationship with Article 5 on equitable and reasonable utilisation. I will take up each of these points in turn – albeit only briefly. First, as to how the so-called ‘no significant harm’ obligation should be formulated: The International Law Commission’s first draft of the article, adopted in 1991, was the essence of simplicity. It provided: “Watercourse States shall utilise an international watercourse in such a way as not to cause appreciable harm to other watercourse states” [10]. The Commission’s final draft, adopted in 1994, introduced considerable flexibility into the text, in two principal respects. First, it expressly made the obligation one of ‘due diligence’. “Watercourse states shall *exercise due diligence* to utilise an international watercourse in such a way as not to cause significant harm ... [etc.]” [11]. But the insertion of the ‘due diligence’ modifier made it clear beyond any doubt that this was not in any way an *absolute* obligation, but rather one of due diligence, or best efforts under the circumstances.

The second way in which flexibility was introduced was by adding a lengthy paragraph 2, which converted the ‘no harm’ obligation into what the ILC described as “a *process* aimed at avoiding significant harm as far as possible while reaching an *equitable result* in each concrete case” (emphasis added). Paragraph 2 stated that if significant harm was caused, despite the exercise of due diligence, then the states involved must enter into consultations concerning two factors: first, the extent to which the harmful use is equitable and reasonable; and second, whether the harming state should adjust its use to eliminate or mitigate the harm, and “where appropriate, the question of compensation”.

It is clear from the text of the Convention that the ILC’s text was changed by the Working Group. Undoubtedly, scholars will spill much ink over the extent to which the changes have brought significant substantive alternations. I do not believe they have. The deletion of ‘due diligence’ from paragraph 1 and its replacement with ‘take all appropriate measures’ is merely saying the same thing in different words. The real battle in the Working Group was over the second paragraph. The question there was whether equitable utilisation should prevail over the ‘no-harm’ obligation, or vice-versa. To illustrate, allow me to return to our hypothetical fact situation. If equitable utilisation is the controlling legal principle, upstream State A may develop its water resources in an equitable and reasonable manner vis-à-vis downstream States B and C, even though that development would cause significant harm to their established uses. If, on the other hand, the obligation not to cause significant harm is dominant, State A could engage in no development, no matter how equitable and reasonable, that would cause States B and C significant harm, without the consent of those states.

To some delegations at the UN negotiations, the ILC’s final text – which represents

an effort to strike a balance between the two principles – favoured equitable utilisation too heavily. They argued for a text that clearly gave precedence to the ‘no-harm’ principle. Other delegations took the opposite view. For them the basic rule was equitable utilisation; at most, any harm to another riparian state should merely be one factor to be taken into account in determining whether the harming state’s use was equitable.

Perhaps not surprisingly, the compromising formula arrived at in the UN negotiations is a *pot-pourri* containing something for everyone. Regardless of whether one is from the equitable utilisation or the no-harm school, one can at least claim partial victory. However, the better view appears to be that paragraph 2 of Article 7 gives precedence to equitable utilisation over the no-harm doctrine, and is thereby consistent with actual state practice [12]. The very existence of a second paragraph implicitly acknowledging that harm may be caused without engaging the harming state’s responsibility supports this conclusion. Also indicating a recognition that significant harm may have to be tolerated by a watercourse state are the numerous mitigating clauses in paragraph 2, especially the phrase ‘having due regard for the provisions of articles 5 and 6’ – the two equitable utilisation articles. Finally, the proposition that the ‘no-harm’ rule does not enjoy inherent pre-eminence is supported by Article 10 of the Convention, which states that any conflict between uses of an international watercourse is to be resolved ‘with reference to articles 5 to 7 ...’ This would presumably mean that if State A’s hydroelectric use conflicts with State B’s agricultural use, the conflict is not to be resolved solely by applying the ‘no-harm’ rule of Article 7, but rather through reference to the ‘package’ of articles setting forth the principles of both equitable utilisation and ‘no-harm’.

But in actual disputes, it seems probable that the facts and circumstances of each case, rather than any *a priori* rule, will ultimately be the key determinants of the rights and obligations of the parties. Difficult cases, (of which there are bound to be more in the future), will be resolved by cooperation and compromise, not by rigid insistence on rules of law. This is one of the lessons of the World Court’s judgement in the Gabcikovo-Nagymaros case.

Before leaving the ‘General Principles’ part of the Convention, I should say an additional word about Article 10. Originally conceived as a provision that would clearly specify that navigational uses no longer enjoy inherent priority over non-navigational ones – if they ever did – this article now has a much richer texture. In particular, paragraph 2 states that a conflict between different kinds of uses of an international watercourse should be ‘resolved with reference to Articles 5 to 7, with special regard being given to the requirements of vital human needs’. The expression ‘vital human needs’ was discussed at some length in the UN negotiations. The final text maintains the ILC’s language but a ‘statement of understanding’ accompanying the text of the Convention indicates that “[i]n determining ‘vital human needs’, special attention is to be paid to providing sufficient water to sustain human life, including both drinking water and water required for the production of food in order to prevent starvation”. This is obviously right. What some countries may fear is that the concept of ‘vital human needs’ could become a loophole, enabling a state to argue that its use should prevail on this ground when in fact it was highly debatable whether vital human needs were involved at all. But since the ‘statement of understanding’ is based on the ILC’s commentary, which would in any event be relevant to an interpretation of paragraph 2, the ‘statement’ probably adds no new problems.

5 Planned measures

Part III of the Convention, Planned Measures, contains a set of procedures to be followed in relation to a new activity in one state that may have a significant adverse effect on other states sharing an international watercourse. The fact that the basic obligation to provide prior notification of such changes was accepted as a part of the Convention by most delegations [13] is, in itself, important: it provides further evidence that the international community as a whole emphatically rejects the notion that a state has unfettered discretion to do as it alone wishes with the portion of an international watercourse within its territory [14]. In explaining its negative vote on the Convention, Turkey stated that Part III introduces a ‘veto’ [15]. While it is true that under the procedures of Part III a state may have to temporarily suspend its implementation of planned measures (see Articles 13 and 17), no veto is provided for in Part III.

While the Working Group made a number of drafting changes, the essence of the system contained in Part III is unchanged from the ILC’s draft. Essentially it provides that a state contemplating a new use or a change in an existing use of an international watercourse that may have a significant adverse effect on other riparian states must provide prior notification to the potentially affected states. Those states are then given six months within which to respond. If they object to the planned use, they are to enter into discussions with the notifying state “with a view to arriving at an equitable resolution of the situation”. This entire process could take twelve months or longer. If the matter is not resolved to the satisfaction of one or more of the states concerned, the dispute settlement procedures of Article 33 would be applicable. A final important point concerning Part III is that it seems clear that, by necessity, it is premised on the assumption that the planning state will conduct an environmental impact assessment to identify possible adverse effects on co-riparian states [16]. Alternatively, unless there was no doubt that the planned project would have adverse transboundary effects, it would be very difficult for the planning state to know whether it had an obligation to notify other states concerning its prospective project.

6 Environmental protection

Part IV of the Convention, entitled ‘Protection, Preservation and Management’, contains the ‘environmental’ provisions of the Convention. While a variety of proposals were made in the UN negotiations for the strengthening of these provisions, in the end only minor changes were made to the ILC’s text. Article 20, Protection and Preservation of Ecosystems, is a simple but potentially quite powerful provision. It says that riparian states have an obligation to “protect and preserve the ecosystems of international watercourses”. Like Article 192 of the United Nations Convention on the Law of the Sea, on which it is modelled, this obligation is not qualified. For example, it does not say that the ecosystems must be protected only if failure to do so may harm another riparian state. Since the ‘ecosystems’ of international watercourses include land areas contiguous to them [17], Article 20 requires that such land areas be maintained in such a way that the watercourses they border are not harmed, by for example, excessive agricultural ‘runoff’. It is unlikely that this is an absolute obligation, however. It is an obligation to exercise due diligence to protect and preserve watercourse ecosystems. This standard takes into account the sensitivity of the ecosystem as well as the capability of the state involved to

protect it.

Pollution of international watercourses is dealt with in Article 21, 'Prevention, Reduction and Control of Pollution'. After defining the term 'pollution', it uses the standard formula – also employed in Article 194 of the Law of the Sea convention – that riparian states must 'prevent, reduce and control' pollution of international watercourses. Unlike Article 20, however, this obligation is qualified. It is triggered only if the pollution "may cause significant harm to other watercourse States or to their environment ...". Of course, it is at least arguable that pollution that would harm only the environment of the state of origin would have to be controlled pursuant to Article 20.

Article 22 requires riparian states to prevent the introduction of alien or new species into international watercourses. There are many illustrations of the importance of this principle. A recent example involves a wholly national watercourse and concerns the poisoning of Lake Davis in northern California by state Fish and Game authorities to rid the lake of an introduced species, the voracious northern pike. This was done even though the lake supplies drinking water for surrounding communities. As with Article 21, the obligation contained in Article 22 applies only where significant harm will be caused to other riparian states.

Article 23 addresses, in a very general way, the problem of marine pollution from land-based sources. Like Article 20, the obligation applies whether or not other states are injured. However, Article 23 actually goes beyond the problem of pollution. Since it requires riparian states to 'protect and preserve the marine environment', it would also presumably apply to such things as the protection of anadromous species and coral reefs.

In a 'statement of understanding', the Working Group indicated that Articles 21-23 'impose a due diligence standard on watercourse States'. It is interesting that this statement does not cover Article 20. But, as I have already indicated, I believe Article 20 must also be read to reflect an obligation of due diligence.

In evaluating the 'environmental' provisions of the Convention, it must be understood that this is a universal, framework agreement. Because of this fact, one cannot expect either the level of detail or the degree of protection that one might find in a bilateral or regional instrument [18]. Indeed, a number of proposals were made during the UN negotiations for strengthening and, it was said, 'updating' the provisions of the Convention from an environmental standpoint. Most of these proposals came from Western European delegations, but a few came from other regions, such as Latin America. Very few of these proposals were ultimately accepted. One cannot say, therefore, that stronger environmental provisions are lacking from the Convention because they were not considered during the negotiations. The fact is, they were thought of, and proposed, but simply did not prove to be broadly acceptable to the delegates participating in the Working Group's deliberations. This may be regrettable, but an environmentally stronger text would undoubtedly have received less support, and states may be prepared in the future, as degradation of fresh water supplies increases, to strengthen the Convention's environmental provisions via a protocol.

A second point also relates to the fact that this is a *framework* instrument. As such, it is intended to be supplemented by more detailed agreements concerning specific watercourses shared by two or more countries. The level of protection that might be appropriate for Canada and the USA, for example, might not be found to be suitable by other countries. The Convention provides an appropriate framework for the negotiation of agreements by riparian states reflecting both their circumstances and needs.

Article 24, Management, is a provision believed by many specialists to be too modest in view of the importance of joint commission. But the ILC did not feel it could go any further than this in a general, framework instrument. It was considered that while international law may require riparian states to cooperate with each other, it does not go to the extent that requires them to form joint commissions. I believe the Commission was correct in this assessment, although in my view the article could have gone somewhat further in indicating the concrete forms that institutionalised cooperation between riparian states might take. But some states – and indeed some members of the Commission – were somewhat uncomfortable even with the article as it presently stands, let alone a more specific provision.

7 Emergencies

Part V is entitled 'Harmful Conditions and Emergency Situations'. It contains one article on each of those topics. 'Harmful conditions' refers to such things as water-borne diseases, ice floes, siltation and erosion. Article 27 requires riparian states to take 'all appropriate measures' to prevent or mitigate such conditions, where they may be harmful to other states sharing the watercourse. Article 28 deals with emergency situations. This term is broadly defined to include both natural phenomena such as floods, and those that are caused by humans, such as chemical spills. A state within whose territory such an emergency originates must notify other potentially affected states as well as competent international organisations. It must also take "all practicable measures ... to prevent, mitigate and eliminate harmful effects of the emergency". This article reflects the importance attached to early notification of emergency situations in order to permit other potentially affected states to take protective measures and to help mitigate the effects of the situation. The principle was also recognised in the Rio Declaration adopted at the 1992 Earth Summit [19].

8 Private remedies

Article 32 deals essentially with private remedies and was intended to ensure equal access and non-discrimination so that a party injured or threatened by harm resulting from the use of an international watercourse in another state could have access to judicial or administrative procedures in that state. The article provoked controversy in the UN negotiations, including a proposal that it should be deleted. Evidently, not all states are yet comfortable with the idea of granting private persons from other (usually neighbouring) countries non-discriminatory access to their judicial and administrative procedures relating to transboundary harm or the threat thereof. While this may be surprising in view of certain United Nations declarations [20] and state practice, at least in western countries [21], it seems to be a political reality in certain parts of Asia, Africa and Central Europe.

9 Settlement of disputes

Article 33 on the settlement of disputes was also somewhat controversial, principally because it provides for compulsory fact-finding at the request of any party to a dispute

(the procedure is in fact closer to conciliation than simple fact-finding). Any compulsory dispute-settlement procedure is bound to draw strong objections from certain countries [22], even if it is only compulsory fact-finding, and even if that only becomes compulsory after negotiations have failed to settle the dispute within six months. The ranks of these ‘automatic objectors’ were swelled somewhat by a few upstream states [23], who were evidently reluctant to surrender whatever leverage their position on an international watercourse conferred upon them. Yet facts are critically significant with regard to the core obligations of the Convention. For example, how can states determine whether their utilisation is ‘equitable and reasonable’ under article 5 without an agreed factual basis? And how can a state establish that it has sustained significant harm if the state that is alleged to have caused the harm denies that it has caused it or that any harm has been suffered? The importance of facts in this field is without doubt what led the ILC to depart from its usual practice by including an article on dispute settlement in its draft. Article 33 also provides for states to declare upon becoming parties to the Convention that they accept as compulsory the submission of disputes to the International Court of Justice or to arbitration in accordance with procedures set out in the Annex to the Convention.

10 To what extent does the Convention reflect customary international law?

Consideration of the Convention would not be complete without briefly looking at the question of the extent to which the Convention reflects rules of customary international law. In my view, it may be said with some confidence that the most fundamental obligations contained in the Convention do indeed reflect customary norms. In the *Gabcikovo-Nagymaros* judgement the Court quoted the following famous passage from the Permanent Court’s judgement in the *River Oder* case:

“[t]he community of interest in a navigable river becomes the basis of a common legal right, the essential features of which are the perfect equality of all riparian States in the user of the whole course of the river and the exclusion of any preferential privilege of any one riparian State in relation to the others’ (Territorial Jurisdiction of the International Commission of the River Oder, Judgement No. 16, 1929, P.C.I.J., Series A, No. 23, pp. 27).” [24]

The Court then made the following important statement:

“Modern development of international law has strengthened this principle for non-navigational uses of international watercourses as well, as evidenced by the adoption of the Convention of 21 May 1997 and on the Law of the non-navigational uses of international watercourses by the United Nations General Assembly.” [25]

There are two discrete elements of this passage. The first is the Court’s declaration that the ‘[m]odern development of international law’ has ‘strengthened’ the principle of the community of interest in a navigable river ‘for non-navigational uses of international watercourses as well’. Here the Court expressly confirms what most commentators have long asserted, namely, that the above-quoted passage from the *River Oder* case, concerning the concept of the ‘community of interest’, applies to non-navigational uses as well as to navigational ones. This is a highly significant recognition of the idea that all

riparian states have interest in an international watercourse. It thereby constitutes an effective repudiation of the Harmon Doctrine of absolute sovereignty [26]. In the second element of the passage the Court states that the adoption of the 1997 Convention provides evidence of the strengthening of the principle of the community of interest in an international watercourse. The Court thereby ascribes significance to the adoption of the Convention as a confirmation of the development of international law in the direction of requiring that riparian states recognise the rights of other riparians in shared freshwater resources. The Court then applies this doctrine to the case at hand in the next paragraph of its judgement, in which it finds that Czechoslovakia, by unilaterally damming the Danube (‘a shared resource’) at a point at which it was wholly within Czechoslovak territory, “thereby deprive[ed] Hungary of its right to an equitable and reasonable share of the natural resources of the Danube ...” [27]. This constitutes a strong endorsement of equitable utilisation as a norm of customary international law, and should remove any lingering doubt about the status of that principle.

While the International Law Commission does not take a position whether a particular article or paragraph of one of its drafts is a codification of international law or an effort to progressively develop that law, it seems reasonable to conclude on the basis of state practice that at least three of the general principles embodied in the convention correspond to customary norms. These are the obligations to use an international watercourse in an equitable and reasonable manner, to use such a watercourse in such a way as not to cause significant harm to other riparian states, and to notify potentially affected riparian states of planned measures on an international watercourse [28]. Of course, other provisions of the Convention, such as some of those relating to the environment, are closely related to, or even flow from these principles. To the extent that these provisions are based on the fundamental principles, they too might be said to reflect custom.

An additional word should perhaps be said concerning the status of the ‘no-harm’ principle in light of the World Court’s judgement in the *Gabcikovo-Nagymaros* case. As already indicated, the Court referred several times in its judgement to the right to an equitable and reasonable share of the uses and benefits of an international watercourse [29]. Notable for its absence, except in connection with the environment, was any reference to the ‘no-harm’ principle. Hungary had relied fairly heavily upon this concept in its pleadings [30], but the Court did not accept its invitation to use it as a basis of its judgement. This does not necessarily mean that the ‘no-harm’ rule has been significantly weakened; but it strongly suggests that the Court views equitable utilisation to be the basic, guiding principle in the field of international watercourses.

Regardless of its status under customary international law, the ‘no-harm’ principle continues to play a significant role, *inter alia*, in the efforts of developing countries to develop their shared water resources. This is because the World Bank, which is often asked to finance such development projects, normally requires the consent of other riparian states to a project on an international watercourse before it will process the project [31]. The Bank’s internal guidelines utilise the concept of ‘appreciable harm’ as a criterion for both notification of other riparian states and assessment by the Bank’s staff of objections by other riparians to the proposed project [32]. Nowhere in the guidelines is equitable utilisation mentioned. This is understandable, however, since it would usually be considerably more difficult to determine whether a proposed project interfered with equitable utilisation than it would be to determine whether it would cause other riparians harm. On the other hand, the fact that equitable utilisation is not the decisive criterion

means that at least some projects may not go forward for lack of bank loans, that would be consistent with that principle. It is perhaps for this reason that the Bank leaves open the possibility of proceeding with a project even in the face of objections by other riparian states [33].

11 Conclusion

The 1997 United Nations convention on International Watercourses helps to clarify the basic, minimum standards governing the non-navigational uses of internationally shared fresh water resources. For the most part, it should be viewed not as an instrument that seeks to push the law beyond its present contours, but as one that reflects a general consensus as to the principles that are universally applicable in the field. It provides a starting point for the negotiation of agreements relating to specific watercourses, and, in the absence of any applicable agreement, sets basic parameters governing the conduct of states riparian to those watercourses. Even where there is an applicable agreement, the Convention may play an important role in the interpretation of that agreement, as in the Gabcikovo-Nagymaros case. For these reasons, the success of the Convention does not seem to be dependent upon whether it enters into force. Its influence is more likely to derive from its status as the most authoritative statement of general principles and rules governing the non-navigational uses of international watercourses.

References and Notes

- 1 The Convention is annexed to UN GA Res. 51/229, 21 May 1997, adopted by a vote of 103 for and 3 against, with 27 abstentions. It is reprinted in (1997) *Int. Legal Materials*, Vol. 36, pp.700–720. See generally Tanzi, A. (1997) Codifying the minimum standards of the law of international watercourses: remarks on part one and a half, *Nat. Resources F.*, Vol. 21, p.109; Crook, J. and McCaffrey, S. (1997) The United Nations starts work on a watercourses Convention, *Am. J. Int. L.*, Vol. 91, pp.374–378; and McCaffrey, S. and Sinjela, M. (1998) The 1997 United Nations Convention on international watercourses, *Am. J. Int. L.*, Vol. 92, pp.97–107.
- 2 *Report of the International Law Commission on the work of its forty-sixth session*, UN GAOR, 49th Sess., Supp. No. 10, pp.197, UN Doc. A/49/10 (1994) (1994 ILC Report). See McCaffrey, S. (1995) ‘The International Law Commission adopts draft articles on international watercourses’, *Am. J. Int. L.*, Vol. 89, pp.395–404.
- 3 The ILC included the topic in its general program of work in 1971. It began study of the topic in 1974 with the establishment of a sub-committee and the appointment of the first of what would be five special rapporteurs. See, e.g. (1986) *Y.B. Int. L. Comm.*, Vol. 2, pt. 2, p. 68.
- 4 McCaffrey, S. (1991) ‘Seventh report on the law of the non-navigational uses of international watercourses’, 2 *Y.B. Int. L. Comm.*, Vol. 2, pt. 1, pp.45–69, pp.53., paras 22–23.
- 5 Verbatim record, 99th plenary meeting, UN General Assembly, 21 May 1997, UN Doc. A/51/PV.99, pp.5 (Pakistan) and 12 (Rwanda).
- 6 1994 ILC Report, ref. 2, p.326.
- 7 Some delegations believed harmonisation should have been required. See, e.g., the statement of Ethiopia in explaining its vote on the Convention, Verbatim record, 99th plenary meeting, ref. 5, pp.9–10.
- 8 Judgement of 25 September 1997, 1997 ICJ No. 92, para. 150.
- 9 Judgement of 25 September 1997, ref. 8, para. 147.

- 10 *Y.B. Int. L. Comm.* (1991) Vol. 2, pt. 2, p.67.
- 11 *ILC Report* (1994) ref. 2, p.236. It will be noted that the Commission also changed ‘appreciable’ to ‘significant’. I do not regard this as a change in substance, however. Both ‘appreciable’ and ‘significant’ mean less than ‘substantial’ or ‘serious’ but more than ‘slight’ or ‘minor’. In fact, in my view, even the use of the term ‘harm’ without any modifier at all would have to be interpreted in the same way, since the law does not concern itself with trifles, in this case, insignificant harm.
- 12 See for e.g. the ILC’s commentary to draft article 5, 1994 *ILC Report*, ref. 2, p.218; McCaffrey, S. (1988) ‘Second report on the law of the non-navigational uses of international watercourses’, UN Doc. A/CN.4/399, [1986] *Y.B. Int. L. Comm.*, Vol. 2, pt. 2, pp.87–144, at pp.103–130.
- 13 Three that did not were Ethiopia, Rwanda and Turkey. Verbatim record, 99th plenary meeting, ref. 5, pp.4–5 (Turkey) 9 (Ethiopia) and 12 (Rwanda).
- 14 The doctrine of ‘absolute territorial sovereignty’, which would support such unfettered discretion, has long been rejected by the state that invented it. See McCaffrey, S. (1996) ‘The Harmon Doctrine one hundred years later: buried, not praised’, *Nat. Resources. J.*, Vol. 36, pp.659–701.
- 15 McCaffrey, ref. 14, p.5.
- 16 Art. 12, which requires the planning state to provide potentially affected states with ‘available technical data and information, concerning the project, including the results of any environmental impact assessment ...’. The use of the term ‘any’ could be interpreted to mean that conducting an environmental impact assessment is optional for the planning state.
- 17 The ICJ recognised this in its judgement in the Gabcikovo-Nagymaros case, where it referred to Czechoslovakia having deprived Hungary ‘of its right to an equitable and reasonable share of the natural resources of the Danube – with the continuing effects of the diversion of these waters on the ecology of the riparian area, Judgement of 25 September 1997, ref. 8, para. 85 (emphasis added).
- 18 Compare, e.g. UNECE Convention on the protection and use of transboundary watercourses and international lakes, March 17, 1992, (1992) *Int. Legal Materials*, Vol. 31, pp.1312–1329, which goes considerably further than the UN Convention in this regard.
- 19 Rio Declaration on environment and development, Principle 19, UNCED Doc. A/CONF.151/Rev. 1, June 13, 1992, reprinted in (1992) *Int. Legal Materials*, Vol. 31, pp.874–880.
- 20 The principle of access by aliens is supported by the 1985 GA Declaration on the human rights of individuals who are not nationals of the country in which they live, UN GA Res. 144 (XL) UN GAOR, 40th Sess., Supp.53, p.253. While this resolution is not directly on point, the fundamental policy underlying it would seem to be the same as in the kinds of cases presently under consideration.
- 21 OECD Council Recommendation (1997) C(77)28 of 17 May 1997 on Implementation of a regime of equal right of equal right of access and non-discrimination in relation to transfrontier pollution.
- 22 See for e.g. China and India. Verbatim record, 99th plenary meeting, ref. 5, pp.7 (China) and 9 (India).
- 23 See for e.g. France, Israel (effectively upstream on the Jordan) and Rwanda. These states, together with China and India, generally maintained that the principle of free choice of means should have been followed in Article 33. Verbatim record, 99th plenary meeting, ref. 4, pp.8 (France) 11 (Israel) and 12 (Rwanda). In a separate vote on Article 33 in the Working Group, the following five countries voted in the negative: China, Colombia, France, India and Turkey. The tally was 33 for, 5 against, with 25 abstentions.
- 24 Judgement of 25 September 1997, ref. 8, para. 85.
- 25 Judgement of 25 September 1997, ref. 8, para. 85.
- 26 McCaffrey, ref. 14.

- 27 Judgement of 25 September 1997, ref. 8, para. 85.
- 28 This is not the place to make the case for the proposition stated in the text. But the ILC seems to have implicitly accepted that these were presently existing obligations. The principle issue was how they should be defined; this was particularly true of the 'no-harm; obligation of Article 7. See the ILC's commentary to the relevant articles, 1994 ILC Report, ref. 2, pp.218, 236 and 260, respectively.
- 29 Judgement of 25 September 1997, ref. 8, paras. 78 and 85.
- 30 See for e.g. Hungarian Memorial, p.219. Among the many authorities referred to in support of Hungary's argument was the 1991 version of the ILC's Article 7, ref. 10. See Hungarian Memorial, p.223.
- 31 World Bank, projects on international waterways, operational policies, World Bank operational manual., OP 7.50, October 1994. The Bank's operational manual does provide, however, for the possibility of proceeding with a project despite the objects of other riparians. Para. 6.
- 32 World Bank, ref. 31, paras. 3 and 6.
- 33 World Bank, ref. 31, para. 6.



CURRENT DEVELOPMENTS

THE INTERNATIONAL LAW COMMISSION ADOPTS DRAFT ARTICLES ON TRANSBOUNDARY AQUIFERS

*By Stephen C. McCaffrey**

At its 2008 session the United Nations International Law Commission (ILC) completed work on a set of nineteen draft articles on the law of transboundary aquifers and transmitted the draft to the General Assembly.¹ The ILC recommended that the Assembly take note of the draft articles and at a later stage consider the elaboration of a convention based upon them.²

The Commission's work on transboundary groundwater was originally intended to complement its earlier draft articles on the law of the non-navigational uses of international watercourses,³ which formed the basis for the negotiation of the 1997 UN convention on the subject.⁴ Scientifically, the transboundary aquifers draft accurately and most usefully reflects the hydrology of aquifers, thanks to the assistance given the ILC by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and other UN scientific bodies. Legally, however, the draft is less than a perfect fit with the UN Convention and introduces a novel, and potentially regressive, concept into the law in this field. After reviewing the background of the transboundary aquifers draft, this Note sets forth a general overview of its provisions and offers comments on the general approach of the draft and its relationship with the UN Convention.

I. BACKGROUND

When it adopted the final version of its draft articles on the law of the non-navigational uses of international watercourses in 1994,⁵ the ILC also adopted a resolution on confined transboundary groundwater.⁶ The resolution reads in part as follows:

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¹ Report of the International Law Commission on the Work of Its Sixtieth Session, UN GAOR, 62d Sess., Supp. No. 10, at 19, UN Doc. A/63/10 (2008) [hereinafter 2008 ILC Report]. The Commission's documents cited in this Note are available on the ILC Web site, <<http://www.un.org/law/ilc/>>, unless otherwise noted.

² 2008 ILC Report, *supra* note 1, at 18.

³ Report of the International Law Commission on the Work of Its Forty-sixth Session, [1994] 2 Y.B. Int'l L. Comm'n, pt. 2, at 89, UN Doc. A/49/10 (1994) [hereinafter 1994 ILC Report]; see Stephen C. McCaffrey, *The International Law Commission Adopts Draft Articles on International Watercourses*, 89 AJIL 395 (1995).

⁴ Convention on the Law of the Non-navigational Uses of International Watercourses, May 21, 1997, 36 ILM 700 (1997) [hereinafter UN Convention].

⁵ 1994 ILC Report, *supra* note 3, at 89.

⁶ Resolution on Confined Transboundary Groundwater, *id.* at 135.

The International Law Commission, Having completed its consideration of the topic “The law of the non-navigational uses of international watercourses”,

Having considered in that context groundwater which is related to an international watercourse,

Recognizing that confined groundwater, that is groundwater not related to an international watercourse, is also a natural resource of vital importance for sustaining life, health and the integrity of ecosystems,

Recognizing also the need for continuing efforts to elaborate rules pertaining to confined transboundary groundwater,

...

1. *Commends* States to be guided by the principles contained in the draft articles on the law of the non-navigational uses of international watercourses, where appropriate, in regulating transboundary groundwater.⁷

The resolution thus recognized (in terms that were not altogether precise) that the draft articles on international watercourses cover “groundwater which is related to an international watercourse.”⁸ This acknowledgment is important both legally and factually, since “[n]early all surface-water features (streams, lakes, reservoirs, wetlands, and estuaries) interact with ground water.”⁹ While in this respect the resolution was redundant, as the draft articles (and the UN Convention) define “watercourse” to include both surface water and hydrologically related groundwater,¹⁰ the point was clear enough: the draft articles on international watercourses covered internationally shared surface water and related groundwater, but not groundwater that was unrelated to this “system”¹¹ of surface and underground water—i.e., not “confined transboundary groundwater.”¹² Considering that an indication of its view as to the law governing this form of groundwater would be useful, the Commission, in the resolution’s first operative paragraph, commended the principles in the international watercourses draft to states for guidance on the regulation of transboundary groundwater.¹³ It could therefore be argued that no further action by the ILC was required on transboundary groundwater, since the Commission dealt with the part related to surface water in its international watercourses articles, and recommended that the principles contained in the latter articles be applied to confined transboundary aquifers. However, as seen, the ILC did recognize, in the resolution’s preamble, “the need for continuing efforts to elaborate rules pertaining to confined transboundary groundwater.”¹⁴

⁷ *Id.*

⁸ *Id.*, pmb.

⁹ *Foreword* to THOMAS C. WINTER ET AL., GROUND WATER AND SURFACE WATER: A SINGLE RESOURCE at III (U.S. Geological Survey Circular 1139, 1998), available at <http://pubs.usgs.gov/circ/circ1139/>.

¹⁰ The draft articles, like the UN Convention, define “watercourse” to mean “a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus.” Art. 2(b), 1994 ILC Report, *supra* note 3, at 90. “International watercourse” is defined simply as “a watercourse, parts of which are situated in different States.” Art. 2(a), *id.*

¹¹ This term is used in the definition of “watercourse.” See *supra* note 10.

¹² See Commentary on Art. 2(b), 1994 ILC Report, *supra* note 3, at 90. The commentary notes: “Some members of the Commission . . . believed that [confined] groundwater should be included within the term ‘watercourse’, provided that the aquifer in which it is contained is intersected by a boundary.”

¹³ Resolution on Confined Transboundary Groundwater, *supra* note 6, para. 1.

¹⁴ *Id.*, pmb.

In 2002 the ILC included the topic of shared natural resources in its program of work. The topic was understood to include groundwater, oil and natural gas, and perhaps other resources such as migratory birds and animals.¹⁵ The ILC appointed Chusei Yamada as special rapporteur for the topic. He “considered that it would be appropriate to begin with the consideration of groundwaters as the follow-up of the Commission’s previous work on the codification of the law of surface waters.”¹⁶ The reference to the previous work on surface waters is not altogether accurate since, as noted above, the ILC’s previous work in the field dealt not only with surface water, but also with much of the world’s groundwater: that which is hydrologically related to surface water. This point will be revisited below. The special rapporteur also stated that “the work on transboundary groundwaters could affect any future codification work by the Commission on oil and natural gas” and that “the Commission might also wish to take into account some relevant elements of the existing regulations and State practice on oil and natural gas before finalizing its work on transboundary groundwaters.”¹⁷ (According to the ILC’s commentary on the draft articles, “the overwhelming majority [of government comments on the draft] supported the view that the law on transboundary aquifers should be treated independently of any future work of the Commission on the issues related to oil and natural gas.”¹⁸) The special rapporteur thus posited a close relationship between the legal regimes governing transboundary groundwater, on the one hand, and oil and natural gas, on the other. He made no distinction between the commonly occurring groundwater that is hydrologically connected with surface water and groundwater, such as so-called fossil water, that is not so connected. As described in the following section, the ILC’s transboundary aquifers draft addresses both forms.

II. OVERVIEW OF THE DRAFT ARTICLES

The ILC’s draft on the law of transboundary aquifers consists of nineteen articles arranged in four parts: Introduction; General Principles; Protection, Preservation and Management; and Miscellaneous Provisions.¹⁹ The first of the two articles in part 1, Article 1, defines the scope of the draft as including “(a) Utilization of transboundary aquifers or aquifer systems; (b) Other activities that have or are likely to have an impact upon such aquifers or aquifer systems; and (c) Measures for the protection, preservation and management of such aquifers or aquifer systems.”²⁰ This broad definition takes into account, in paragraphs (b) and (c), that

¹⁵ Report of the International Law Commission on the Work of Its Fifty-fourth Session, paras. 518–19, UN GAOR, 57th Sess., Supp. No. 10, at 243–44, UN Doc. A/57/10 (2002).

¹⁶ Report of the International Law Commission on the Work of Its Fifty-eighth Session, UN GAOR, 61st Sess., Supp. No. 10, at 193, UN Doc. A/61/10 (2006) (referring to the UN Convention, *supra* note 4) [hereinafter 2006 ILC Report]. The Commission’s previous work, of course, is that reflected in 1994 ILC Report, *supra* note 3.

¹⁷ 2006 ILC Report, *supra* note 16, at 193. The special rapporteur dealt with the relationship between the work on groundwaters and that on oil and gas in his fourth report, considered at the ILC’s 2007 session. See Report of the International Law Commission on the Work of Its Fifty-ninth Session, UN GAOR, 62d Sess., Supp. No. 10, at 124, UN Doc. A/62/10 (2007) [hereinafter 2007 ILC Report]; see *id.* at 126 (summarizing the Commission’s discussion of the fourth report).

¹⁸ General commentary on the draft articles, para. 2, 2008 ILC Report, *supra* note 1, at 28.

¹⁹ These are the same titles as those used for parts I, II, IV, and VI, respectively, of the UN Convention, *supra* note 4.

²⁰ 2008 ILC Report, *supra* note 1, at 20.

activities other than the use of groundwater per se—for example, disposal of waste on the surface of land in a recharge zone—may adversely affect shared groundwater. Article 2 contains all-important definitions of the terms used throughout the draft. These include (by relevant paragraph of Article 2) “aquifer” (a), “aquifer system” (b), “transboundary aquifer” or “transboundary aquifer system” (c), “aquifer State” (d), “utilization of transboundary aquifers or aquifer systems” (e), “recharging aquifer” (f), “recharge zone” (g), and “discharge zone” (h).²¹ (Note that there is no definition of “groundwater.”)

The first of the seven articles of part 2, Article 3, Sovereignty of Aquifer States, proclaims the sovereignty of each aquifer state over the part of a transboundary aquifer or aquifer system located in its territory.²² This remarkable provision will be discussed further in the following section. It finds no counterpart in either the ILC’s 1994 draft articles or the UN Convention.

Articles 4 through 8 correspond to Articles 5 through 9 of the UN Convention. In general, these articles are modeled upon the corresponding provisions of the UN Convention, with appropriate adaptations. Article 4, however, simply refers to “the principle of equitable and reasonable utilization” rather than adjusting the text of Article 5(1) of the Convention setting forth that principle. The draft article then proceeds to state how this principle applies to transboundary aquifers.²³

Article 5 contains a nonexhaustive list of factors to be taken into account in ensuring that utilization of a transboundary aquifer is equitable and reasonable. The list generally tracks the one in Article 6 of the UN Convention (though the factors are reordered), again with appropriate modifications, but adds two factors: “(d) The contribution to the formation and recharge of the aquifer or aquifer system” and “(i) The role of the aquifer or aquifer system in the related ecosystem.” According to the Commission’s commentary, subparagraph (d) refers to “the comparative size of the aquifer in each aquifer State and the comparative importance of the recharge process in each State where the recharge zone is located.”²⁴ Subparagraph (d) thus goes beyond the UN Convention, which does not explicitly include the contribution of water by a given state as an indicative factor—although it may of course be relevant in a specific case and would thus be properly considered. Subparagraph (i) recognizes the importance of aquifers to sustaining the ecosystems related to them. The commentary describes the complex physical relationships characteristic of this function.²⁵ Paragraph 2 of Article 5, concerning the weight to be given to the various factors, reproduces Article 6(2) of the UN Convention, with appropriate adjustments. But it also adds the concept of “vital human needs,” which is contained in Article 10 of the Convention, Relationship Between Different Kinds of Uses (a provision that does not have a counterpart in the transboundary aquifers draft): “in weighing different kinds of utilization of a transboundary aquifer or aquifer system, special regard shall be given to vital

²¹ *Id.* at 20–21.

²² *Id.* at 21.

²³ Interestingly, the Commission’s commentary on Article 4 distinguishes between “equitable” and “reasonable” utilization of aquifers, explaining that three of the article’s four paragraphs (relating to maximizing long-term benefits, para. (b); establishing comprehensive utilization plans, para. (c); and not overutilizing recharging transboundary aquifers, para. (d)) are “more related to reasonable utilization.” Commentary on Art. 4, para. 4, *id.* at 42.

²⁴ Commentary on Art. 5, para. 4, *id.* at 45.

²⁵ The commentary on paragraph (i) states that the expression “related ecosystem” should be understood in the context of the use of the term “ecosystem” in draft Article 10 on protection and preservation of ecosystems. *Id.*

human needs.”²⁶ The intrinsic importance of this principle is magnified by its coming the closest in both instruments to recognizing the human right to water.²⁷

Article 6, Obligation Not to Cause Significant Harm, is the counterpart of the article that caused the most difficulty in negotiating the UN Convention, Article 7. Yet the aquifers draft, rather than simply reproducing it with only the most necessary adaptations, adds a paragraph and rewords the Convention’s critical paragraph 2. The additional paragraph arguably is necessary; since it deals with “activities other than utilization of a transboundary aquifer . . . that have, or are likely to have, an impact upon that transboundary aquifer,”²⁸ it will help to prevent an unduly narrow reading of the obligation to prevent the causing of significant harm. Article 6 further reflects hydrologic reality in requiring that significant harm be prevented, not only with respect to other states sharing a transboundary aquifer, but also with respect to those “in whose territory a discharge zone is located.”²⁹ Whether this rewording of the rather awkwardly formulated Article 7(2) of the UN Convention will be judged an acceptable balancing of the no-harm and equitable utilization obligations remains to be seen. The Commission omitted even the weak reference to compensation in Article 7(2),³⁰ explaining that it is covered “by other rules of international law.”³¹

Article 7, on the general obligation to cooperate, generally follows Article 8 of the UN Convention but substitutes a terse provision for the somewhat long second paragraph on the establishment of joint management mechanisms that was added to Article 8 of the ILC’s draft during the negotiation of the UN Convention. According to this paragraph of the aquifers draft, states sharing aquifers (“aquifer states”³²) “should” establish such mechanisms.³³

Article 8, concerning the regular exchange of data and information, in large part tracks the corresponding provision of the UN Convention, Article 9. The Commission, however, added what is probably an essential paragraph calling upon states sharing aquifers to develop further data and information on those aquifers when necessary.³⁴ Another change, which is less felicitous, moved the words “where appropriate” in the final paragraph of the article, so that it reads: “Aquifer States shall, where appropriate, employ their best efforts to collect and process data and information in a manner that facilitates their utilization by the other aquifer States to which such data and information are communicated.”³⁵ The UN Convention’s version placed the words “where appropriate” before “process,” giving them a more limited effect. Inserting them before all words of obligation in the paragraph considerably broadens their scope and

²⁶ *Id.* at 22.

²⁷ See generally STEPHEN C. MCCAFFREY, *THE LAW OF INTERNATIONAL WATERCOURSES* 369–71 (2d ed. 2007).

²⁸ Art. 6(2), 2008 ILC Report, *supra* note 1, at 22.

²⁹ Art. 6(3), *id.*

³⁰ The states causing the harm are, “where appropriate, to discuss the question of compensation.” UN Convention, *supra* note 4, Art. 7(2).

³¹ Commentary on Art. 6, para. 5, 2008 ILC Report, *supra* note 1, at 47.

³² Article 2(d) defines “aquifer State” to mean “a State in whose territory any part of a transboundary aquifer or aquifer system is situated.” *Id.* at 20.

³³ “For the purpose of paragraph 1, aquifer States should establish joint mechanisms of cooperation.” Art. 7(2), *id.* at 23.

³⁴ Art. 8(2), *id.*

³⁵ Art. 8(4), *id.* The UN Convention’s counterpart provision reads: “Watercourse States shall employ their best efforts to collect and, where appropriate, to process data and information in a manner which facilitates its utilization by the other watercourse States to which it is communicated.” UN Convention, *supra* note 4, Art. 9(3).

weakens the article. Data and information collected by means of one system may not be usable by a state that employs another system. Yet the sharing of data and information is critical to the proper management of international watercourses, and to equitable utilization itself. Such sharing is particularly critical for groundwater, about which we have less knowledge than we do about surface water.

Article 9, Bilateral and Regional Agreements and Arrangements, at first appears to be a new provision. Closer examination, however, reveals that it largely reproduces, with appropriate modifications, the fourth paragraph of Article 3 of the UN Convention, Watercourse Agreements. The opening phrase of Article 9, however, gives rise to some confusion about the article's relationship with Articles 7 and 14 of the draft. That phrase states: "For the purpose of managing a particular transboundary aquifer or aquifer system . . ." ³⁶ Article 7, it will be recalled, encourages states to "establish joint mechanisms of cooperation." The Commission's commentary makes clear that these mechanisms are envisioned as engaging in various forms of coordination and management. ³⁷ Article 14, Management, also deals with joint management mechanisms. Why the ILC decided to deal with joint management mechanisms in three different articles, rather than grouping the relevant provisions in a single article, remains uncertain. ³⁸ In addition, it might be asked whether a provision on bilateral and regional agreements and arrangements even belongs in a section of the draft on general principles.

Part 3 contains six articles, the first of which, Article 10, Protection and Preservation of Ecosystems, is based on Article 20 of the UN Convention. At first blush, it appears to weaken the latter provision somewhat by qualifying the obligation to protect transboundary aquifer-related ecosystems with the words "take all appropriate measures." ³⁹ These words generally connote an obligation of due diligence, or making best efforts under the circumstances. While the obligation to "protect and preserve the ecosystems of international watercourses" under Article 20 of the UN Convention is presumably one of due diligence even without these words, this interpretation is not entirely evident. ⁴⁰ The Commission's commentary indicates that the "obligation of States to take 'all appropriate measures' is limited to the protection of relevant ecosystems. This allows States greater flexibility in the implementation of their responsibilities under this provision." ⁴¹ This explanation may raise more questions than it answers. Does it suggest that the words "take all appropriate measures" do not apply to the obligation to "preserve" aquifer-related ecosystems? This reading seems unlikely, yet that is what the commentary says on its face. Moreover, the explanation almost invites states to circumvent the basic obligation.

Article 11, concerning recharge and discharge zones, is new. These zones are areas of the land surface through which an aquifer is recharged, or replenished, or where water from an aquifer

³⁶ Art. 9, 2008 ILC Report, *supra* note 1, at 23.

³⁷ Commentary on Art. 7, *id.* at 49–50.

³⁸ One of the articles, Article 14, is located in a different part of the draft, part 3, from the other two, which are contained in part 2.

³⁹ Art. 10, 2008 ILC Report, *supra* note 1, at 24.

⁴⁰ While the "Statements of Understanding" adopted by the Working Group of the Whole of the Sixth Committee, in which the UN Convention was negotiated, state that Articles 21–23 of the Convention "impose a due diligence standard on watercourse States," they do not include Article 20 in this group. Report of the Sixth Committee Convening as the Working Group of the Whole at Its Second Session, para. 8, UN Doc. A/51/869, at 5 (Apr. 11, 1997), *reprinted in* 36 ILM 720 (1997).

⁴¹ Commentary on Art. 10, para. 4, 2008 ILC Report, *supra* note 1, at 55.

emerges from the ground into a watercourse of some kind (such as a stream or a lake) or into the sea. It is therefore crucial that they—recharge zones in particular—be protected to avoid the contamination of aquifers. Article 11 provides for the identification of such zones and for their protection from harmful impacts. Importantly, it further recognizes that either of these kinds of zones may be located in a state other than the one(s) where the aquifer is located, that is, the aquifer state(s). Article 11 requires such nonaquifer states to cooperate with aquifer states to protect the aquifer and related ecosystems. ⁴² Yet whether nonaquifer states would be parties to any instrument based on the draft articles is uncertain.

Article 12, Prevention, Reduction and Control of Pollution, is based on paragraph 2 of Article 21 of the UN Convention. It is even more urgent to prevent the pollution of groundwater than that of surface water because once an aquifer is contaminated, it is ordinarily time-consuming and difficult, if not impossible, to restore its waters to their former unpolluted state. One would therefore have expected a detailed and robust provision on this subject. But in contrast to Article 21 of the Convention, which contains three rather lengthy and detailed paragraphs in this regard, Article 12 consists of a solitary paragraph of two sentences. Further, unlike Article 21 of the Convention, Article 12 surprisingly contains no definition of "pollution"; nor is that term defined anywhere else in the draft articles. One would think, for example, that it should be made clear that saltwater intrusion into an aquifer (such as by overabstraction of water from it) is a form of "pollution" for the purpose of this provision. Article 12 does require that states sharing transboundary aquifers "take a precautionary approach in view of uncertainty about the nature and extent of a transboundary aquifer or aquifer system and of its vulnerability to pollution." ⁴³ On the surface, this provision appears to be a positive, logical, and even necessary feature, precisely in view of the "vulnerability" of aquifers. But on reflection, the precautionary principle, or "approach," is addressed to situations in which there is scientific uncertainty about environmental harm. ⁴⁴ Little scientific uncertainty can be discerned about the harm pollution would cause to an aquifer. The Commission's commentary states that a precautionary approach is required in view of "the fragility and scientific uncertainty of aquifers." ⁴⁵ Aquifers are no doubt fragile, in the sense that care must be exercised with respect to their use and protection. There may also be "scientific uncertainty" about the precise nature, characteristics, and extent of a given aquifer. But, again, hardly anyone appears to doubt that aquifers are "vulnerab[le] to pollution," in the words of Article 12. It therefore seems more appropriate for Article 12 to have enjoined states to exercise a high degree of caution, perhaps even to take precautionary measures, so as to prevent pollution of shared aquifers, rather than to have invoked a principle or approach ⁴⁶ designed to deal with uncertainty.

⁴² Art. 11(2), *id.* at 24.

⁴³ Art. 12, *id.*

⁴⁴ Perhaps the most broadly accepted general formulation of the precautionary "approach" is that of Principle 15 of the Rio Declaration on Environment and Development: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." Rio Declaration on Environment and Development, June 14, 1992, 31 ILM 874, 879 (1992).

⁴⁵ Commentary on Art. 12, para. 5, 2008 ILC Report, *supra* note 1, at 59.

⁴⁶ The ILC's commentary acknowledges the controversy as to whether it is a precautionary "approach" or "principle" and opts for the former on the ground that "it is the less disputed formulation." *Id.*

Article 13 deals with monitoring, a critical subject in the case of groundwater. The article provides that states sharing aquifers are to monitor them jointly wherever possible, or at least to exchange data obtained through the monitoring process.⁴⁷ States sharing aquifers “should” identify the parameters to be monitored, which should include “the condition of the aquifer or aquifer system . . . and also . . . [their] utilization.”⁴⁸

Article 14 requires “aquifer states” to “establish and implement plans for the proper management of their transboundary aquifers or aquifer systems.”⁴⁹ It does not state expressly whether this is to be done jointly or severally, but its second sentence suggests that the latter is intended: “[Aquifer states] shall, at the request of any of them, enter into consultations concerning the management of a transboundary aquifer”⁵⁰ Since transboundary groundwater is a shared resource, attempting to manage it unilaterally would be an exercise in futility, or worse: the consequences could easily amount to a tragedy of the commons.⁵¹ Management plans must therefore be prepared and implemented not only domestically, but also jointly, with other aquifer states.⁵² The article’s final sentence provides that “[a] joint management mechanism shall be established, wherever appropriate.”⁵³ As already noted, this is one of three places in the draft that management is dealt with (the others are Articles 7(2) and 9).

Article 15, Planned Activities, deals with the same subject as part 3 of the UN Convention, Planned Measures, which contains nine articles. (The ILC does not explain why it opted for the term “activities” rather than the broader expression “measures,” as in the UN Convention.) In view of the sensitivity of aquifers, such extensive compression of the Commission’s treatment of this important issue is somewhat surprising. The commentary explains that “a minimalist approach is taken in this draft article due to the scarcity of State practice with respect to aquifers.”⁵⁴ Since states look to the ILC for guidance, and since its mandate includes not only codification, but also progressive development of international law, this explanation is not entirely convincing—especially when one recalls that much of the world’s groundwater is hydrologically connected with surface water. State practice in relation to surface water is therefore largely applicable to groundwater, as concluded by the International Law Association in

⁴⁷ Art. 13(1), *id.* at 24.

⁴⁸ Art. 13(2), *id.* at 24–25.

⁴⁹ Art. 14, *id.* at 25.

⁵⁰ *Id.*

⁵¹ The reference here is to Garrett Hardin’s well-known article, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968). Hardin uses the analogy of a pasture open to all herdsmen. The incentive of each is to increase his herd without limit, leading eventually to the destruction of the commons: “Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.” *Id.* at 1244. The same phenomenon would operate in the case of a shared aquifer.

⁵² See in this connection the “Bellagio Draft Treaty,” a model agreement for transboundary groundwater, in Robert D. Hayton & Albert E. Utton, *Transboundary Groundwaters: The Bellagio Draft Treaty*, 29 NAT. RES. J. 663, 663 (1989) (“Withdrawals from one country can drain life-giving water from a neighboring country and, as a consequence, be the source of severe and protracted conflict. . . . The draft provides mechanisms for the international aquifers in critical areas to be managed by mutual agreement rather than continuing to be subjected to unilateral taking.”). Article VIII of the Bellagio Draft Treaty deals with comprehensive management plans, which are to be prepared by a joint commission, provided for in Article III and established by the states sharing the aquifer in question. *Id.* at 684, 695. Remarkably, the ILC’s draft refers to the Bellagio Draft Treaty, a widely respected model for the management of shared groundwater, only for its definition of “aquifer.” Commentary on Art. 2, 2008 ILC Report, *supra* note 1, at 34 n.23.

⁵³ Art. 14, 2008 ILC Report, *supra* note 1, at 25.

⁵⁴ Commentary on Art. 15, para. 1, *id.* at 66.

its Seoul Rules on International Groundwaters.⁵⁵ Article 15 begins with a paragraph that does not have a counterpart in the UN Convention but that would have been a welcome addition. It provides that, “as far as practicable,” a state (whether or not it is an aquifer state⁵⁶) is to assess the possible effects of an activity planned within its territory when it “has reasonable grounds for believing” that the activity may affect a transboundary aquifer in a way that could have “a significant adverse effect upon another State.”⁵⁷ The two succeeding paragraphs of Article 15 are based upon Articles 12 and 17(1), respectively, of the UN Convention. They require prior notification of planned activities entailing potential adverse effects (paragraph 2) and consultations if the states concerned disagree about the possible effect of the planned measures (paragraph 3).⁵⁸

Part 4 contains the final four articles of the draft. Article 16, a rather ambitious, though well-intentioned provision, purportedly requires all states⁵⁹ (not merely aquifer states) to promote cooperation with developing countries with regard to the technical and legal aspects of the management and protection of transboundary aquifers. Like Article 15, this article thus seems to presume that any international agreement based on the draft articles would include not only states sharing transboundary aquifers but also others, and that at least some of those other states would be in a position to “promote” the kinds of “cooperation” envisaged in the article.

Article 17, Emergency Situations, tracks Article 28 of the UN Convention,⁶⁰ and requires a state where an emergency originates to notify potentially affected states and competent international organizations and to take all practicable measures to prevent, mitigate, and eliminate any harmful effects of the emergency.⁶¹ In an innovation the article provides that a state “may take measures that are strictly necessary to meet” a threat to “vital human needs” posed by the emergency, “notwithstanding draft articles 4 and 6.”⁶² Here the Commission evidently had in mind crises such as that occasioned by “the devastating tsunami disaster along the coast of the Indian Ocean,” which “could flood seawater into an aquifer.”⁶³ Curiously, however, the commentary states that “[i]n the case of aquifers, emergencies might not be as numerous

⁵⁵ The Seoul Rules on International Groundwaters adopted by the International Law Association (ILA) in 1986 make the ILA’s 1966 Helsinki Rules applicable to groundwater. Rules on International Groundwaters, in 62 ILA, CONFERENCE REPORT 251 (1986) [hereinafter Seoul Rules on International Groundwaters]. The rules were adopted by the Resolution on International Water Resources Law, *id.* at 21.

⁵⁶ Commentary on Art. 15, para. 1, 2008 ILC Report, *supra* note 1, at 66.

⁵⁷ Art. 15(1), *id.* at 25.

⁵⁸ Paragraph 3 of Article 15 also states, in its final sentence, that the states concerned “may utilize an independent fact-finding body to make an impartial assessment of the effect of the planned activities.” Art. 15(3), *id.* What this provision adds is unclear, since states are always free to have recourse to such third parties. The ILC refers in its commentary on this article to the compulsory fact-finding procedure set forth in Article 33 of the UN Convention, but states that “there exists no evidence as yet for such an obligation in relation to groundwaters.” Commentary on Art. 15, para. 6, *id.* at 68. As indicated in the text at notes 54–55 *supra*, this explanation is not convincing.

⁵⁹ Article 16 begins: “States shall . . . promote . . . cooperation with developing States” Art. 16, chapeau, *id.* at 25. The commentary does not address what is intended by the initial reference to “States,” but on the basis of other uses of the term, unmodified by the adjective “aquifer,” in the draft, *see, e.g.*, Art. 15, it seems reasonable to conclude that it refers to all states.

⁶⁰ *See* Commentary on Art. 17, para. 1, 2008 ILC Report, *supra* note 1, at 73 (stating that the UN Convention “contains a similar provision in article 28”).

⁶¹ Art. 17(2), *id.* at 26.

⁶² Art. 17(3), *id.* Articles 4 and 6 set forth the obligations of equitable utilization and prevention of significant harm, respectively.

⁶³ Commentary on Art. 17, para. 1, *id.* at 73.

and destructive as in the case of watercourses.⁶⁴ Putting aside the continued confusion in terminology⁶⁵ and unrealistic compartmentalization of surface water and groundwater,⁶⁶ a disaster affecting an aquifer could seemingly be far more destructive than one principally affecting surface water, since an aquifer would take considerably more time to cleanse itself than, for example, a surface stream.

Article 18, Protection in Time of Armed Conflict, is the counterpart to Article 29 of the UN Convention. The text of the two provisions is identical, save for the replacement of “international watercourses” with “transboundary aquifers or aquifer systems.”⁶⁷ Both state that the relevant freshwater resources enjoy the protection accorded by international law “in international and non-international armed conflict and shall not be used in violation of those principles and rules.”⁶⁸

The final provision of the draft, Article 19, on data and information vital to national defense or security, is based on Article 31 of the UN Convention. Again, the substantive text of the two provisions is identical. In the case of Article 19, however, the expression “watercourse state” in the UN Convention is replaced with “state,” purporting to make the article applicable to other states as well as to aquifer states.⁶⁹ While the commentary offers no explanation for this expansion of coverage, the Commission presumably had in mind the same considerations as regards various other articles in the draft that also refer to a “state” or “states” without modification.⁷⁰ Article 19 provides that states are not required to furnish data and information vital to their national defense or security but that they should provide “as much information as possible under the circumstances.”⁷¹

III. EVALUATION

In general, the transboundary aquifers draft seeks to apply the principles of the UN Convention, *mutatis mutandis*, to transboundary groundwater. Indeed, as has been seen, most of the substantive articles in the aquifers draft are based on the watercourses articles.⁷² Those that are not for the most part consist of refinements relating to the special characteristics of groundwater.⁷³ This provenance validates the ILC’s recommendation in its 1994 Resolution on Confined Transboundary Groundwater that in regulating transboundary groundwater, states

⁶⁴ *Id.*

⁶⁵ For the definition of “watercourse” in Article 2(a) of the UN Convention, see *supra* note 10.

⁶⁶ As indicated above, most surface water has associated groundwater. It does not accord with hydrologic reality to treat the two as entirely separate. See WINTER ET AL., *supra* note 9.

⁶⁷ 2008 ILC Report, *supra* note 1, at 27.

⁶⁸ *Id.*

⁶⁹ *Id.*

⁷⁰ See Arts. 6, 11, 15, 16, 17.

⁷¹ 2008 ILC Report, *supra* note 1, at 27.

⁷² The substantive provisions (i.e., those not involving scope and definitions) in the transboundary aquifers draft that do not have counterparts in the UN Convention are Article 3, Sovereignty of Aquifer States; Article 11, Recharge and Discharge Zones; Article 13, Monitoring; and Article 16, Technical Cooperation with Developing States.

⁷³ The statement that provisions of the aquifers draft that are not based on the UN Convention “for the most part” deal with the special characteristics of aquifers refers to the fact that Article 16, Technical Cooperation with Developing States, is more broadly applicable. Article 3, while inimical to the law of shared freshwater resources as discussed below, was apparently inspired by the characteristics of aquifers.

should be guided, where appropriate, by the principles in the draft articles on non-navigational uses of international watercourses.⁷⁴ But it also raises two broad questions: first, whether the aquifers draft has added anything new; and second, whether it has made a positive contribution to the development of the law of shared freshwater resources.

The first question must surely be answered in the affirmative, if only in a somewhat limited sense. The special rapporteur was able to arrange briefings for the Commission by groundwater experts from UNESCO, the Food and Agriculture Organization, the Economic Commission for Europe, and the International Association of Hydrogeologists.⁷⁵ These briefings resulted in imparting a knowledge of aquifers, groundwater, and hydrogeology in general into the draft articles, giving them a scientifically sound basis. This achievement should not be underestimated since groundwater, while much more plentiful than surface water,⁷⁶ is far less understood by states and their political subdivisions. Injecting the language of hydrogeology into the discourse of international watercourse law is surely a good thing and has the potential to inform future agreements and arrangements between states concerning shared groundwater.

The second question, however, cannot be answered so unequivocally—perhaps in part because the Commission became so enamored of the science of aquifers that it lost sight of its main task: the codification and progressive development of the law of transboundary groundwater. In the context of the ILC’s work, the difference between the terms “aquifers” and “groundwater,” while it may seem subtle, is important. An aquifer is a geologic formation that contains water. The formation itself does not move; it is static. But the water—groundwater—it holds does move. It responds to a variety of forces, from gravity to withdrawals by the state in which it is located or a neighboring state. In short, it is not static. The special rapporteur had initially “indicated his intention to deal with confined transboundary groundwaters” before moving on to other shared natural resources.⁷⁷ The decision to make the subject of the Commission’s study, and thus its draft articles, the law of transboundary *aquifers*, rather than the law of transboundary groundwater (or, in the more restrictive terms of the ILC’s 1994 resolution, the law of *confined* transboundary groundwater), may have been influenced by the briefings presented by the United Nations scientific agencies. In any event, the decision had major repercussions throughout the draft articles. These repercussions fall chiefly into two related categories: the physical and legal scope of the draft and its relationship with the UN Convention; and the decision to make the “sovereignty of aquifer states” the guiding principle of the draft. These points will be considered in turn.

The Scope of the Draft and Its Relationship with the UN Convention

First, the ILC’s decision to make transboundary aquifers, rather than groundwater, the subject of the draft had far-reaching effects on its physical scope and thus on its relationship to the

⁷⁴ See note 6 *supra* and corresponding text.

⁷⁵ 2008 ILC Report, *supra* note 1, at 18.

⁷⁶ According to the United Nations Environment Programme, of all freshwater on Earth, only 0.3 percent is contained in lakes and rivers, while 30.8 percent is groundwater. The remaining 68.9 percent takes the form of glaciers and permanent snow cover. See Vital Water Graphics (2002), available at <<http://www.unep.org/dewa/assessments/ecosystems/water/vitalwater/01.htm>>. In its commentary on the preamble to the draft, the ILC states that “[n]inety-seven per cent of readily available freshwater is stored underground.” 2008 ILC Report, *supra* note 1, at 31, para. 2.

⁷⁷ 2008 ILC Report, *supra* note 1, at 13, para. 34.

UN Convention. The draft defines “aquifer” as “a permeable water-bearing geological formation underlain by a less permeable layer and the water contained in the saturated zone of the formation.”⁷⁸ By focusing primarily on the geologic formation, and only secondarily referring to the “water contained in” it, the draft invites confusion as to whether the geological formation (rock⁷⁹) or its content (water) is the primary subject of legal regulation. Unfortunately, the draft articles make clear that their overriding concern is with the rock, not the water. This emphasis is manifested all too plainly in the first general principle announced in the draft, “sovereignty of aquifer states,” which seems to have become its leitmotif. The question whether a state enjoys anything but a limited form of sovereignty over shared groundwater bears upon the second category of repercussions, discussed below. Rather than focusing on the geologic formation, the draft articles could usefully have followed the approach of the International Law Association’s 1986 Seoul Rules on International Groundwaters, which regulate “the waters of international aquifers.”⁸⁰

But even this definition of the draft’s physical scope would be too broad if overlap with the UN Convention was to be avoided. The Convention, as indicated earlier, covers all groundwater that is hydrologically related to surface water.⁸¹ The only form of groundwater not covered by the 1997 UN Convention is that which does not interact with surface water, that is, water contained in what are sometimes referred to as “confined aquifers.”⁸² As understood by the Commission when it adopted its draft articles on international watercourses and the accompanying Resolution on Confined Transboundary Groundwater in 1994, confined aquifers do not receive significant recharge from surface water or otherwise (often because they are very deep) and do not discharge water to the surface or to other aquifers. Some regions of the world, principally the Middle East and North Africa, refer to this form of groundwater as “fossil water.”

What the Commission envisaged in 1994 was that additional work could be done “to elaborate rules pertaining to confined transboundary groundwater,”⁸³ as this form of groundwater not only was not covered by the ILC’s draft articles on international watercourses (or, consequently, the UN Convention) but also had not been considered by the Commission in its work on that project. Yet the scope of the transboundary aquifers draft is by no means limited to confined groundwater or aquifers. It purports to cover the water contained in all transboundary aquifers or aquifer systems, including those that are recharged from surface waters and discharge into those waters⁸⁴—precisely the forms of groundwater covered by the UN Convention. The two instruments therefore overlap with respect to all forms of groundwater except

⁷⁸ Art. 2(a), *id.* at 20.

⁷⁹ The term “rock” is used for simplicity. As noted in the commentary, “[a] ‘geological formation’ consists of naturally occurring materials such as rock, gravel and sand.” Commentary on Art. 2(a), para. 1, *id.* at 35.

⁸⁰ Seoul Rules on International Groundwaters, *supra* note 55, Art. 1, at 251 (entitled The Waters of International Aquifers) (emphasis added).

⁸¹ See the UN Convention’s definition of “watercourse,” *supra* note 10.

⁸² See, e.g., Commentary on Art. 2, para. 1, 2008 ILC Report, *supra* note 1, at 35: “All the aquifers are underlain by less permeable layers which serve, as it were, as the bottom of [a] container. Some aquifers are also upper-lain by less permeable layers. The waters stored in such aquifers are referred to as confined groundwaters as they are pressurized by more than atmospheric pressure.”

⁸³ Resolution on Confined Transboundary Groundwater, *supra* note 6, pmb.

⁸⁴ See the definitions of “recharging aquifer,” “recharge zone,” and “discharge zone” in Article 2(f), (g), and (h), 2008 ILC Report, *supra* note 1, at 20–21.

confined transboundary groundwater, a point noted by some members of the Commission.⁸⁵ This overlap is problematic for at least three reasons: first, it is likely to lead to confusion as to which instrument should apply to a situation that they both cover; second, the rules applicable to situations the two instruments cover are not perfectly congruent, as noted above; and third, and most fundamentally, the transboundary aquifers draft’s use of “sovereignty” over transboundary aquifers as a guiding principle is entirely inconsistent with the UN Convention, as discussed below.

The problems created by overlap might at least have been ameliorated if the Commission had decided that the ultimate form of the transboundary aquifers draft would be a guide to practice that would assist states in their relations concerning transboundary groundwater. Precedent for such an approach can be found in the Commission’s proposed outcome of its draft articles on reservations to treaties,⁸⁶ and the General Assembly could still decide that the aquifers draft should be used in this way. But, evidently reflecting uncertainty as to how the transboundary aquifers draft would mesh with the UN Convention,⁸⁷ the Commission, in its recommendation to the General Assembly on the final form of the draft, suggested neither this result nor the more usual form, a convention. Instead, the ILC proposed what it referred to as a “two-step approach,”⁸⁸ recommending to the General Assembly:

- (a) To take note of the draft articles on the law of transboundary aquifers in a resolution, and to annex these articles to the resolution;
- (b) To recommend to States concerned to make appropriate bilateral or regional arrangements for the proper management of their transboundary aquifers on the basis of the principles enunciated in these articles;
- (c) To also consider, at a later stage, and in view of the importance of the topic, the elaboration of a convention on the basis of the draft articles.⁸⁹

Presumably, the “two steps” are, first, recommendations (a) and (b), and, second, recommendation (c). Whether or not the last recommendation is taken up by the General Assembly, even “at a later stage,” should depend in part on whether the aquifers draft can be made consistent with the law of international watercourses generally, as reflected in the UN Convention, and with the scope of the Convention.

It is worth noting in this connection that the ILC’s Drafting Committee decided not to include the draft Article 20, Relation to Other Conventions and International Agreements,⁹⁰ which had been proposed by the special rapporteur. That article reads as follows:

1. The present draft articles shall not alter the rights and obligations of the States parties which arise from other conventions and international agreements compatible with the

⁸⁵ *Id.* at 17, para. 43 (describing consideration of special rapporteur’s proposed Article 20, discussed in text at notes 90–92 *infra*).

⁸⁶ See, e.g., *id.* at 136, para. 68.

⁸⁷ *Id.* at 15, para. 39 (“[I]ssues concerning the relationship with other instruments were linked to questions concerning final form.”).

⁸⁸ *Id.*

⁸⁹ *Id.* at 18, para. 49. In December 2008, the General Assembly decided to consider the form the draft articles might take during its sixty-sixth session in 2011. See note 138 *infra*.

⁹⁰ Why the Commission felt it necessary to refer to both “conventions” and “international agreements,” since the latter is an all-embracing term for treaties, however named, is not known. See the definition of “treaty” in Article 2(a) of the Vienna Convention on the Law of Treaties, *opened for signature* May 23, 1969, 1155 UNTS 331.

present draft articles and which do not affect the enjoyment by other States parties of their rights or the performance of their obligations under the present draft articles.

2. Notwithstanding the provisions of paragraph 1, when the States parties to the present draft articles are parties also to the Convention on the Law of the Non-navigational Uses of International Watercourses, the provisions of the latter concerning transboundary aquifers or aquifer systems apply only to the extent that they are compatible with those of the present draft articles.⁹¹

According to this draft article by the special rapporteur, the transboundary aquifers draft would prevail over any inconsistent instrument, including the UN Convention. This proposal stands in sharp contrast to the corresponding provision of the Convention itself, which provides that “[i]n the absence of an agreement to the contrary, nothing in the present Convention shall affect the rights or obligations of a watercourse State arising from agreements in force for it on the date on which it became a party to the present Convention.”⁹² In light of the sweeping effect of the special rapporteur’s proposed Article 20, its deletion by the Drafting Committee is perhaps not surprising.

A final point relating to the physical scope of the draft is that if it is to overlap with the UN Convention, it seems unnecessarily and unhelpfully limited in one respect. An aquifer may be situated entirely in one state but contribute water to a surface stream that flows from that state into another state. Such an aquifer is not covered by the terms “transboundary aquifer” and “transboundary aquifer system,” as defined in the draft; at most, it would be covered by the article on “recharge and discharge zones,”⁹³ but the general principles contained in the draft evidently do not apply to those zones, as they govern transboundary aquifers and aquifer systems. Since the principles contained in the draft should logically apply to the waters of aquifers or aquifer systems that are located in a single state but contribute to the surface waters of an international watercourse, such aquifers should be covered by the draft; why they are not remains unclear. Such aquifers are covered by the 1997 UN Convention, but since other forms of groundwater covered by the Convention are also covered by the draft, it would not seem that avoiding overlap with the Convention is the reason that the current draft excludes this particular form of groundwater.

Sovereignty of Aquifer States

The second category of repercussions of the ILC’s decision to study transboundary aquifers rather than transboundary groundwater relates to the consequent centering of the draft on the concept of “sovereignty of aquifer states.”⁹⁴ Article 3 of the ILC’s aquifers draft provides as follows: “Each aquifer State has sovereignty over the portion of a transboundary aquifer or aquifer system located within its territory. It shall exercise its sovereignty in accordance with international law and the present draft articles.”⁹⁵

⁹¹ 2008 ILC Report, *supra* note 1, at 15 n.13.

⁹² UN Convention, *supra* note 4, Art. 3(1).

⁹³ Article 10, Recharge and Discharge Zones, 2008 ILC Report, *supra* note 1, at 24.

⁹⁴ See generally Margaret J. Vick, *International Water Law and Sovereignty: A Discussion of the ILC Draft Articles on the Law of Transboundary Aquifers*, 21 PAC. MCGEORGE GLOBAL BUS. & DEV. L.J. 191 (2008).

⁹⁵ 2008 ILC Report, *supra* note 1, at 21.

The ILC’s commentary on Article 3 cites a number of treaties and nonbinding instruments purportedly supporting this provision.⁹⁶ Only two of those instruments concern freshwater; none relates specifically to aquifers or groundwater and none refers to sovereignty over shared freshwater of any kind.⁹⁷ The only way that either of the two freshwater agreements refers to sovereignty is by reproducing the general formula of Principle 2 of the Rio Declaration on Environment and Development, which refers to states’ “sovereign right to exploit their own resources” (“in accordance with the Charter of the United Nations and the principles of international law”) in the context of emphasizing their “responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states.”⁹⁸ Unfortunately, Article 3 does not take Principle 2’s additional and important second step of underscoring the responsibility of states to ensure that activities within their jurisdiction that affect transboundary groundwater do not cause damage to other states. This may be one reason some states suggested adding to the second sentence of Article 3 the words “international law and” to the version of the article adopted on first reading.⁹⁹ That version had only required that a state’s “sovereignty over . . . a transboundary aquifer” be exercised “in accordance with the present draft articles.”

If the subject matter being regulated is an immovable part of the territory of states, it is only natural to conceive of states as having “sovereignty” over it. But if the subject matter is something that moves from one state to another, from underground to surface, from surface to atmosphere, from atmosphere back to surface, and so on in the hydrologic cycle, the notion that states have sovereignty over it seems a far from perfect match. Considering the language of Article 3 and the commentary on the draft, the Commission seems to have had the first kind of subject matter in mind: both refer to a part of an aquifer “located” within a state’s territory. According to the commentary, “In essence, each aquifer State has sovereignty over the transboundary aquifer or aquifer system to the extent located within its territory.”¹⁰⁰ An aquifer—rock—can be “located” within a state. The term “located,” which is used in the sense of “situated,”¹⁰¹ does not accurately describe something moving, such as water flowing through an aquifer. A substance moving from one state to another is not something that accords with

⁹⁶ Commentary on Art. 3, *id.* at 39 n.24.

⁹⁷ This is not the place for an analysis of each of the treaties and nonbinding instruments referred to in note 24 of the ILC’s commentary. Suffice it to say that they relate to a wide variety of subject matters, from the ozone layer and biodiversity to succession of states and the law of the sea. Only two of the instruments actually concern freshwater, and one of those, the 2003 Convention on the Sustainable Development of Lake Tanganyika, reproduces Principle 2 of the Rio Declaration on Environment and Development, *supra* note 44, in its preamble. Many of the other instruments cited reproduce Principle 2 as well. In providing that “States have . . . the *sovereign right* to exploit their own resources,” 31 ILM at 876 (emphasis added), Principle 2 is not saying the same thing as that states have “sovereignty over” those resources; nor is there any reference to shared natural resources. The other instrument relating to freshwater, the 1999 Protocol on Water and Health to the 1992 ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, also reproduces Principle 2 of the Rio Declaration in its Article 5(c). Not one instrument cited is devoted to transboundary groundwater.

⁹⁸ Rio Declaration on Environment and Development, *supra* note 44, princ. 2, 31 ILM at 876.

⁹⁹ See the comments of Brazil and Israel, in Shared Natural Resources, Comments and Observations by Governments on the Draft Articles on the Law of Transboundary Aquifers, at 22, UN Doc. A/CN.4/595 (Mar. 26, 2008) [hereinafter Comments and Observations by Governments], *available at* <<http://documents.un.org/default.asp>>.

¹⁰⁰ Commentary on Art. 3, para. 3, 2008 ILC Report, *supra* note 1, at 40.

¹⁰¹ “[H]aving a site, situation, or location: LOCATED.” MERRIAM-WEBSTER’S COLLEGIATE DICTIONARY 1166 (11th ed. 2003).

groundwater cannot possibly be squared with “the exclusion of any preferential privilege of any one riparian State in relation to the others.” In the *Oder* case, the Permanent Court ruled against Poland’s contention that the international regime of two tributaries of the Oder should extend only up to the Polish border—effectively, an argument that Polish sovereignty over those rivers once they crossed the Polish border made them noninternational. The Court based its decision largely on the “community of interest” principle, which the ICJ applied to non-navigational uses in the passage quoted above. The ICJ may thus be said to have rejected the notion that a state has “sovereignty” over the portion of an international watercourse (including groundwater) that is situated in its territory. Rather, other states sharing that resource have an “interest” in it together with the territorial state. The states sharing the interest form a “community” whose existence is based on the fact that they share the resource.

Unfortunately, in its commentary on Article 3 the Commission does not clarify what it intended to imply by a state’s “sovereignty” over the portion of a transboundary aquifer located in its territory. The first sentence of that commentary states as follows:

The need to have an explicit reference in the form of [a] draft article to the sovereignty of States over the natural resources within their territories was reaffirmed by many States, particularly by those aquifer States that are of the opinion that water resources belong to the States in which they are located and are subject to the exclusive sovereignty of those States.¹¹⁶

This characterization of the views of some states supporting Article 3, specifically the clause beginning with “particularly,” is breathtaking in both its comprehensiveness and its absoluteness: the expression “water resources” is not qualified, meaning that it would include all forms of shared freshwater resources, not only transboundary groundwater; and these states are said to take the view that water resources “belong” to the states where they are located and “are subject to the exclusive sovereignty of those States.” This statement strongly echoes the infamous “Harmon Doctrine” of absolute sovereignty over international watercourses,¹¹⁷ which has long since been discredited, not least by the state of its origin, the United States.¹¹⁸

Nevertheless, one may question whether “many” states actually expressed the view that an article on sovereignty over transboundary aquifers was needed. One measure of the strength of a state’s commitment to a provision of an ILC draft is whether it submits written comments on the provision as adopted on first reading in response to the Commission’s request.¹¹⁹ By this standard there does not seem to have been a great deal of interest in Article 3, or indeed in the

¹¹⁶ Commentary on Art. 3, para. 1, 2008 ILC Report, *supra* note 1, at 38–39.

¹¹⁷ The “Harmon Doctrine” of absolute sovereignty was articulated by Attorney General Judson Harmon of the United States in 1895 in a dispute with Mexico over the Rio Grande. 21 Op. Att’y Gen. 274 (1895), *available in* 1895 U.S. AG LEXIS 4. The dispute was resolved in the Convention Providing for the Equitable Distribution of the Waters of the Rio Grande for Irrigation Purposes, U.S.-Mex., May 21, 1906, 34 Stat. 2953. *See generally* MCCAFFREY, *supra* note 27, at 76–110.

¹¹⁸ The United States disavowed the Harmon Doctrine in the context of a later dispute with Canada, stating that it never represented international law. *See, e.g.*, WILLIAM L. GRIFFIN, LEGAL ASPECTS OF THE USE OF SYSTEMS OF INTERNATIONAL WATERS, S. DOC. NO. 85-118, at 59–63 (1958) (reprinting Memorandum of the U.S. Dep’t of State, Apr. 21, 1958).

¹¹⁹ *See* 2006 ILC Report, *supra* note 16, at 184, para. 73. This practice is followed by the ILC for all of its drafts, as provided for in Articles 16–21 of its Statute. ILC Statute, *as amended*, Arts. 16–21, UN Doc. A/CN.4/4/Rev.2 (1982). Governments are typically given a year to submit their written comments and observations. The ILC then

aquifers draft as a whole, when the ILC adopted the draft articles on first reading in 2006: only a small number of states explicitly supported the notion of sovereignty over transboundary aquifers and no governments stated that they supported the proposition that “water resources belong to the States in which they are located and are subject to the exclusive sovereignty of those States.”¹²⁰ Specifically, the Commission reports that only eighteen states submitted comments on the draft articles as adopted on first reading and, of those, only six (Austria, Brazil, Cuba, Israel, Portugal, and Turkey) commented on draft Article 3.¹²¹ Of those six states, three (Austria, Brazil, and Turkey) are upstream or predominantly upstream, one (Israel) is upstream on one of the four aquifers it shares with the Palestinians, one (Portugal) is predominantly downstream, and one (Cuba) has no international watercourses. (Historically, to the extent that sovereignty over shared freshwater resources has been asserted, upstream states have generally been the ones to have done so.) Of these states, only Portugal commented that cooperation should be emphasized and that the ILC should “reflect upon whether or not to shift towards a more actual and mitigated doctrine of sovereignty.”¹²² The remaining five offered varying degrees of support for Article 3, although two of these insisted that the article be amended to provide that a state’s sovereignty over transboundary aquifers should be exercised in accordance with international law.¹²³ One of these states explained that it “does not support the making of exceptions to accepted customary international law on this issue.”¹²⁴ All told, among the states with international watercourses (including transboundary aquifers) that commented, four would not seem to qualify as “many.” Additional governments may have made specific oral comments on Article 3 during the annual discussion of the Commission’s reports in the Sixth (Legal) Committee of the General Assembly. However, the topical summaries of those debates in 2006 and 2007¹²⁵ indicate that only “some” delegations addressed Article 3, and that they made substantially the same points as were made in the written comments and referred to in the Commission’s commentary.¹²⁶

Even if the number of states arguing the “need” for a provision on sovereignty over the portion of shared natural resources within their territories had been greater, that alone should not have been enough to persuade the Commission to include such a provision in its draft in the face of contrary state practice. Traditionally, in carrying out its task of the “progressive development of international law and its codification,”¹²⁷ the ILC has taken into account all the

gives the draft articles a second reading taking into consideration the comments that have been submitted. Also available to the ILC are topical summaries, prepared by the UN Secretariat, of the debates held in the Sixth (Legal) Committee of the General Assembly on the ILC’s annual reports.

¹²⁰ *See* text at note 116 *supra*.

¹²¹ Comments and Observations by Governments, *supra* note 99, at 21–22. In fairness, only twenty-one states submitted comments on the international watercourses articles adopted on first reading. *See* UN Doc. A/CN.4/447 & Add. 1, 2, 3 (1993). Unfortunately, low response rates to ILC requests for government comments on its drafts are not unusual. But states with strong interests in a given draft can be expected to submit comments.

¹²² Comments and Observations by Governments, *supra* note 99, at 22.

¹²³ *Id.* (Brazil and Israel). These countries seem to have feared making the draft articles the sole limitation on a state’s exercise of sovereignty.

¹²⁴ *Id.*, comment of Israel.

¹²⁵ Topical Summary of the Discussion Held in the Sixth Committee of the General Assembly During Its Sixty-first Session, Prepared by the Secretariat, UN Doc. A/CN.4/577 (Jan. 19, 2007); Topical Summary of the Discussion Held in the Sixth Committee of the General Assembly During Its Sixty-second Session, Prepared by the Secretariat, UN Doc. A/CN.4/588 (Jan. 24, 2008), *available at* <<http://documents.un.org/default.asp>>.

¹²⁶ 2008 ILC Report, *supra* note 1, at 38–39.

¹²⁷ ILC Statute, *supra* note 119, Art. 1(1) (defining the “object” of the International Law Commission).

forms of sources and evidence of international law, emphasizing state practice. Yet, as seen, in this case it was able to identify no state practice supporting the notion of a state's having sovereignty over the portion of transboundary groundwater in its territory. The ILC should have recognized that like the infamous and discredited Harmon Doctrine,¹²⁸ these comments, by apparently but a few states, in support of the notion of sovereignty over transboundary aquifers reflect not state practice but advocacy of a position they considered supportive of their interests. Whether making such an argument concerning transboundary aquifers could ever be supportive of a state's interest is discussed below.

In addition to the lack of support in state practice for the notion of sovereignty over shared groundwater, three specific dangers relate to the use of the concept of sovereignty in this context. First, it will reinforce the historic tendency of some states to claim *absolute* sovereignty over the portion in their territories of even transboundary surface waters. As indicated above, such claims have long been discredited and are clearly contrary to contemporary international law. In this connection the International Court of Justice in the *Gabčíkovo-Nagymaros* case referred to a state's "basic right to an equitable and reasonable sharing of the resources of an international watercourse."¹²⁹ Indeed, the Commission's transboundary aquifers draft includes equitable and reasonable utilization as a general principle.¹³⁰ The indeterminate, yet powerful, concept of "sovereignty" is anything but compatible with and supportive of the principle of "an equitable and reasonable sharing" to which states have a "basic right." "Sharing" of transboundary freshwater and "sovereignty" over it even seem mutually exclusive. Article 3's declaration that a state has sovereignty over the portion of a transboundary aquifer in its territory risks reopening what had been considered a long-dead debate between adherents of the "absolute territorial sovereignty" theory and those of the "absolute territorial integrity" theory,¹³¹ as well as encouraging states to make claims that can only generate disputes.

Second, the notion of "sovereignty" may give a state the idea that it has absolute discretion concerning the water contained in a transboundary aquifer when in fact and in law it does not. It may get this idea notwithstanding the statement in the second sentence of draft Article 3 that the state "shall exercise its sovereignty in accordance with international law and the present draft articles." The damage has already been done in the first sentence, as it clearly implies that sovereignty is the guiding principle and that the remainder of the draft must be interpreted in that light. The comments of one state evidence acceptance of this implication by supporting the notion of sovereignty of aquifer states because it "emphasiz[es] that sovereignty is the fundamental rule on which the entirety of the draft articles is based so that the latter have to be interpreted accordingly."¹³² Thus, the first sentence of Article 3 lets the genie of sovereignty out of the bottle, and the second sentence cannot put it back in. The state is clearly sovereign over the water-bearing geologic formation itself, up to the point where the border intersects it.¹³³ It has rights of use in, but not sovereignty over, the water contained in that formation.

¹²⁸ See note 117 *supra*.

¹²⁹ Gabčíkovo-Nagymaros Project, *supra* note 113, 1997 ICJ REP. at 54, para. 78.

¹³⁰ Article 4, Equitable and Reasonable Utilization, 2008 ILC Report, *supra* note 1, at 21.

¹³¹ For a discussion of these theories in state practice and the views of publicists concerning them, see MCCAFFREY, *supra* note 27, at 112–26, and 126–35, respectively. See also text at note 135 *infra*.

¹³² Comments and Observations by Governments, *supra* note 99, comment of Austria, at 21–22.

¹³³ This point may not always be simple to determine, just as the precise location of surface boundaries is not always obvious.

At most, therefore, the state could be said to have "sovereign rights" in the water contained in the aquifer, though how that would differ from the state's having mere "rights" in that water is not at all clear.

Third, the notion that states are sovereign over the portions of shared freshwater resources located in their respective territories raises the classic problem of how the sovereignties of the two (or more) states sharing surface water or groundwater are to be reconciled: under this provision, all states sharing a given groundwater resource are sovereign over the portion of it located in their respective territories. If we then posit that the water in a transboundary aquifer flows from state *A* to state *B*, *A* may claim that its freedom to dispose of the water while it is in its territory enables it to use the groundwater virtually¹³⁴ as it wishes because of its sovereignty over that water; but state *B*, which may have begun using the shared groundwater before state *A*, could equally claim that *B*'s sovereign right to receive the water contained in the aquifer over which it—state *B*—has sovereignty is being violated by *A* through *A*'s use of the shared resource. These claims would be supported, respectively, by the "absolute territorial sovereignty" and the "absolute territorial integrity" theories,¹³⁵ which have now been overtaken by the development of the customary international law of international watercourses as reflected in the UN Convention. It is the irreconcilability of these theories, caused by their basis in sovereignty, that led to the development of the doctrine of equitable utilization, as enunciated by the ICJ in the *Gabčíkovo-Nagymaros* case.¹³⁶ The sharing of freshwater in an equitable and reasonable way will not be promoted by starting from a position of sovereignty over it.

IV. CONCLUSION

The ILC's draft articles on the law of transboundary aquifers can potentially make an important contribution to the codification and progressive development of the law and offer useful assistance to states sharing groundwater. They reflect a sophisticated understanding of the nature of groundwater and aquifers, which is all too rare in the law, whether domestic or international. But rather than picking up where the 1997 UN Convention left off, the Commission's draft purports to regulate not only shared freshwater that the UN Convention does not cover, but also that which it does cover. This overlap will inevitably sow the seeds of confusion and potential conflicts. The draft also introduces a wild card into the field in the form of its general principle of "sovereignty of aquifer states." These considerations counsel caution on the part of the UN General Assembly in determining the fate of the draft articles. The ILC itself has proposed that the Assembly adopt a cautious approach by recommending that it "take note" of the articles at present and consider only at "a later stage" whether they should serve

¹³⁴ State *A*'s freedom to dispose of the shared water would not be complete because of the obligations of equitable and reasonable utilization (Art. 4) and prevention of significant harm (Art. 6). But those provisions would operate only as limitations on the "sovereignty" conferred by Article 3 and in many cases would be more likely to be raised by the affected state (here, state *B*) after the activity producing the effects had begun rather than by the acting state (here, state *A*).

¹³⁵ See MCCAFFREY, *supra* note 27, at 112–35.

¹³⁶ See *id.* at 384; see also text at note 129 *supra* (quoting Gabčíkovo-Nagymaros Project, *supra* note 113, 1997 ICJ REP. at 54).

as the basis for negotiating a convention.¹³⁷ The Assembly followed this recommendation in a resolution adopted in December 2008.¹³⁸ If the General Assembly ultimately does decide to convene a conference to negotiate such a convention, the integrity of the legal regime thus established will crucially depend on eliminating both the overlap between the draft and the UN Convention in terms of the physical subject matter they regulate, and the notion of “sovereignty” over shared groundwater, which should have no place in any set of rules governing the use, protection, and management of shared freshwater resources.

¹³⁷ 2008 ILC Report, *supra* note 1, at 18.

¹³⁸ The Law of Transboundary Aquifers, GA Res. 63/124, para. 6 (Dec. 11, 2008) (deciding to include this item in the provisional agenda of the Assembly’s sixty-sixth session—i.e., three years hence—“with a view to examining, inter alia, the question of the form that might be given to the draft articles”).

International Law Commission Adopts Draft Articles of a Transboundary Aquifers Convention¹

By Kerstin Mechlem

On August 5, 2008, the International Law Commission (ILC) adopted draft articles for an international framework convention on transboundary aquifers. [1] These draft articles represent six years of work by the ILC and constitute a landmark event for the protection and management of groundwater resources, which have been neglected as a subject of international law despite the social, economic, environmental, and strategic importance of groundwater. This Insight provides some background on groundwater, describes the ILC's work on transboundary aquifers, analyzes the ILC's draft articles, and provides some concluding thoughts on the future of these articles.

Background on the Importance of Groundwater Resources

Groundwater makes up 97% of the Earth's fresh water resources, excluding the resources locked in polar ice. Globally, it provides about 50% of the current potable water supplies. It also delivers approximately 40% of water used by industry and between 20-30% of the water used in irrigated agriculture. Groundwater ensures the baseflow of rivers and lakes, keeps springs flowing, vegetation growing, and wetlands wet. Although a worldwide inventory of transboundary aquifers has not yet been compiled, the number of transboundary aquifers is estimated to be similar, if not greater, than the more than 260 transboundary river basins. [2] Europe alone has more than 89 transboundary aquifers.[3]

In addition, aquifers provide a range of more exotic services, including storage or withdrawal of heat due to natural geothermal aquifer properties, storage of non-toxic fluids such as liquefied greenhouse gases for carbon sequestration, or disposal of some wastes that can biodegrade because of properties in the aquifer matrix. Unfortunately, over the last 60 years, groundwater resources and the social, economic, and environmental systems dependent on them have come under increasing stress from over-abstraction and pollution. [4]

International Law and Groundwater Resources

Prior to the ILC's efforts on transboundary aquifers, states and international organizations had not used international law directly to address problems with groundwater resources. Surface water has been dealt with in numerous international agreements and other instruments. When not intentionally or unintentionally left out of such instruments, groundwater is only nominally included in their scopes of application. Further, substantive treaty norms and the powers of joint bodies in these instruments are biased towards surface water management (see, e.g., the United Nations Convention on the Non-Navigational Uses of International Watercourses (UN Watercourses Convention)[5]). Few treaties and other legal instruments exclusively ad-

¹ Mechlem, Kerstin. International Law Commission Adopts Draft Articles of a Transboundary Aquifers Convention, ASIL Insight, Vol. 12, No. 18, (2008).

The ILC's Work on Transboundary Aquifers

In 2002, the ILC included the topic “Shared Natural Resources of States,” comprising oil, gas, and “confined” groundwaters, in its long-term program of work[7] and appointed Ambassador Chusei Yamada as Special Rapporteur for Shared Natural Resources.[8] The ILC’s work on groundwater follows its work on the law of international watercourses (1971-1994), which culminated in the adoption of draft articles that became the basis of the UN Watercourses Convention.

When preparing the draft articles for international watercourses, the ILC did not cover aquifers that receive no significant contemporary recharge. [9] The ILC called these aquifers (in a scientifically incorrect manner) “confined” transboundary aquifers and recommended that states “be guided by the principles contained in the draft articles on the non- navigational uses of international watercourses, where appropriate, in regulating transboundary groundwater.”[10] The resolution also recognized a “need for continuing efforts to elaborate rules pertaining to confined transboundary groundwater.”[11]

Between 2003 and 2008, the Special Rapporteur presented five reports. Early in this process, the ILC decided to broaden the topic from “confined” groundwaters to all transboundary aquifers. In 2006, it adopted on first reading 19 draft articles and commentaries thereto. In 2008, it completed the second reading. During the drafting process, the ILC received comments and observations from 47 governments. An overwhelming majority of states supported the priority the ILC was giving groundwater and the ILC’s general approach. Views were divided on whether the draft articles should lead to a binding convention or a non- binding set of guidelines.[12]

Therefore, the final fate of the draft articles is yet to be determined. The ILC followed the two-step approach adopted in 2001 for the draft articles on the Responsibility of States for Internationally Wrongful Acts[13]: It recommended to the General Assembly that it take note of the draft articles in a resolution, annex them to the resolution, and recommend that states make appropriate arrangements bilaterally or regionally for the proper management of transboundary aquifers on the basis of the principles enunciated in the draft articles. The ILC further recommended that the General Assembly consider, at a later stage, the elaboration of a convention on the basis of the draft articles.[14]

Overview of the Draft Articles

Application and scope of the draft articles

The UN Watercourses Convention inspired the ILC’s approach in the draft articles, but the ILC adapted the Convention’s principles to the specific characteristics of groundwater resources. The draft articles apply to single transboundary aquifers and to transboundary aquifer systems consisting of a series of two or more hydraulically connected aquifers (Article 2 (b)).

The draft articles- scope covers (a) the utilization of transboundary aquifers; (b) other activities that have

or are likely to have an impact upon those aquifers; and (c) measures for the protection, preservation, and management of transboundary aquifers (Article 1). Article 1(b) is new compared to the UN Watercourses Convention because the ILC recognized the need to protect aquifers against harm resulting, for example, from fertilizer or pesticide use or industry discharges in aquifer recharge zones.

The draft articles enshrine the fundamental principles of customary international law on water resources, namely the principle of equitable and reasonable utilization (Article 4), the obligation not to cause significant harm (Article 6), and the obligation to cooperate (Article 7).

The draft articles interpret equitable and reasonable utilization to mean utilization of an aquifer in a manner that is consistent with:

- The equitable and reasonable accrual of benefits from the aquifer;
- The aim of maximizing the long-term benefits to be derived from the use of aquifer waters;
- The establishment of individual or joint comprehensive utilization plans, taking into account present and future needs and alternative water sources; and
- Not utilizing a recharging aquifer at a level that would prevent the continuance of its effective functioning.

Obligation not to cause significant harm (Article 6)

The obligation not to cause significant harm is a duty “to take all appropriate measures” to prevent harm to aquifers, which is equivalent to an obligation of due diligence. The draft articles cover significant harm caused through an aquifer’s direct utilization (e.g., excessive water abstraction) and caused by other activities that affect and cause harm to or through the aquifer (e.g., pesticide or industrial pollution seeping into the aquifer’s water).

During the drafting process, the ILC engaged in considerable debate about whether, given the unique vulnerability of aquifers, the threshold of “significant harm” would be adequate or whether a lower threshold would be more appropriate. The ILC finally agreed that the concept of “significant harm” is flexible enough to protect aquifers. For instance, a smaller amount of a pollutant could cause greater harm to an aquifer than it may create in surface water.

Duties on cooperation and other obligations (Article 7)

Other obligations refer to cooperation (Article 7), to the exchange of data and information, where specific attention is paid to the fact that knowledge about the nature and extent of a transboundary aquifer is often inadequate (Article 8), and to bilateral and regional agreements (Article 9).

Protection and preservation provisions, and the absence of the precautionary and “polluter pays” principles

Part III of the draft articles is dedicated to protection, preservation, and management. It deals with the protection and preservation of ecosystems (Article 10); recharge and discharge zones (Article 11); the prevention, reduction, and control of pollution, including by taking a precautionary approach (Article 12); monitoring (Article 13); management (Article 14); and planned activities, including a notification requirement (Article 15).

No consensus among states and ILC members could be reached on directly including the precautionary principle in the draft articles because of the principle's still contested status in customary international law. Thus, the draft articles refer in Article 12 to a "precautionary approach" rather than to the "precautionary principle."^[15] Other principles, such as the polluter-pays principle, which many water law treaties contain, are not mentioned at all. ^[16]

The obligations in the draft articles concerning planned activities which may affect a transboundary aquifer and thereby may have a significant adverse effect on another state are relatively vague and do not comprise an obligation to carry out an environmental impact assessment. Given that the draft articles do not make pre-activity fact-finding compulsory and that they contain no provisions on dispute resolution, the extent to which the draft articles provide actual guidance to states in the case of planned activities is not clear.^[17]

Evaluation and Outlook

The ILC's decision to prioritize development of the international law on transboundary groundwater resources and to treat it separately from work on oil and gas should be welcomed. Its speedy preparation of the draft articles reflects recognition that groundwater resources have come under increasing stress globally and that international action is required.

Despite their shortcomings the draft articles are a significant step ahead in the protection of transboundary aquifers. They strike a good compromise between building on the accepted rights and obligations of international water law and devising new rules that take adequate account of the specific characteristics of groundwater resources. The draft articles are compatible with the UN Watercourses Convention, but independent of it. Thus, the protection of groundwater does not depend on the fate of the UN Watercourses Convention, which, given the slow progress of its ratification, might never enter into force.^[18]

The ILC's decision to recommend that the General Assembly adopt a resolution supporting the draft articles and consider convening a negotiating conference at a later stage is prudent at the moment. This approach reduces the risk of rushing towards a convention prematurely, which at this stage might not attract the necessary amount of ratifications. Instead, it allows for a period during which the impact of the draft articles on relations among states can be evaluated and during which they could become a catalyst and frame of reference for the development of general or aquifer-specific bilateral, multilateral, or regional treaties. Such treaties will be indispensable to adequately manage specific shared aquifers.

In the longer term, the draft articles would ideally become a binding framework convention. As aquifer specific treaties are largely absent and customary international law is not yet very developed, such a convention would represent the only source of binding international law specific to transboundary aquifers and would, thereby, contribute to legal certainty concerning the rights and obligations of states sharing groundwater resources. Even if more aquifer-specific treaties are concluded in the future, a binding framework convention, which sets out general principles, can usefully guide and complement such treaties. This synergistic relationship has been seen in the area of transboundary watercourses through the mutually supportive dynamic between the United Nations Economic Commission for Europe's Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki Convention)^[19] and the numerous treaties on rivers within the geographical scope of the Helsinki Convention.

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- [2] Shaminder Puri and Alice Aureli, Transboundary Aquifers: A Global Program to Assess, Evaluate, and Develop Policy, 43 GROUND WATER 661, 664 (2005).
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- [5] United Nations Convention on the Non-Navigational Uses of International Watercourses, annexed to G.A. Res. 229, U.N. GAOR, 51st session, UN Doc. A/Res/51/229 (1997); also reprinted in (1997) 36 ILM 700 (not yet entered into force).
- [6] For legal instruments that address groundwater, see GROUNDWATER IN INTERNATIONAL LAW: COMPILATION OF TREATIES AND OTHER LEGAL INSTRUMENTS (Stefano Burchi and Kerstin Mechlem eds., 2004).

[7] Report of the International Law Commission to the General Assembly on Its Fifty-Fourth Session, U.N. GAOR, 57th Session, Supp. No. 10, UN Doc. A/57/10 (2002), chap. X.A.1, para. 518.

[8] *Ibid.* at para. 519.

[9] “No significant contemporary recharge” refers to average annual recharge rates that are very low compared to the overall storage capacity of an aquifer. Such aquifers are non-renewable resources and often contain water that infiltrated millennia ago under climatic conditions different to the present and that has been stored underground since that time. Such resources are mainly found in large trans-boundary aquifer systems located in the arid and semi-arid regions of North Africa and the Arabian Peninsula where they provide a most important source of water. NON-RENEWABLE GROUNDWATER RESOURCES (Stephen Foster and Daniel P. Loucks, eds., 2006), 13-14, 18-19.

[10] ILC, “Resolution on Confined Transboundary Groundwater,” Art. 1, in Report of the Commission to the General Assembly on the work of its forty-sixth session, II (2) YBILC 135 (1994).

[11] *Id.* at preambular para. 4.

[12] ILC, Fifth Report on Shared Natural Resources: Transboundary Aquifers by Chusei Yamada, Special Rapporteur, U.N. Doc. A/CN.4/591 (2008), paras. 5-8.

[13] Report of the International Law Commission to the General Assembly on Its Fifty-Third Session, U.N. GAOR, 56th Sess., Supp. No. 10, U.N. Doc. A/56/10 and Corr. 1 (2001), paras. 72 and 73.

[14] Report of the International Law Commission to the General Assembly on Its Sixtieth Session, Chapter IV, Shared Natural Resources, *supra* note 1.

[15] Among the water law treaties that contain the precautionary principle are the United Nations Economic Commission for Europe (UN ECE) Convention on the Protection and Use of Transboundary Watercourses and International Lakes, (1992) 31 ILM 1312; the Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (London Protocol, 1999), U.N. Doc. MP.WAT/2000/1; the Convention on Cooperation for the Protection and Sustainable Use of the River Danube (1994), O.J. L.342, 12.12.1997, p. 19; the Convention on the Protection of the Rhine (1999), O.J. L.289, 16.11.2000, p. 31; the Convention on the Sustainable Development of Lake Tanganyika (2003), available at: FAOLEX (FAO legal database online, <http://faolex.fao.org/faolex/>); and the Convention on the Sustainable Development of Lake Victoria Basin (2003), FAOLEX (FAO legal database online, <http://faolex.fao.org/faolex/>).

[16] See, e.g., the United Nations Economic Commission for Europe (UN ECE) Convention on the Protection and Use of Transboundary Watercourses and International Lakes, (1992) 31 ILM 1312.

[17] The ILC considered it premature to address dispute settlement given that it is not yet clear whether

the draft articles will form the basis of a binding legal instrument.

[18] Whereas 35 ratifications are necessary for the entry into force of the 1997 Convention (Art. 36), to date, there are only 16 signatories and 16 parties.

[19] United Nations Economic Commission for Europe (UN ECE) Convention on the Protection and Use of Transboundary Watercourses and International Lakes, (1992) 31 ILM 1312.

United Nations Convention on the Law of the Sea (1982)

The Convention¹

Navigational rights, territorial sea limits, economic jurisdiction, legal status of resources on the seabed beyond the limits of national jurisdiction, passage of ships through narrow straits, conservation and management of living marine resources, protection of the marine environment, a marine research regime and, a more unique feature, a binding procedure for settlement of disputes between States - these are among the important features of the treaty. In short, the Convention is an unprecedented attempt by the international community to regulate all aspects of the resources of the sea and uses of the ocean, and thus bring a stable order to mankind's very source of life.

"Possibly the most significant legal instrument of this century" is how the United Nations Secretary-General described the treaty after its signing. The Convention was adopted as a "Package deal", to be accepted as a whole in all its parts without reservation on any aspect. The signature of the Convention by Governments carries the undertaking not to take any action that might defeat its objects and purposes. Ratification of, or accession to, the Convention expresses the consent of a State to be bound by its provisions. The Convention came into force on 16 November 1994, one year after Guyana became the 60th State to adhere to it.

Across the globe, Governments have taken steps to bring their extended areas of adjacent ocean within their jurisdiction. They are taking steps to exercise their rights over neighbouring seas, to assess the resources of their waters and on the floor of the continental shelf. The practice of States has in nearly all respects been carried out in a manner consistent with the Convention, particularly after its entry into force and its rapid acceptance by the international community as the basis for all actions dealing with the oceans and the law of the sea.

The definition of the territorial sea has brought relief from conflicting claims. Navigation through the territorial sea and narrow straits is now based on legal principles. Coastal States are already reaping the benefits of provisions giving them extensive economic rights over a 200-mile wide zone along their shores. The right of landlocked countries of access to and from the sea is now stipulated unequivocally. The right to conduct marine scientific research is now based on accepted principles and cannot be unreasonably denied. Already established and functioning are the International Seabed Authority, which organize and control activities in the deep seabed beyond national jurisdiction with a view to administering its resources; as well as the International Tribunal for the Law of the Sea, which has competence to settle ocean related disputes arising from the application or interpretation of the Convention.

¹ Source: United Nations, Office of Legal Affairs, Division for Oceans Affairs and Law of the Sea, The United Nations Convention on the Law of the Sea (A historical perspective) (1998) as found at http://www.un.org/Depts/los/convention_agreements/convention_historical_perspective.htm#Key_provisions

tional seabed area, had raised many concerns especially from industrialized States. The Secretary-General, in an attempt to achieve universal participation in the Convention, initiated a series of informal consultations among States in order to resolve those areas of concern. The consultations successfully achieved, in July 1998, an Agreement Related to the Implementation of Part XI of the Convention. The Agreement, which is part of the Convention, is now deemed to have paved the way for all States to become parties to the Convention.

For more information and the full text of the Convention, please see:

http://www.un.org/Depts/los/convention_agreements/texts/unclos/UNCLOS-TOC.htm



A new imperative for improving management of large marine ecosystems

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Abstract

Continued over-fishing in the face of scientific warnings, fishing down food webs, destruction of habitat, and accelerated pollution loading—especially nitrogen export—have resulted in significant degradation to coastal and marine ecosystems of both rich and poor nations. Fragmentation among institutions, international agencies, and disciplines, lack of cooperation among nations sharing marine ecosystems, and weak national policies, legislation, and enforcement all contribute to the need for a new imperative for adopting ecosystem-based approaches to managing human activities in these systems in order to avoid serious social and economic disruption. The global environment facility (GEF) has been approached by developing countries in overwhelming numbers for assistance in securing the futures of their shared large marine ecosystems (LMEs). This paper describes GEF supported processes being used to assist them in adopting a science-driven, ecosystem-based approach to the management of human activities affecting coastal and marine ecosystems and linked freshwater basins. At risk are renewable goods and services valued at \$10.6 trillion per year. A total of 10 LME projects involving 72 countries have been approved by the GEF Council, and another 7 LMEs involving 54 countries have GEF international waters projects under preparation. A five-module assessment and management methodology is being tested that moves the countries toward adopting practical joint governance institutions through place-based management. This LME approach engages stakeholders, fosters the participation of the science community, and leads to the development of adaptive management institutions. Comprehensive initiatives in four LMEs are described. The importance is underscored for establishing and coordinating partnerships between the North and South for specific LMEs and their linked watersheds. These coordinated North–South partnerships significantly augment catalytic interventions made by the GEF leading to reforms and investments that are helping make the transition to sustainable development.

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1. Introduction

A legacy of over-fishing, destruction of coastal habitats, and accelerated pollution loading has dramatically reduced biomass and diversity of the coastal oceans to the point that ecosystems are being degraded, national economic benefits from marine systems are falling, and poor communities depending on the resources for livelihoods and protein are being threatened. The degradation is global, occurring in marine ecosystems adjacent to developing and developed States. Exports to developed countries and their subsidized fleets fuel the depletion. With mismanagement of freshwater basins contributing to the coastal degradation, and with new threats from fluctuating climatic regimes, it is becoming clear that the global life support system anchored, in part, by coastal ecosystems is at risk, and both food security and the socio-economic future of coastal regions are in jeopardy.

Ten years after Rio, more effort is required from all States to meet the goals of Chapter 17 of Agenda 21. Progress in the last decade since Rio has been disappointing. Both developed and developing countries have reforms to enact to reverse the increasing coastal degradation. However, single species management in isolation; bilateral access agreements; illegal, unregulated and unreported fishing; discarded by-catch; trawl damage; perverse government subsidies; ineffective fisheries governance; habitat loss; and coastal pollution continue to degrade coastal ecosystems. Activities under Chapters 17 and 18 of Agenda 21 were conducted in isolation during the last decade rather than linked to restore and protect coastal ecosystems. Initiatives under different legal instruments have been thematic, fragmented, or disconnected with sound science, and consequently they were unable to influence political decisions. Competing programs of competing agencies developed over time, and those driven by the donor community were just not comprehensive or participative enough to capture the commitment of developing nations.

Since the mid-1990s, developing countries have approached the global environment facility (GEF) in increasing numbers for assistance in improving the management of large marine ecosystems (LMEs) shared with neighboring nations. (Fig. 1) This paper describes the processes being undertaken as part of GEF projects focusing on LMEs to foster country-driven commitments to policy, legal, and institutional reforms for changing the way human activities are conducted in the economic sectors that place stress on coastal ecosystems. LMEs serve as place-based, ecologically defined areas for which stakeholder support for integrating essential national and multi-country reforms and international agency programs can be mobilized into a cost-effective, collective response to an array of conventions and programs. Site-specific ocean concerns, those of adjacent coastal areas, and linked freshwater basins are being addressed in LMEs through GEF assistance. Operation of joint management institutions is being supported and tested in order to restore biomass and diversity to sustainable levels to meet increased needs of coastal populations, and reverse the precipitous declines in ecosystem integrity currently being caused by over-fishing, habitat loss, and nitrogen over-enrichment. At risk are renewable goods and services valued at \$10.6 trillion per year [1].

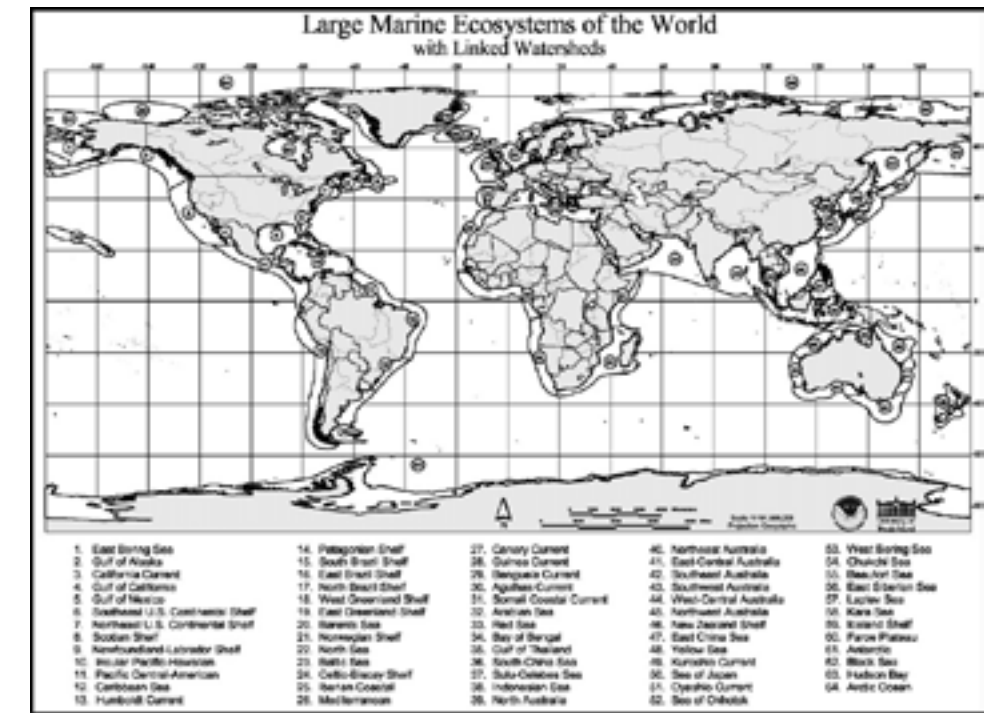


Fig. 1. Large Marine Ecosystems are areas of the ocean characterized by distinct bathymetry, hydrography, productivity, and trophic interactions. They annually produce 95 percent of the world's fish catch. They are national and regional focal areas of a global effort to reduce the degradation of linked watersheds, marine resources, and coastal environments from pollution, habitat loss, and over-fishing.

2. A new imperative for ecosystem-based action

Fishing down food webs and accelerated pollution loading contribute to the degradation of marine ecosystems and loss of habitat and biodiversity around the world as noted by FAO [2], GESAMP [3], Duda and Cruz [4], and others [5–7]. These trends were identified in Stockholm 30 yr ago, and their significance was reaffirmed with actions adopted at the UN Conference on Environment and Development (UNCED) in Rio in 1992. Unfortunately, progress since 1992 under Agenda 21 has been disappointing. Commitments to an alternative, sustainable pathway have been made by the world community in global instruments such as the UN Convention on the Law of the Sea (UNCLOS), the Convention on Biological Diversity (CBD), the Global Programme of Action (GPA) for the Protection of the Marine Environment from Land-based Activities, and the UN Framework Convention on Climate Change (UNFCCC). The UN Fish Stocks Agreement (FSA), regional seas agreements under UNCLOS, and the FAO Code of Conduct for Responsible Fishery practices with its action plans. But they have yet to be effectively implemented by coastal countries.

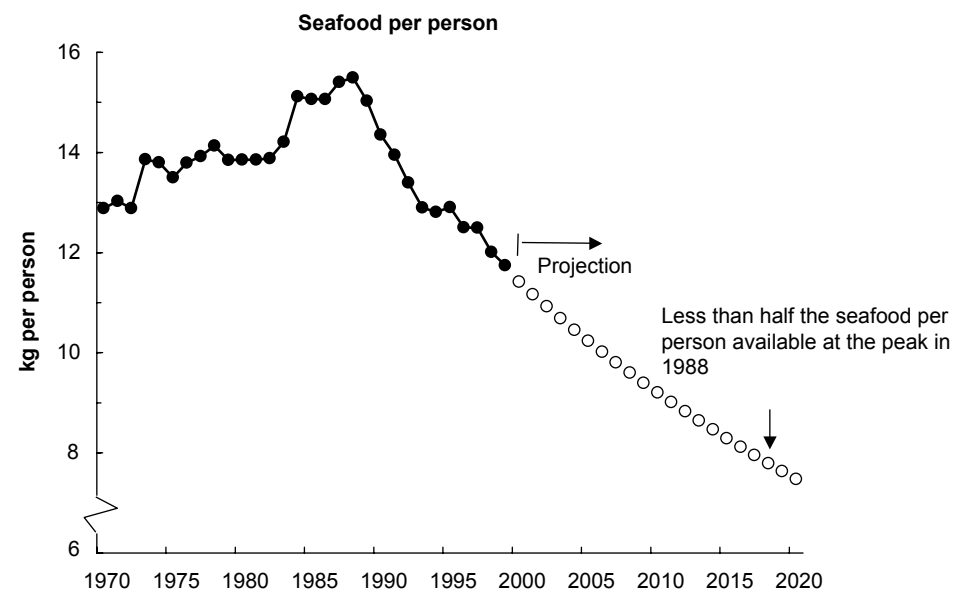


Fig. 2. Projected decline in per capita seafood availability from Watson and Tyedmers [71].

In fact, recent information suggests that the global situation is worse than commonly thought. Jackson and others [7] recently reported that over-fishing has been more important than other causes of marine biomass depletion and biodiversity loss around the world, and that existing fish populations of marine ecosystems are but a fraction of their historical levels. With the need to support growing coastal populations and to maintain the foreign exchange receipts from the \$50 billion international trade in marine fisheries [8], positive steps need to be taken toward population restoration. In addition, Watson and Pauly [9] recently reported recalculations of fish catches that show a precipitous global decline since the 1980s. The authors identified inaccurate reporting of data to FAO that has likely distorted global assessments and subsequent policy. The inaccurate capture fisheries data reported to FAO may have maintained a false sense of security through the years, and as burgeoning aquaculture replaced capture fisheries, total production numbers have lulled policymakers into false impressions of the ever deepening global decline.

When these recalculated fisheries statistics are normalized by global population data to provide a per capita annual catch estimate as was reported previously by Duda and Cruz [4], an even more alarming decline in fisheries is evident that should worry policymakers. Based on the new information from Watson and Pauly [9], this decline is depicted in Fig. 2, and the resulting lack of confidence in global fishery statistics is troubling. When combined with estimates that approximately 25% of global capture fisheries is often wasted as by-catch and with up to \$15 billion annually in perverse economic subsidies from governments that are often

underreported or not disclosed in compliance with World Trade Organization requirements [10], there is ample evidence that marine ecosystems and their biological diversity are being depleted for short-term gains and that a breakdown of global, regional, and national institutions is responsible.

More and more, European, North American, and Asian nations are importing fish from developing nations to replace their already depleted stocks. With the European fleet more than 40% larger than fish stocks can accommodate, marine resource depletion has expanded to the southern Mediterranean, to West Africa, and to South America [11,12]. Irregularities have been identified in West African waters from excessive over-fishing, excessive by-catch loss, underpayment of licenses, and denial of timely information to coastal states by Kaczynsky and Fluharty [11]. Despite the multi-billion dollar a year international trade in fisheries, developing countries receive relatively little in terms of fees from distant fishing fleets and face a not-too-distant-future of resource depletion and drops in license fees. Even in the rich tuna fishery of the western Pacific, UNDP [13] reported that Pacific Small Island Developing States (SIDS) received only about 4% of the value of the tuna taken by distant fleets. Fishing down the food-web in proximity to coral reefs contributes much degradation of reefs along with periodic bleaching events that may be related to fluctuating climate. The global status of reefs has declined the last decade as human impacts result in more damage to marine biodiversity such as turtles, dugongs, and other mammals have also declined in response to overfishing, food chain and habitat effects [6,7]. These symptoms of marine degradation serve as indicators that neither global policies nor their uneven implementation are leading towards more sustainable coastal resources and environments; they constitute a new imperative for a radical shift in thinking about how site-specific marine ecosystems can be sustained, and how North-South collaboration can result in changes in the economic sectors that drive ecosystem depletion.

3. An ecosystems-based approach to management

The Ecological Society of America Committee on the Scientific Basis for Ecosystem Management concluded that the overarching principle for guiding ecosystem management is to ensure the intergenerational sustainability of ecosystem goods (e.g. fish, trees, petroleum) and ecosystem services or processes including productivity cycles and hydrological cycles [14]. From a fisheries perspective, the National Research Council [6] concluded that sustaining fishery yields will require sustaining the ecosystems that produce the fish. This approach represents a paradigm shift from the highly focused, single-species or short-term sectoral thematic approach in general practice today to a broader more encompassing ecosystem-based approach that moves spatially from smaller to larger scales, and from short-term to longer-term management practices described by Lubchenco [15]. Included in this approach is movement away from the management of commodities to maintaining the sustainability of the productive resource to ensure benefits from ecosystem goods and services for the future.

This approach builds on an earlier application of “an ecosystem approach” to management of the North American Great Lakes Basin Ecosystem described by the Great Lakes Science Advisory Board [16] and Duda [17] as well as more recent efforts in developing an ecosystem-based approach for assessment and management of the North Sea [18], the Northeast Shelf of the US [19], the Gulf of Mexico [20], and the Baltic Sea [21]. The ecosystem-based approach recognizes the inter-connections among living and non-living systems as well as humankind and economic and social systems being considered as integral parts of the ecosystem. The Great Lakes approach led to governance agreements between the US and Canada that follow longer-term pathways for sustainable use of ecological resources and resulted in significant reversal in degradation following adoption of joint assessment and management institutions.

4. Large Marine Ecosystems (LMEs)

On a global scale, 50 LMEs produce most of the world’s annual marine fishery biomass yield [22]. Recent new additions in the Arctic and in the Pacific near Australia and New Zealand have been reported [23], bringing the global LME total to 64. LMEs are regions of ocean space encompassing coastal areas from river basins and estuaries to the seaward boundaries of continental shelves, enclosed and semi-enclosed seas, and the outer margins of the major current systems as shown in Fig. 1. They are relatively large regions on the order of 200,000 km² or greater, characterized by distinct bathymetry, hydrography, productivity, and trophically dependent populations [22]. Within the 64 LMEs, 95% of the global marine capture fisheries are found as well as most of the ocean pollution and coastal habitat alteration. Fig. 2 shows LME interlinkages among the coastal ocean, its coastal margins, and linked freshwater basins as modified from Duda and Cruz [4].

For 33 of the LMEs, studies have been conducted of the principal driving forces affecting changes in biomass yields. Changes in biodiversity among the dominant species within fish communities of LMEs have resulted from: excessive exploitation, naturally occurring environmental shifts in climate regime, or coastal pollution. For example, in the Humboldt Current, Benguela Current, and California Current LMEs, the primary driving force influencing variability in fisheries yield is the influence of changes in upwelling strength; fishing and pollution effects are secondary and tertiary effects on fisheries yields. In continental shelf LMEs, including the Yellow Sea and Northeast United States Shelf, excessive fisheries effort has caused large-scale declines in catch and changes in the biodiversity and dominance in the fish community. In these ecosystems, pollution and environmental perturbation are of secondary and tertiary influence. In contrast, significant coastal pollution and eutrophication have been important factors driving changes in fisheries yields of the Northwest Adriatic, Black Sea, and the Baltic Sea. Following peer-review, the results of these investigations were published in nine volumes (Table 1).

5. Global Environment Facility (GEF)

Following a 3 yr pilot phase (1991–1994), the GEF was formally launched to forge cooperation and finance actions in the context of sustainable development that address critical threats to the global environment: biodiversity loss, climate change, degradation of international waters, ozone depletion, and persistent organic pollutants. Activities concerning land degradation, primarily desertification and deforestation as they relate to these threats are also addressed. GEF projects are implemented by UNDP, UNEP, and the World Bank and expanded opportunities exist for participation by other agencies.

The only new funding source to emerge from the 1992 Earth Summit, GEF today counts 171 countries as members. During its first decade, GEF allocated \$US 3.2 billion in grant financing, supplemented by more than \$US 8 billion in additional financing, for 800 projects in 156 developing countries and those in economic transition. All six thematic areas of GEF, including the land degradation cross-cutting theme, have implications for coastal and marine ecosystems. Priorities have been established by the GEF Council in its Operational Strategy [24] adopted in 1995. The international waters focal area was designed to be consistent with both Chapter 17 and 18 of Agenda 21. In 1995, the GEF Council included the concept of LMEs in its GEF Operational Strategy as a vehicle for promoting ecosystem-based

Table 1

List of 33 LMEs and subsystems for which syntheses relating to primary, secondary, or tertiary driving forces controlling variability in biomass yields have been completed for inclusion in LME volumes

Large marine ecosystem	Volume no.	Authors
US Northeast Continental Shelf	1	M. Sissenwine P. Falkowski
	6	S. Murawski
US Southeast Continental Shelf	4	J. Yoder
Gulf of Mexico	2	W. Richards and M. McGowan
	4	B. Brown et al.
	9	R. Shipp
California Current	1	A. MacCall
	4	M. Mullin
	5	D. Bottom
Eastern Bering Shelf	1	L. Inceze and J. Schumacher
	8	P. Livingston et al.
West Greenland Shelf	3	H. Hovgård and E. Buch
Norwegian Sea	3	B. Ellersten et al.
Barents Sea	2	H. Skjoldal and F. Rey
	4	V. Borisov
North Sea	1	N. Daan
Baltic Sea	1	G. Kullenberg
Iberian Coastal	2	T. Wyatt and G. Perez-Gandaras
Mediterranean–Adriatic Sea	5	G. Bombace
Canary Current	5	C. Bas

Table 1 (continued)

Large marine ecosystem	Volume no.	Authors
Gulf of Guinea	5	D. Binet and E. Marchal
Benguela Current	2	R. Crawford et al.
Patagonian Shelf	5	A. Bakun
Caribbean Sea	3	W. Richards and J. Bohnsack
South China Sea–Gulf of Thailand	2	T. Piyakarnchana
East China Sea	8	Y-Q Chen and X-Q Shen
Sea of Japan	8	M. Terazaki
Yellow Sea	2	Q. Tang
Sea of Okhotsk	5	V. Kusnetsov et al.
Humboldt Current	5	J. Alheit and P. Bernal
Pacific Central American	8	A. Bakun et al.
Indonesia Seas–Banda Sea	3	J. Zijlstra and M. Baars
Bay of Bengal	5	S. Dwivedi
	7	A. Hazizi et al.
Antarctic Marine	1 & 5	R. Scully et al.
Weddell Sea	3	G. Hempel
Kuroshio Current	2	M. Terazaki
Oyashio Current	2	T. Minoda
Great Barrier Reef	2	R. Bradbury and C. Mundy
	5	G. Kelleher
	8	J. Brodie
Somali Current	7	E. Okemwa
South China Sea	5	D. Pauley and V. Christensen

Vol. 1: Variability and management of large marine ecosystems. In: Sherman K, Alexander LM, editors. AAAS Selected Symposium, 99. Boulder, CO: Westview Press, Inc., 1986. 319 pp.

Vol. 2: Biomass yields and geography of large marine ecosystems. In: Sherman K, Alexander LM, editors. AAAS selected symposium 111. Boulder, CO: Westview Press, Inc., 1989. 493 pp.

Vol. 3: Large Marine Ecosystems: Patterns, Processes, and Yields. In: Sherman K, Alexander LM, Gold BD, editors. AAAS Symposium. Washington, DC: AAAS, 1990. 242 pp.

Vol. 4: Food chains, yields, models, and management of large marine ecosystems. In: Sherman K, Alexander LM, Gold BD, editors. AAAS Symposium. Boulder, CO: Westview Press, Inc., 1991. 320 pp.

Vol. 5: Large marine ecosystems: stress, mitigation, and sustainability. In: Sherman K, Alexander LM, Gold BD, Washington, DC: AAAS Press, 1992. 376 pp.

Vol. 6: The Northeast Shelf Ecosystem: assessment, sustainability, and management. In: Sherman K, Jaworski NA, Smayda TJ, editors. Cambridge, MA: Blackwell Science, Inc., 1996. 564 pp.

Vol. 7: Large marine ecosystems of the Indian Ocean: assessment, sustainability, and management. In: Sherman K, Okemwa EN, Ntiba MJ, editors. Malden, MA: Blackwell Science, Inc., 1998. 394 pp.

Vol. 8: Large marine ecosystems of the Pacific Rim: assessment, sustainability, and management. In: Sherman K, Tang Q, editors. Malden, MA: Blackwell Science, Inc., 1999. 455 pp.

Vol. 9: The Gulf of Mexico large marine ecosystem: assessment, sustainability, and management. In: Kumpf H, Stiedinger H, Sherman K, editors. Malden, MA: Blackwell Science, Inc., 1999. 736 pp.

management of coastal and marine resources in the international waters focal area within a framework of sustainable development. The Report of the Second Meeting of the UN Informal, Open-ended Consultative Process on Ocean Affairs [25] related to UNCLOS recognized the contribution of the GEF in addressing LMEs through its science- and ecosystem-based approach.

The geographic area of the LME, its coastal area, and contributing basins constitute the place-based area for assisting countries to understand linkages among root causes of degradation and integrating needed changes in sectoral economic activities. The LME areas serve to initiate capacity building and for bringing science to pragmatic use in improving the management of coastal and marine ecosystems. The GEF Operational Strategy recommends that nations sharing an LME begin to address coastal and marine issues by jointly undertaking strategic processes for analyzing factual, scientific information on transboundary concerns, their root causes, and setting priorities for action on transboundary concerns. This process has been referred to as a transboundary diagnostic analysis (TDA) and it provides a useful mechanism to foster participation at all levels. Countries then determine the national and regional policy, legal, and institutional reforms and investments needed to address the priorities in a country-driven strategic action program (SAP). This allows sound science to become the basis for policy-making and fosters a geographic location upon which an ecosystem-based approach to management can be developed, and more importantly, can be used to engage stakeholders within the geographic area so that they contribute to the dialogue and in the end they support the ecosystem-based approach that can be pragmatically implemented by the communities and governments involved. Without such participative processes to engage specific stakeholders in a place-based setting, marine science has often remained confined to the marine science community or has not been embraced in policy-making. Furthermore, the science-based approach encourages transparency through joint monitoring and assessment processes (joint cruises for countries sharing an LME) that builds trust among nations over time and can overcome the barrier of false information being reported.

6. GEF bridging the institutional gaps

The GEF-supported processes in LME projects foster “learning by doing” and capacity building as “enabling activities” do in other GEF focal areas. They allow the science community to become engaged and provide interim outputs that serve as vehicles for stimulating stakeholder participation. These processes foster cross-sectoral integration so that an ecosystem-based approach to improving management institutions may be pursued. It provides a framework for those involved in integrated coastal management (ICM) and those addressing land-based activities and freshwater basin management to be integrated into priority setting processes. This process builds confidence among different sectoral interests in a country through establishing a national GEF inter-ministerial committee and then among participating countries sharing the LME by establishing a multisectoral, intergovernmental, GEF project Steering Committee. The process of producing the SAP facilitates development of country-driven, politically agreed ways ahead for commitments to action that address the priorities in a framework that encourages adaptive management. This shared commitment and vision for action has proven essential in GEF projects that have completed the processes in securing commitments for

policy, legal, and institutional reforms in different economic sectors. GEF may then fund an implementation project to assist countries in addressing the country-driven priorities for reform and investments.

Existing international agreements fall short of attaining the goals of the UNCED process for oceans. They are designed around sectoral themes such as pollution, the GPA, sewage, waste disposal, fisheries, biodiversity, or global climate change that fail to link international and local problems in a cross-sectoral strategic approach applicable for the particular priorities of that LME and its coastal area. They remain thematic and have encouraged narrowly focused institutions to develop. To bridge this gap, the GEF, its UN partner agencies, and other organizations including IUCN, IOC of UNESCO and NOAA, have joined together to address these concerns. Developing country officials responsible for coastal and marine resources have understood the ramifications of the declining status of their marine ecosystems and the link to land-based activities that has been so difficult to foster. Across Africa, Asia and the Pacific, Latin America and the Caribbean, and in Eastern Europe, country officials have been experimenting with the GEF to reverse the decline of their marine ecosystems, testing methods for restoring once abundant biomass in order to sustain growing populations of coastal communities and to conserve highly fluctuating systems to ensure continued benefits for future generations. Since the early 1990s, these nations have approached the GEF, its implementing agencies, and other executing agencies like the UN Industrial Development Organization (UNIDO) for assistance in restoring and protecting sustainable use of their LMEs.

Table 2 lists the LME projects that have been approved by the GEF or are under preparation with GEF funding. The approved GEF-LME projects include developing nations or those in economic transition as well as other OECD countries since the living resources, the pollution loading, or the critical habitats have transboundary implications across rich and poor nations alike. Over one-half billion dollars in total project costs from the North and South are currently being invested as of December 2001 in 10 LME projects in 72 countries with \$225 million in GEF grant finance. An additional 7 LME projects are under preparation involving 54 different nations. A total of 126 different countries are involved with these GEF LME projects. With OECD countries involved that share the LMEs with the GEF recipient nations, expectations are that reforms will take place in both the North and the South in order to operationalize this ecosystem-based approach to managing human activities in the different economic sectors that contribute to place-specific degradation of the LME and adjacent waters.

7. Features and early results of LME projects

Through the GEF LME projects, countries are testing methods to demonstrate how integrated management of oceans, coasts, estuaries, and freshwater basins can be implemented through an ecosystem-based approach. It is noteworthy that non-recipient OECD countries also share these LMEs or are located in contributing

Table 2
Countries Participating in GEF/large marine ecosystem projects

LME	Countries
<i>Approved GEF Projects</i>	
Gulf of Guinea (6)	Benin, Cameroon, Côte d'Ivoire, Ghana, Nigeria, Togo ^a
Yellow Sea (2)	China, Korea
Patagonia Shelf/Maritime Front (2)	Argentina, Uruguay
Baltic (9)	Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia, Sweden
Benguela Current (3)	Angola ^b , Namibia, South Africa ^b
South China Sea (7)	Cambodia, China, Indonesia, Malaysia, Philippines, Thailand, Vietnam
Black Sea (6)	Bulgaria, Georgia, Romania, Russian Federation, Turkey ^b , Ukraine
Mediterranean (19)	Albania, Algeria, Bosnia-Herzegovina, Croatia, Egypt ^b , France, Greece, Israel, Italy, Lebanon, Libya, Morocco ^b , Slovenia, Spain, Syria, Tunisia, Turkey, Yugoslavia, Portugal
Red Sea (7)	Djibouti, Egypt, Jordan, Saudi Arabia, Somalia, Sudan, Yemen
Western Pacific Warm	Cook Islands, Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Papua New
Water Pool-SIDS (13)	Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu Total number of countries: 72 ^c
<i>GEF Projects in the preparation stage</i>	
Canary Current (7)	Cape Verde, Gambia, Guinea, ^b Guinea-Bissau, ^b Mauritania, Morocco, Senegal
Bay of Bengal (8)	Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, Thailand
Humboldt Current (2)	Chile, Peru
Guinea Current (16)	Angola, Benin, Cameroon, Congo, Democratic Republic of the Congo, Côte d'Ivoire, Gabon, Ghana, Equatorial Guinea, Guinea, Guinea-Bissau, Liberia, Nigeria, Sao Tome and Principe, Sierra Leone, Togo
Gulf of Mexico (3)	Cuba ^b , Mexico ^b , United States
Agulhus/Somali Currents (8)	Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, South Africa, Tanzania
Caribbean LME (23)	Antigua and Barbuda, The Bahamas, Barbados, Belize, Columbia, Costa Rica, Cuba, Grenada, Dominica, Dominican Republic, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, Venezuela Total number of countries: 54 ^c

^aThe six countries participating in the Gulf of Guinea project also appear in a GEF/LME project in the preparatory phase.

^bCountries that are participating in more than one GEF/LME project.

^cAdjusted for multiple listings.

basins such as Germany and Austria in the Danube Basin draining to the Black Sea. Emphasizing the global situation in which both the developed and developing nations must cooperate in order to reverse the continuing degradation of coastal and marine ecosystems, a total of 18 non-recipient, developed States are collaborating with the GEF recipient States in those LME projects on the particular high priority

concerns relevant for each waterbody—some focused on the depletion of fisheries, others on habitat restoration and protection, and still others on the reduction of pollution from land-based sources.

7.1. Danube/Black Sea Basin LME

An example where GPA concerns prevail is the case of accelerated eutrophication of the Danube Delta and Black Sea LME from excessive levels of nitrogen loading. A series of small GEF projects for the Danube and Dnipro River basins and the states of the Black Sea LME since the early 1990s have been programmed to focus on reducing nitrogen loadings from the 17 contributing nations. Following successful completion of the TDA and SAP processes in the mid and late 1990s for the Black Sea LME [26] and the Danube Basin [27], political commitments were achieved for nutrient reduction and abatement of persistent toxic substances being released from hotspots. Reforms in policy, laws, institutions, and investments are now being supported by GEF in each country for nitrogen abatement from the agriculture, municipal, and industrial sectors. Billions of dollars of water quality investments are being mobilized through EU accession, agriculture pollution is being reduced, and wetlands are being restored in the upstream basins to serve as nutrient sinks to protect the LME.

A GEF Strategic Partnership is in place for 2001–2006 with all 3 GEF implementing agencies to assist the 17 collaborating nations. Through the GEF recommended strategic processes, political commitments have been agreed to among the states (including nutrient reduction action by the Danube basin states of Austria and Germany supported by national funding). The Partnership among the 3 GEF agencies, donors, and the 17 States is now bringing coordinated support and benefits to the transboundary basin and its linked marine environment under the Bucharest Convention and the Istanbul Convention and has fostered an adaptive management approach. Community and NGO participation is fostered with extensive small grants programs for mobilizing support for hotspot cleanup. GPA Protocols to the conventions are to be adopted codifying country commitments to action, and a fisheries convention is to be negotiated by the six Black Sea states to adopt an ecosystem-based management approach. This is the largest GEF international waters initiative of its kind and is intended to serve as a test of whether a more comprehensive level of participation by GEF and streamlined sub-project approvals can leverage significant environmental improvements for a large LME and its drainage basin.

7.2. Red Sea LME

The Red Sea and Gulf of Aden LME represents another example of all three GEF implementing agencies working together to assist the collaborating States in a modest, catalytic project with GEF finance being just a small part of a much larger effort in different economic sectors funded through other sources that help protect the unique coral reefs of the sea. Formulation of the Red Sea SAP [28] was initiated in 1995 and was the first one completed under the GEF Operational Strategy in 1997. The processes of formulating the TDA and the SAP played an important role in

uniting the countries under their previously adopted regional seas convention, the Jeddah Convention. The SAP identifies actions needed to protect the uniquely fragile coral reefs, sea grass beds, and mangroves of the Red Sea coast. And an array of actions are supported in implementation, including development and implementation of ICM plans for specific coastal areas and the development of marine protected areas (MPAs).

The Red Sea project was programmed with a complementary GEF international waters project for the pollution hotspot of the Gulf of Aqaba in Jordan to accompany World Bank assistance. The reefs in the Gulf are the northern most warm-water-type coral reefs on Earth and the 17 km marine park protected area shared by Israel and Jordan serves as an example of how developed and developing countries may work together jointly to sustain their valuable coastal and marine resources. The marine park serves as a haven for fish and contributes to repopulation of other areas subject to exploitation. The use of MPAs is an essential management component of LMEs in order to conserve biomass and biodiversity. The project also assisted Jordan to develop a modern environmental management institution as part of its economic development processes in areas to protect the sensitive reefs from excesses of tourism, pollution discharges, and industrial development. The institution is now more stringent in its development requirements to protect the marine ecosystem than the rest of the country.

7.3. Western Pacific warm pool marine ecosystem

While not strictly an LME, The western pacific marine ecosystem is the life blood of pacific sids economies with its rich tuna fisheries and with its island archipelagos represents an agglomeration of a number of LMEs. Heads of states of the 13 PACSIDS adopted their GEF SAP [29] in september 1997 and began implementation of their GEF/UNDP international waters project thereafter. While a number of components were involved including community-based fisheries management, ICM, and interventions addressing their water supplies; An important component included GEF support to the countries through the forum fisheries agency included in the establishment of a regional convention on conservation, management, and sustainable use of their highly migratory fish stocks. A commission is being established to oversee a more ecosystem-based approach to management, known as the “Convention on the Conservation and Management of Highly Migratory Fish Stocks of the Western and Central Pacific Ocean”. The GEF assistance helped level the playing field among the Pacific SIDS as they negotiated the Convention with Asian, North American and European nations. Following 7 sessions of what was known as the MHLC process [30], the Convention was signed in September 2000 and is the first agreement to be successfully negotiated on the basis of the 1995 UN Fish Stocks Agreement.

7.4. Mediterranean LME

In the Mediterranean project, GEF assistance resulted in a SAP for land-based sources of marine pollution being adopted by all 20 nations under their Barcelona

Convention [31] with enforceable commitments to action on pollution reduction for specific pollutants with specific timetables and targets—the first such commitments to action in the program’s 20 yr history as GEF played a catalytic role in its transition from a research focus to an on-the-ground implementation focus. The eight non-recipient nations must also adhere to the pollution reduction timetables as the SAP process operationalized their GPA Protocol under their regional seas convention and expanded the collaboration from just the saltwater to the basins draining to the sea. The UNEP and World Bank are assisting the Mediterranean countries according to their comparative advantages. UNEP is assisting in the more controversial processes of developing a TDA and SAP for living resources and their critical habitats that will take a number of years to complete in conjunction with the review of the EU Common Fisheries Policy. The World Bank is assisting with feasibility studies for high priority bankable investments that will help the states implement their Mediterranean SAP for land-based sources of pollution.

7.5. South China Sea LME

The South China Sea project with UNEP has been programmed in conjunction with two other GEF international waters projects to fit programmatically in the attempt to restore and protect the globally significant coral reefs, sea grass beds, mangroves, and wetlands of the LME and its coast. The Mekong Basin project with its valuable delta receives GEF assistance through the World Bank while the complementary hotspot remediation demonstration activities conducted through the GEF/UNDP/IMO program entitled *Partnerships for Environmental Management of the Seas of East Asia (PEMSEA)* are also an integral part of GEF’s programmatic approach. While the South China Sea project undertakes collective strategic processes for developing a more ecosystem-based approach to management through production of a TDA [32] and SAP, *PEMSEA* has supported a number of complementary local demonstrations of ICM since 1996 that are well-known throughout the ICM community [33].

Of global policy significance has been the *GEF/PEMSEA* assistance to the Government of the Philippines as it developed the Manila Bay Declaration and Manila Bay Coastal Strategy in its part of the South China Sea. This complementary initiative is multi-jurisdictional in nature with respective national governments, provinces in the drainage area, and the large municipalities of Manila and represents a GPA-equivalent of a SAP for the contributing freshwater basin that is enacted in the framework of coastal sustainable development. The political declarations have been adopted at the highest level and represent a decade-long commitment to action.

7.6. Patagonia Shelf LME

Two international waters projects cover the Patagonia Shelf LME in Uruguay and Argentina. The Plata Maritime Front area is subject to management under a commission and bilateral treaty. The remainder of the LME is in Argentina and suffers from land-based pollution from hotspots as well as extreme amounts of



over-fishing recently brought about through agreements with the EU and Asian distant fleets. As noted by UNEP [12], depletion of the ecosystem as a result of trade distortions and EU subsidies was rapid with the fishery lasting but 10 yr with modern equipment of the EU and Asian fleets. UNDP is assisting the countries with the highly polluted and over-fished Maritime Front and the World Bank is assisting Argentina with two loans (one for land-based pollution abatement and another related to reforms in the fishery sector) to which GEF has added an incremental amount of grant funding toward restoration and protection of the marine biodiversity. The projects are under implementation.

8. Comprehensive LME demonstration projects and project modules

Four of the LME project areas involve testing comprehensive attempts at resolving complex and interlinked ecosystem problems: the Guinea Current, the Benguela Current, the Yellow Sea, and the Baltic Sea LMEs. A five-module approach to the assessment and management of LMEs has been proven to be useful in other LMEs and is being applied in these four areas to test its utility. The processes are customized to fit the situation within the context of the TDA process and the SAP process for the groups of nations sharing the particular LME based on available information and capacity. These processes are critical to integrate science into management in a practical way and to establish governance regimes appropriate for the particular situation. The five modules (productivity, fish/fisheries, pollution/ecosystem health, socio-economics, and governance) are in the process of being adapted to four of the Comprehensive LME Demonstration projects. The first four models support the TDA process while the governance module is associated with periodic updating of the Strategic Action Program or SAP. Adaptive management regimes are encouraged through periodic assessment processes (TDA updates) and updating of SAPs as gaps are filled.

8.1. Productivity module

Productivity can be related to the carrying capacity of an ecosystem for supporting fish resources [34]. Recently, scientists have reported that the maximum global level of primary productivity for supporting the average annual world catch of fisheries has been reached, and further large-scale “unmanaged” increases in fisheries yields from marine ecosystems are likely to be at trophic levels below fish in the marine food chain [35]. Measuring ecosystem productivity also can serve as a useful indication of the growing problem of coastal eutrophication. In several LMEs, excessive nutrient loadings of coastal waters have been related to algal blooms implicated in mass mortalities of living resources, emergence of pathogens (e.g., cholera, vibrios, red tides, paralytic shellfish toxins), and explosive growth of non-indigenous species [36].

The ecosystem parameters measured in the productivity module are zooplankton biodiversity and information on species composition, zooplankton biomass, water

column structure, photosynthetically active radiation (PAR), transparency, chlorophyll-*a*, NO₂, NO₃, and primary production. Plankton of LMEs have been measured by deploying Continuous Plankton Recorder (CPR) systems monthly across ecosystems from commercial vessels of opportunity over decadal time scales. Advanced plankton recorders can be fitted with sensors for temperature, salinity, chlorophyll, nitrate/nitrite, petroleum, hydrocarbons, light, bioluminescence, and primary productivity, providing the means for in situ monitoring and the calibration of satellite-derived oceanographic conditions relating to changes in phytoplankton, zooplankton, primary productivity, species composition and dominance, and long-term changes in the physical and nutrient characteristics of the LME and in the biofeedback of plankton to the stress of environmental change [37,38].

8.2. Fish and fisheries module

Changes in biodiversity among the dominant species within fish communities of LMEs have resulted from: excessive exploitation, naturally occurring environmental shifts in climate regime, or coastal pollution. Changes in the biodiversity of a fish community can generate cascading effects up the food chain to apex predators and down the food chain to plankton components of the ecosystem. The fish and fisheries module includes fisheries-independent bottom-trawl surveys and acoustic surveys for pelagic species to obtain time-series information on changes in fish biodiversity and abundance levels. Standardized sampling procedures, when deployed from small calibrated trawlers, can provide important information on diverse changes in fish species [39]. Fish catch provides biological samples for stock assessments, stomach analyses, age, growth, fecundity, and size comparisons; data for clarifying and quantifying multispecies trophic relationships; and the collection of samples for monitoring coastal pollution. Samples of trawl-caught fish can be used to monitor pathological conditions that may be associated with coastal pollution and can be used as platforms for obtaining water, sediment, and benthic samples for monitoring harmful algal blooms, diseases, anoxia, and changes in benthic communities.

8.3. Pollution and ecosystem health module

In several LMEs, pollution has been a principal driving force in changes of biomass yields. Assessing the changing status of pollution and health of the entire LME is scientifically challenging. Ecosystem “health” is a concept of wide interest for which a single precise scientific definition is problematical. The health paradigm is based on multiple-state comparisons of ecosystem resilience and stability and is an evolving concept that has been the subject of a number of meetings [40]. To be healthy and sustainable, an ecosystem must maintain its metabolic activity level and its internal structure and organization, and must resist external stress over time and space scales relevant to the ecosystem [41]. The ecosystem sampling strategies are focused on parameters related to overexploitation, species protected by legislative authority (marine mammals), and other key biological and physical components at

the lower end of the food chain (plankton, nutrients, hydrography) as noted by Sherman [22].

Fish, benthic invertebrates, and other biological indicator species are used in the Pollution and Ecosystem Health module to measure pollution effects on the ecosystem, including the bivalve monitoring strategy of “Mussel-Watch;” the pathobiological examination of fish; and the estuarine and nearshore monitoring of contaminants and contaminant effects in the water column, substrate, and in selected groups of organisms. The routes of bioaccumulation and trophic transfer of contaminants are assessed, and critical life history stages and selected food chain organisms are examined for parameters that indicate exposure to, and effects of, contaminants. Effects of impaired reproductive capacity, organ disease, and impaired growth from contaminants are measured. Assessments are made of contaminant impacts at the individual species and population levels. Implementation of protocols to assess the frequency and effect of harmful algal blooms, emergent diseases and multiple marine ecological disturbances [42] are included in the pollution module.

8.4. Socio-economic module

This module is characterized by its emphasis on practical applications of its scientific findings in managing an LME and on the explicit integration of economic analysis with science-based assessments to assure that prospective management measures are cost effective. Economists and policy analysts work closely with ecologists and other scientists to identify and evaluate management options that are both scientifically credible and economically practical with regard to the use of ecosystem goods and services.

Designed to respond adaptively to enhanced scientific information, socioeconomic considerations must be closely integrated with science. This component of the LME approach to marine resources management has recently been described as the human dimensions of LMEs. A framework has been developed by the Department of Natural Resource Economics at the University of Rhode Island for monitoring and assessment of the human dimensions of an LME and the socioeconomic considerations important to the implementation of an adaptive management approach for an LME [43]. One of the more critical considerations, a methodology for considering economic valuations of LME goods and services has been developed around the use of interaction matrices for describing the relationships between ecological state and the economic consequences of change and is included in the framework.

8.5. Governance module

The Governance module is evolving based on demonstrations now underway among ecosystems to be managed from a more holistic perspective than generally practiced in the past. In projects supported by GEF—for the Yellow Sea ecosystem, the Guinea Current LME, and the Benguela LME—agreements have been reached

among the environmental ministers of the countries bordering these LMEs to enter into joint resource assessment and management activities as part of building institutions. Among other LMEs, the Great Barrier Reef ecosystem is being managed from an ecosystem-based perspective; the Antarctic marine ecosystem is also being managed from an ecosystem perspective under the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). Governance profiles of LMEs are being explored to determine their utility [44] in promoting long-term sustainability of ecosystem resources.

9. Comprehensive LME demonstrations

In essence, systematic application of the 5 modules through the TDA-SAP processes can help foster an adaptive management approach to joint governance based on iterative assessments of indicator parameters (GEF monitoring and evaluation indicators) as part of establishing commitments to action and periodically reviewing progress made toward the indicators. These processes help to integrate science into the management regime and establish governance regimes for a collective response to site-specific priorities under various environmental conventions and action programs. Joint monitoring surveys are being employed to provide transparency in collection of data and confidence and trust among participating nations. As noted in the Gulf of Guinea and Benguela Current LME projects in Africa, such joint cruises also serve to build capacity among nations to utilize sound science so that management decision-making may be improved.

9.1. Gulf of Guinea Pilot Project

The GEF is supporting the coastal nations all along the western coast of Africa in the establishment of ecosystem-based assessment and management of their coastal environments and resources. Included among the projects was the pilot phase of the Guinea Current LME project from 1995 to 1999. The six participating countries—Benin, Cameroon, Ghana, Ivory Coast, Nigeria, and Togo—have used the GEF Grant to strengthen national infrastructure in staffing positions and engaging government support. The long-term objective of the project is to restore and sustain the health of the Guinea Current Large Marine Ecosystem and its living resources, particularly with regard to biological diversity, coastal habitats, and the control of water pollution.

Project participants included: networks of national environmental protection Agencies and Departments, public health Administrations, sewage work Authorities, industries, and Universities/Research Institutions in the participating countries. Non-governmental organizations (NGOs) and Community Based Organisations (CBOs) have been very active particularly as it relates to public awareness and environmental education aspects. In order to provide the necessary focus, National Focal Point Agencies and National Focal Point Institutions were designated. National and regional experts were designated to support the monitoring and

assessment module of the project at the national and regional level. The capacity of national institutes and experts was reinforced through the supply of appropriate equipment and by a series of workshops aimed at standardizing methodological approaches in the afore mentioned components. Activity groups on specific topics (productivity, fish and fisheries, pollution monitoring, socioeconomics, and governance) were convened regularly to discuss the progress made and problems encountered, and to undertake joint assessments.

At the international level, UNDP served as the Implementing Agency, UNIDO as the Executing Agency and UNEP as a co-operating organization. The United States Department of Commerce through its National Oceanic and Atmospheric Administration (NOAA) provided technical support particularly in capacity building initiatives in addition to in-kind contribution to the funding of the project. Other United Nations and non-United Nations Agencies such as the Intergovernmental Oceanographic Commission (IOC) of UNESCO, IMO, FAO, and IUCN provided guidance at specific stages in project implementation.

Actions included joint identification of major transboundary environmental and living resources management issues and problems, and adoption of a common regional approach, in terms of strategies and policies for addressing these priorities in the national planning process at all levels of administration, including local governments. Among the successfully completed activities is a cooperative survey of the bottom fish stocks using a chartered Nigerian vessel with representatives of each of the participating countries taking part in the trawling and data reporting operations. Funds were used to complete a report on the major multidecadal shifts in the abundance of fish stocks in the ecosystem, caused principally by environmental perturbations affecting the annual upwelling cycle and temperature regime of the ecosystem. In addition to the cooperative trawl survey, surveys of the plankton community to address the carrying capacity of the Gulf of Guinea for supporting sustainable fisheries were conducted at six-week intervals using plankton recorder systems deployed from large container vessels transiting the region. The samples are being processed in a Plankton Center established with GEF funds in Tema, Ghana in collaboration with the Sir Alister Hardy Foundation of the UK.

Forty region-wide workshops attended by nearly 900 participants were held on the key transboundary concerns, including: pollution monitoring, ecosystem productivity studies; natural resources management and planning, development of institutional capacities (including administrative and legal structures), and data and information management and exchange. The pilot project for the Guinea Current LME established intra- and international networks of scientific institutions and non-governmental organizations, with a total of more than 500 scientists, policy makers and other participants (making it the African continent's single largest network for marine and coastal area management), to undertake studies on ecosystem degradation, to assess living resources availability and biodiversity, and to measure socio-economic impacts of actions and non-actions. The capacity of the networks has been reinforced through the supply of appropriate equipment and by a series of group training workshops aimed at standardizing methodological approaches

around five project modules: (1) productivity, (2) fish and fisheries, (3) pollution and ecosystem health, (4) socioeconomics, and (5) governance.

Restoration has been initiated of mangrove areas along the coast. And assessments of the principal sources of coastal pollution have been initiated. National State of the Marine Environment Reports were issued as “initial assessments,” encompassing published and unpublished data and including policy options and past interventions. Plans for the management of transboundary coastal resources were completed by each of the countries [45–50]. Several studies have suggested options for increasing the long-term sustainability of coastal resources and increasing socioeconomic benefits to the people of the region [51]. A detailed assessment of the nature and quantities of urban wastes and sewage and the present status of their management was completed. With due recognition of the ongoing government efforts with the World Bank to implement master plans for urban wastes and sewage management, the project focused with municipal authorities on novel and low technology options, such as the use of settling pits in Ghana for sewage treatment in small communities and the sorting of domestic wastes prior to disposal as a means of encouraging recycling and reuse. In addition, a parallel effort was made to develop strategies and policies to encourage reduction, recycling, recovery and reuse of industrial wastes. One such initiative, now at the pilot stage in Ghana, is the establishment of Waste Stock Exchange Management System. This concept, which has been enthusiastically embraced by manufacturing industries in Ghana and has as a slogan “one person’s waste, another person’s raw material,” holds considerable promise as a cost effective waste management tool.

An Accra Declaration has been signed by the Environmental Ministers from each of the six countries indicating joint commitment for taking steps to promote the long-term sustainability of the Gulf of Guinea resources [52]. The ministers of the environment, fisheries, tourism, energy, mining, and finance of the six countries engaged in the first phase of the Guinea Current project agreed with counterpart ministers of 10 neighboring countries along the coastal margins of the ecosystem to extend the project in phase two from Guinea Bissau on the northwest part of the coast to Angola in the southwest. Phase two is presently focused on development of and expanded TDA and strategic action plan (SAP) in collaboration with the GEF, United Nations Industrial Development Organization (UNIDO), the UN Development Programme, NOAA, and IUCN.

9.2. Benguela Current LME Project

The GEF is supporting an ecosystem-based project requested by the governments of Angola, Namibia and South Africa for the “Integrated Management, Sustainable Development, and Protection of the Benguela Current Large Marine Ecosystem (BCLME).” The project is focused on sustainable management and utilization of living marine resources, mining and environmental variability, ecosystem forecasting, management of pollution, ecosystem health and protection of biological diversity, and capacity strengthening. Within an overall ecosystem approach, specific actions have been agreed upon through a series of meetings between stakeholders



and government representatives. During a 12-month planning period, the three countries reached consensus on a strategic approach for the project, based on the preparation of a TDA and a strategic action plan (SAP). With regard to the fish and fisheries of the BCLME, the countries agreed to establish a regional structure to: (1) conduct transboundary fish stock and ecosystem assessments; (2) evaluate transboundary resource and environmental linkages; and (3) provide advice to the three governments based on the assessment results. They agreed to conduct joint surveys and assessments of shared fish stocks over a 5 yr period beginning in 2002 as a demonstration of the benefits to each of the countries of joint assessments for compiling baseline data and validating survey and assessment methodology.

The countries are establishing an Interim Benguela Current Commission (IBCC) to strengthen regional cooperation. The IBCC is to be supported by a project coordinating unit and advisory groups. Within a period of 5 yr it is expected that the IBCC will become a fully functioning Benguela Current Commission (BCC) with a supporting secretariat. The BCC is to serve as the organization for harmonizing technical issues including fishing gear, mesh size and type, data compatibility, and assessment methodology. Cooperative assessments of non-exploited species will also be made. Effort will be directed by the BCC to develop a viable mariculture policy for the three countries. Cooperative analyses of the socioeconomic consequences of harvesting methods will be undertaken by the IBCC with a view to appropriate intervention within the framework of improving sustainable use of the BCLME resources, and in compliance with the FAO Code of Conduct for Responsible Fishing. In addition to fisheries, the IBCC will develop a regional framework for enhancing consultations for the purpose of mitigating the negative impacts of marine mining particularly with regard to any potential or actual conflicts among fisheries and coastal and offshore diamond/gold mining and oil and gas exploration and/or production.

Among the principles adopted by the IBCC are: (1) the concept of sustainable development shall be used in a way that does not destroy the integrity of the BCLME ecosystem, or otherwise foreclose on options for use and enjoyment for future generations; (2) the precautionary principle where appropriate, shall be applied, preventative measures being taken when there are reasonable grounds for concern that an activity may increase the potential hazards to human health, living marine resources or marine ecosystems, damage amenities, or interfere with other legitimate uses of the sea, even when there is no conclusive evidence of a causal relationship between the activity and the effects and by virtue of which greater caution is required when information is uncertain, unreliable or inadequate; and (3) the use of economic and policy instruments that foster sustainable development shall be promoted through, inter alia, the implementation of economic incentives for introducing environmentally friendly technologies, activities and practices; the phasing-out of subsidies which encourage the continuation of non-environmentally friendly technologies, activities and practices; the introduction of user fees and the polluter pays principle; and that environmental, ecosystem, and human health considerations shall be included into all relevant policies and sectoral plans, especially those

concerning marine industrial development, fisheries, mariculture and marine transport.

The structure of the Interim Benguela Current Commission (IBCC) and terms of reference of the Advisory Groups to the Commission for fisheries, environment, pollution, legal affairs, and data exchange have been approved at the ministerial level in the participating countries.

9.3. *The Yellow Sea LME Project*

Notable progress has been made in the introduction of the ecosystem-based management and assessment activities for the Yellow Sea LME (YSLME) by ministerial representatives of China and South Korea serving together in a joint steering committee for a GEF-sponsored International Waters project. The project is being carried out in collaboration with the UNDP and other international partners including NOAA and IUCN. The Yellow Sea LME is an important global resource. This international water-body supports substantial populations of fish, invertebrates, marine mammals, and seabirds. Many of these resources are threatened by both land and sea-based sources of pollution and habitat loss resulting from extensive economic development in the coastal zone, and by the unsustainable exploitation of natural resources (primarily overfishing). Additionally, there is significant international shipping traffic through the waters of the Yellow Sea, with associated threats from spills and collisions with marine mammals.

In the western Yellow Sea, pollution sources include wastewater from Qingdao, Dalian, and Lianyungang port cities; oil discharged from vessels and ports; and oil and oily mixtures from oil exploration. More than 100 million tons of domestic sewage and about 530 million tons of industrial wastewater from coastal urban and rural areas are discharged into the nearshore areas of the Yellow Sea each year. The major pollutants carried by sewage and waste water are oils, mercury, cadmium, lead, COD, and inorganic nitrogen.

The eastern Yellow Sea has significant pollution in the shallow inlets of its southern coastline where the many islands prevent mixing with open ocean water and red tides persist. Demersal species used to be the major component of the resources and accounted for 65 to 90 percent of annual total catch. The resource populations of demersal species such as small yellow croaker, hairtail, large yellow croaker, flatfish, and cod declined in biomass by more than 40 percent when fishing effort increased threefold from the early 1960s to the early 1980s. Shifts in species dominance and biodiversity in the Yellow Sea are significant. The dominant species in the 1950s and early 1960s were small yellow croaker and hairtail, while Pacific herring and chub mackerel became dominant during the 1970s. Some smaller-bodied, fast-growing, short-lived, and low-value fish (e.g., *Setipinna taty*, anchovy, scaled sardine) increased markedly in about 1980 and have taken a prominent position in the ecosystem resources thereafter. As a result, some larger-sized and higher trophic level species were replaced by smaller-bodied and lower trophic level species, and the resources in the Yellow Sea declined in quality. About 70 percent of the biomass in 1985 consisted of fish and invertebrates smaller than 20 cm, and the



mean body length in the catches of all commercial species was only 12 cm while the mean body length in the 1950s and 1960s exceeded 20 cm. The trophic levels in 1985 and in the 1950s were estimated to be 3.2 and 3.8, respectively. Thus, it appears that the external stress of fishing has affected the trophic structure of the Yellow Sea ecosystem.

Aquaculture is a major use of the coastal waters of the Yellow Sea. Mariculture is commonly practiced in all coastal provinces of China, and it is most advanced in Shandong and Liaoning provinces. The total yield of invertebrate mariculture of ROK in 1997 was 301,873 metric tons (MT) representing 29.7 percent of ROK's total mariculture production (1,015,134 MT), including 200,973 MT of oysters (20 percent) and 63,572 MT of mussels (6.3 percent).

Offshore oil exploration has been successful in the Chinese and DPRK portions of the Yellow Sea. In addition, the sea has become more important with the growth in trade among its bordering nations. The main Chinese ports are Shanghai, Lu-ta, Tientsin, Qingdao, and Chin-huang-tao; the main ROK port is Inchon, the outport of Seoul; and that for DPRK is Nampo, the outport for P'yongyang. Tourism is an industry in its infancy in both China and Korea. Several sites of picturesque beauty around the coastlines of these countries could be promoted as tourist attractions. As access to China and Korea becomes easier for foreign visitors, the tourist industry will expand; and the granite mountains of the western Liaoning coast in China and the islands and swimming beaches of ROK, in particular Cheju Island, will be in even greater demand.

The Yellow Sea is an international water-body and many of its problems can be solved only through international cooperation. The management of the Yellow Sea is especially complicated in that it is surrounded by nations that share some aspects of their historical and cultural background, but differ in internal political systems, external political and economic alignment, and levels of economic development. For the future of the Yellow Sea, it is thus imperative for the coastal nations to realize the importance of regional cooperation. There are currently several agreements for bilateral regulation or development of the Yellow Sea and East China Seas, but none of them are binding on all the coastal nations; nor is any nation a party to all the agreements. Of global policy significance has been the GEF/PEMSA assistance to the Government of China as it developed the Bohai Sea Declaration for the internal sea connected to the Yellow Sea. This initiative is multi-jurisdictional in nature with the national government, provinces in the drainage area, and large downstream municipality of Tianjin, and it represents the national equivalent of SAP enacted in the framework of coastal sustainable development. The political declaration represents a decade-long commitment to on-the-ground action that will total billions of dollars of investments and policy/legal/institutional reforms to reduce the coastal degradation. Such commitments are unprecedented in GEF recipient countries, and they are quite similar to the Chesapeake Bay Basin cleanup program in the United States that has been at work for two decades in coastal restoration.

The principal activities to be operationalized within the framework of the YSLME project are listed below. The activities include measurements of stock size and primary productivity for carrying capacity determinations for capture fisheries

mariculture and pollution assessments. Other activities involve the assessments of fish stocks and establishment of total allowable catch quotas for fish. A China–Korea forum for annual determination of TAC levels, based on the results of joint bottom trawl and acoustic surveys, will be introduced. Budgets have been provided for improving analyses of socioeconomic benefits in relation to short- and long-term resource sustainability options. Consideration will also be given by both countries to the optimization of management actions for all shared marine resources. A bilateral China-Korea Project Coordination Unit (PCU) has been established to oversee the project for both countries.

9.4. Baltic Sea Regional Project

As late as 1950 the Baltic Sea was still regarded as environmentally “healthy;” its ecological deterioration has been caused in recent years by an increase of point source industrial and non-point source agricultural pollutants, degradation of the coastal zone and non-sustainable use of living marine resources. The natural vulnerabilities have been seriously aggravated by anthropogenic causes of environmental change and degradation. These problems of the Baltic Sea are transboundary in nature, and difficult to address on an individual country basis. The need to address the management of agricultural inputs into international waters, improve coastal zone management and adopt sustainable management of living marine resources has been highlighted in the “Baltic Sea Joint Comprehensive Environmental Action Program (JCP)” which was prepared under the coordination of the Helsinki Commission by a broad based task force. The JCP was adopted as the strategic action program for the region by the Ministers of Environment in 1992 and was updated and strengthened in 1998. HELCOM prepares assessments of transboundary trends and impacts in the form of Pollution Load Compilations and Periodic Assessments which support implementation of the JCP. The JCP recognizes the need to use an ecosystem-based management approach that recognizes the freshwater, coastal and marine resources as a management continuum. This GEF Project responds to the need to address regional transboundary issues and to establish a coordinated approach to ecosystem-based management, in order to alleviate burdens from anthropogenic impacts and meet the objectives of the JCP. In fact, for the first time, this project has all three international commissions with responsibilities in the Baltic working together. In addition to HELCOM, the Baltic Sea Fisheries Commission and the International Commission for the Exploration of the Sea are collaborating in the GEF project to address overfishing, the loss of genetic resources of valuable fisheries in the LME, and contaminants that bioaccumulate to pose ecosystem and human health threats.

The Baltic Sea ecosystem and its catchment area have a range of ecotones and biological diversity. The brackish waters of the Baltic Sea contain a mixture of marine and freshwater species. The coastal areas serve as spawning, nursery, and feeding areas for several species of fish. Baltic 21 statistics have indicated that the fishery industry contributes significantly to regional and local economy, and sustenance fishing is critical to the social and economic welfare of the coastal

communities in the eastern Baltic. Major coastal and marine transboundary issues prevail due to current land, coastal and marine practices; they include: (i) changes in the productivity of the near coastal and offshore waters from eutrophication; (ii) unsustainable condition of fish stock yields; and (iii) degraded condition of coastal water quality from pollution, harmful algal blooms, multiple ecological disturbances, and contaminant loading.

The Project components are based on the LME concept and include integrated land, coastal and open sea activities to strengthen the local and regional capacity to achieve sustainable ecosystem management of the Baltic Sea resources. Sustainable management will improve ecosystem health while providing social and economic benefits to farming, coastal and fishing communities and sectors such as businesses and tourism. The Project introduces jointly planned and implemented multi-national monitoring and assessment surveys that facilitate local cooperation and coordination and use of innovative methodologies for assessing the changing state of the ecosystem and development of effective strategies for the management of these shared resources. Component activities provide the mechanisms to meet these objectives through improving coastal and open sea monitoring and assessment practices, understanding the carrying capacity of the coastal and open sea ecosystem, and promoting sustainable fishery practices.

The Project supports activities in the coastal near shore environment of the Eastern Baltic Sea and in selected adjacent sections of the open sea environment. In general, the coastal near shore activities and monitoring network will correlate with land-based coastal and associated demonstration activities addressing land-based agricultural inputs to coastal and open sea waters and improving coastal zone management are critical for management of the Baltic Sea ecosystem. The JCP highlights management of agriculture inputs and coastal areas of the Baltic as priority issues. The agricultural element of the Component will (i) test administrative and organizational mechanisms (regional and local) and provide advice and support to the farming community; (ii) assess farmers’ interest in and willingness to pay for improving their environmental management practices; (iii) assist farmers to lower both the risk and barriers that currently hinder adoption of new practices; and (iv) provide support for small-scale environmentally responsible agricultural investments.

The Project partially finances investment costs for on-farm environmental facilities, operating expenses of local implementers, equipment recommended by the farm management plans, and recurrent costs for local capacity building. The coastal zone management element of the Component covers the following: (i) focuses on the role that can be played by local communities in sustainable management of coastal resources; (ii) links activities in the demonstration watershed to activities being taken on the coast; (iii) supports implementation of previously prepared management plans; and (iv) assists local communities to overcome barriers to adoption of new planning and management methods in these sensitive areas. The Project will partially finance costs for management activities, small-scale investments and demonstration activities and selected costs for local capacity building as well as encourage the three commissions to work together.

10. Reversing biomass depletion is possible in LMEs

Recent carefully controlled ecosystem-based management actions in two LMEs are serving to reverse multidecadal declines in biomass yields. Since 1994, reductions in fishing effort increased the spawning stock biomass (ssb) levels of cod on the Icelandic Shelf ecosystem, and haddock, yellowtail flounder, and other species in the US Northeast Shelf ecosystem.

From the mid-1960s through the early 1990s, the biomass of principal groundfish and flounder species inhabiting the US Northeast Shelf ecosystem declined significantly from overfishing of the spawning stock biomass [53]. In response to the decline, the biomass of skates and spiny dogfish increased from the 1970s through the early 1990s [53]. The impact of the increase in small elasmobranchs, particularly spiny dogfish, shifted the principal predator species on the fish component of the ecosystem from silver hake during the mid-1970s to spiny dogfish in the mid-1980s [54]. By the mid-1990s a newly developing fishery for small elasmobranchs initiated a declining trend in biomass for skates and spiny dogfish [53].

Following the secession of foreign fishing on the Georges Bank-Gulf of Maine herring complex and the Atlantic mackerel stock in the late 1970s, and over a decade of very low fishing mortality, both species began to recover to high stock sizes in the 1990s. Bottom trawl survey indices for both species increased dramatically, showing over a ten fold increase in abundance (average of 1977–1981 vs. 1995–1999) by the late 1990s [55,56]. Stock biomass of herring increased to over 2.5 million metric (mt) tons by 1997 and ssb was projected to increase to well over 3.0 million tons in 2000 [53]. The offshore component of herring, which represents the largest proportion of the whole complex, appears to have fully recovered from the total collapse it experienced in the early 1970s [55]. For mackerel, the situation is similar, total stock biomass has continued to increase since the collapse of the fishery in the late 1970s. Although absolute estimates of biomass for the late 1990s are not available, recent analyses concluded that the stock is at or near a historic high in total biomass and ssb [56]. Recent evidence following mandated substantial reductions in fishing effort indicate that both haddock and yellowtail flounder stocks are responding to the catch reductions rather favorably with substantial growth reported in ssb size, since 1994 for haddock and flounder. In addition, in 1997 a very strong year-class of yellowtail flounder was produced, and in 1998, a strong year-class of haddock was produced (Fig. 3).

At the base of the food web, primary productivity provides the initial level of carbon production to support the important marine commercial fisheries [57]. Zooplankton production and biomass in turn provide the prey-resource for larval stages of fish, and the principal food source for herring and mackerel in waters of the NE Shelf ecosystem. Over the past two decades the long-term median value for the zooplankton biomass of the NE Shelf ecosystem has been about 29 cc of zooplankton per 100 m³ of water strained produced from a stable mean-annual primary productivity of 350 gC m² yr. During the last two decades, the zooplanktivorous herring and mackerel stocks underwent unprecedented levels of growth,

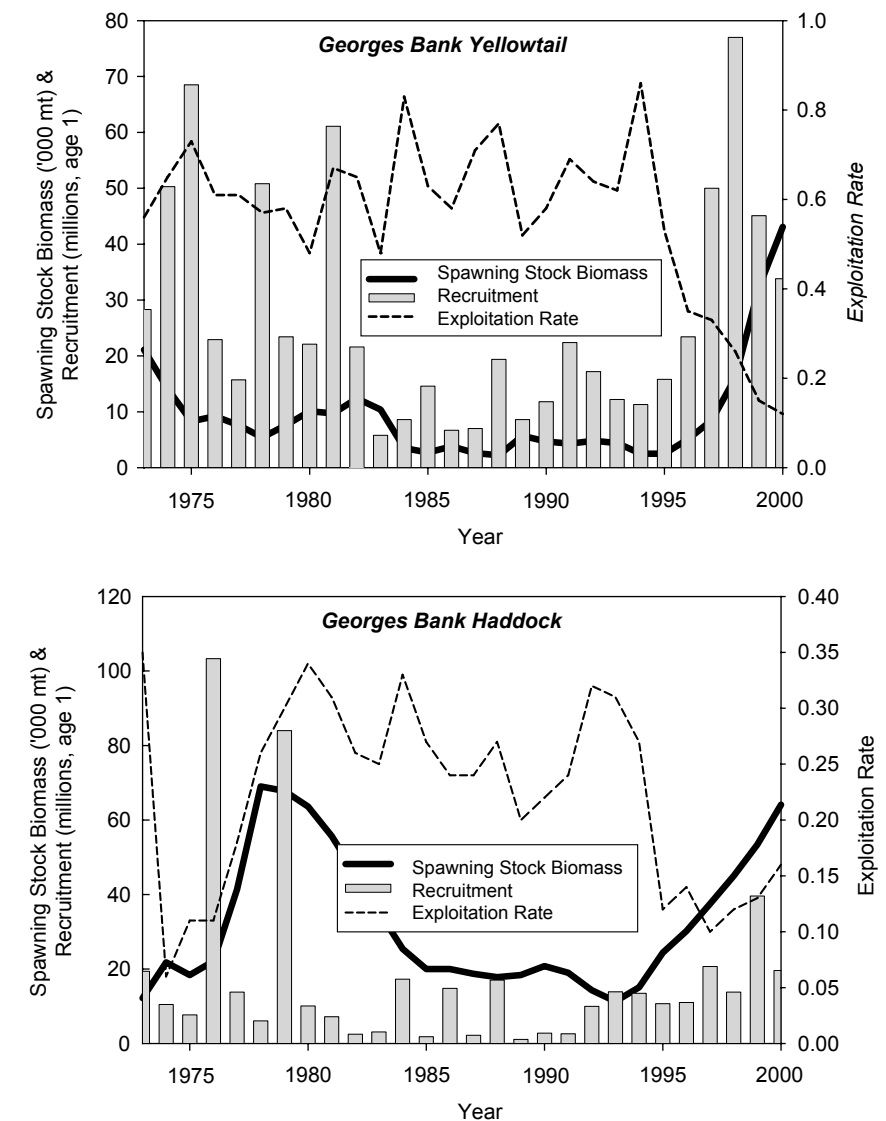


Fig. 3. Increasing trends in spawning stock biomass (ssb) and recruitment in relation to reductions in exploitation rate (fishing effort) for two commercially important species inhabiting the Georges Bank subarea of the Northeast Shelf ecosystem, haddock (top) and yellowtail flounder (bottom).

approaching an historic high combined biomass. This growth is taking place during the same period that the fishery management councils for the New England and Mid-Atlantic areas of the NE Shelf ecosystem have sharply curtailed fishing effort on haddock and yellowtail flounder stocks. Given the observed robust levels of primary productivity and zooplankton biomass, it appears that the “carrying capacity” of

zooplankton supporting herring and mackerel stocks and larval zooplanktivorous haddock and yellowtail flounder is sufficient to sustain the strong year-classes reported for 1997 (yellowtail flounder) and 1998 (haddock).

The zooplankton component of the Northeast Shelf ecosystem is in a robust condition at biomass levels at or above the levels of the long-term median values of the past two decades, providing a suitable prey base for supporting a large biomass of pelagic fish (herring and mackerel), while providing sufficient zooplankton prey to support strong year-classes of recovering haddock and yellowtail flounder stocks [58]. No evidence has been found in the fish, zooplankton, temperature, or chlorophyll component that is indicative of any large-scale oceanographic regime shifts of the magnitude reported for the North Pacific or northeast Atlantic Ocean areas.

The robust condition of the plankton components at the base of the food web of the Northeast Shelf ecosystem was important to the relatively rapid rebuilding of zooplanktivorous herring and mackerel biomass from the depleted condition in the early 1980s to a combined biomass in 1999 of an unprecedented level of approximately 5.5 mm tons, following the exclusion of foreign fishing effort and the absence of any significant US fishery on the stocks. The milestone action leading to the rebuilding of lost herring and mackerel biomass was the decision by the United States to extend jurisdiction over marine fish and fisheries within 200 miles of the coastline. Recently the Fishery Management Councils of New England, and the mid-Atlantic coastal states agreed to reduce fishing effort significantly on demersal fish stocks of the NE Shelf ecosystem. With the reduction of exploitation rate, the spawning biomass of haddock and yellowtail flounder increased over a 4 yr period and led to the production of large year-classes of haddock in 1998 and yellowtail flounder in 1997.

The Northeast Shelf ecosystem is presently undergoing a significant trend toward biomass recovery of pelagic and demersal fish species important to the economy of the adjacent northeast states from Maine to North Carolina. Although the recovery has not as yet been fully achieved, the corner has been turned from declining overharvested fish stocks toward a condition wherein the stocks can be managed to sustain their long-term potential yield levels. The management decisions taken to reduce fishing effort to recover lost biomass was supported by science-based monitoring and assessment information forthcoming from the productivity, fish and fisheries, pollution and ecosystem health, socioeconomics, and governance modules that have been operational by NOAA's Northeast Fisheries Science Center for several decades in collaboration with state, federal, and private stakeholders from the region. This case study can serve to underscore the utility of the modular approach to ecosystem-based management of marine fish species. In an effort to stem the loss of fisheries biomass in other parts of the world, applications of this modular approach to LME management are presently underway by countries bordering the Yellow Sea, Benguela Current, Baltic Sea, and Guinea Current LMEs [59], with financial assistance of the GEF, collaborating UN agencies, and the technical and scientific assistance of other governmental and non-governmental agencies and institutions.

11. Special concerns about nitrogen over-enrichment of LMEs

A common thread regarding degradation of LMEs in GEF projects is the large number of eutrophication cases. More and more, GEF receives requests for interventions in LMEs for such eutrophication concerns. Nitrogen over-enrichment has been reported as a coastal problem for two decades, from the southeast coast of the US as described by Duda [60] 20 yr ago to the Baltic and other systems [61]. More recent estimates of nitrogen export to LMEs from linked freshwater basins are summarized in Fig. 4 as adapted from Jaworski [62]. These recent human-induced increases in nitrogen flux range from 4–8 times during the past 20 years in the US from the Gulf of Mexico to the New England coast [62] while no increase was documented in areas with little agricultural or population sources in Canada [63].

In European LMEs, recent nitrogen flux increases of from three fold in Spain to four fold in the Baltic and 11 fold in the Rhine basin draining to the North Sea LME have been recorded [63]. Duda and El-Ashry [64] described the origin of this disruption of the nitrogen cycle from the “Green Revolution” of the 1970s as the world community converted wetlands to agriculture, utilized more chemical inputs, and expanded irrigation to feed the world. As noted by Duda [60] for the Southeast estuaries of the US and Rabalais [65] for the Gulf of Mexico, much of the large increase in nitrogen export to LMEs is from agricultural inputs, both from the increased delivery of fertilizer nitrogen as wetlands were converted to agriculture and from concentrations of livestock as shown Duda and Finan [66] for eastern North Carolina, where the increase in nitrogen export over the forested situation ranged

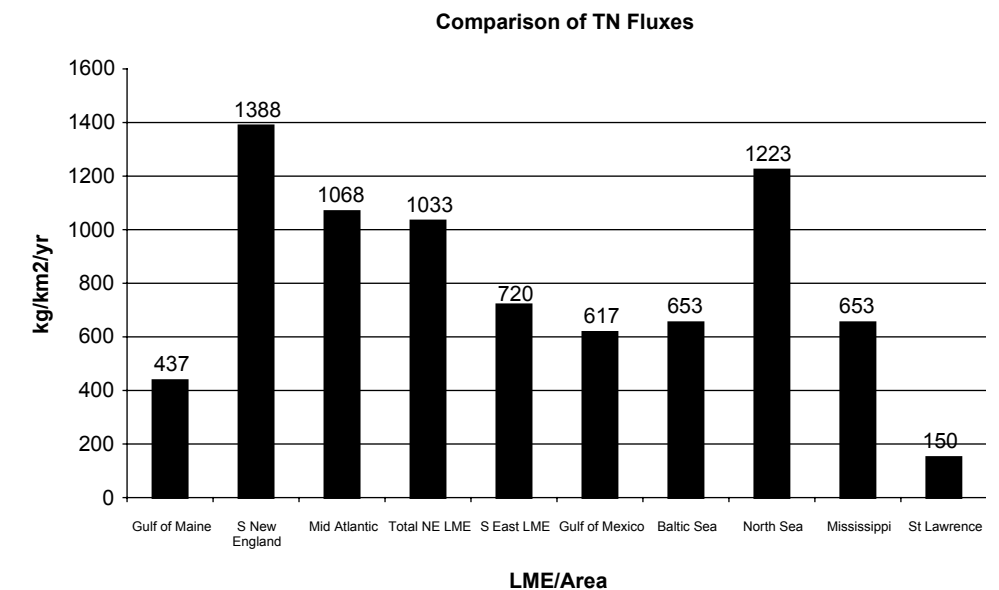


Fig. 4. Comparison of total nitrogen fluxes from select LME watersheds from Jaworski [62].

from 20–500 fold in the late 1970s. Industrialized livestock production the last two decades increases the flux, the eutrophication, and the oxygen depletion even more as reported by the NRC [67]. The latest GESAMP Assessment [2] also identified sewage as a significant contributor to the eutrophication in drainages from large cities and atmospheric deposition from automobiles/agricultural activities may also contribute depending on proximity to sources.

GEF is being asked more frequently by countries to help support the agreed upon incremental cost of actions that reduce such nitrogen flux. Actions range from assisting in development of joint institutions for ecosystem-based approaches for adaptive management described in this paper to on-the-ground implementation of nitrogen abatement measures in the agricultural, industrial, and municipal sectors and breaching of floodplain dikes so that wetlands recently converted to agriculture may be reconverted to promote nitrogen assimilation. The excessive levels of nitrogen contributing to coastal eutrophication constitute a new global environment problem that is transboundary in nature. Excessive nitrogen loadings have been identified as problems in the following LMEs that are receiving GEF assistance: Baltic Sea, Black Sea, Adriatic portion of the Mediterranean, Yellow Sea, South China Sea, Bay of Bengal, Gulf of Mexico, and Plata Maritime Front/Patagonia Shelf. In fact, preliminary global estimates of nitrogen export from freshwater basins to coastal waters were assembled by Seitzinger and Kroeze [68] as part of a contribution to better understanding LMEs. Included as Fig. 5 and adapted from Kroeze and Seitzinger [69], these preliminary estimates of global freshwater basin nitrogen export are alarming for the future sustainability of LMEs. Given the expected future increases in population and fertilizer use, LMEs may be, without significant N mitigation efforts, subjected to a future of increasing harmful algal bloom events, reduced fisheries, and hypoxia that further degrades marine biomass and biological diversity.

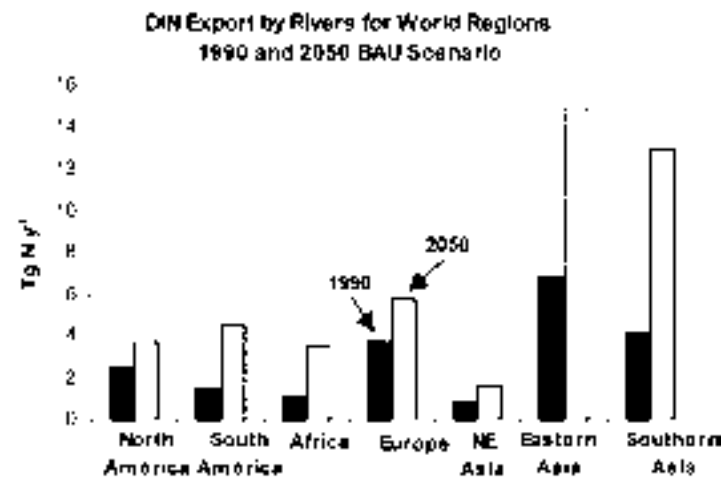


Fig. 5. Model-predicted nitrogen (dissolved inorganic N) export by rivers to coastal systems in 1990 and in 2050 (based on a business-as-usual [BAU] scenario). Figure modified from Kroeze and Seitzinger [69].

12. Sustaining momentum created in 126 countries

An increasing number of developed and developing countries, now totaling 126 around the world, are concerned enough with the degraded condition of their coastal and marine ecosystems to collaborate on GEF LME projects. Ministerial level commitments to ecosystem-based approaches for assessment and management may ultimately lead to establishing joint adaptive management regimes in support of the global objectives of Chapter 17 of Agenda 21, the Jakarta Mandate of the CBD, UNCLOS, the GPA, and the regional seas agreements countries have signed. It appears that an important corner has been turned by these countries toward a focused global effort to restore biomass and biological diversity to coastal oceans as concerned governments understand the poverty reduction and security enhancement that accompanies more sustainable management regimes. The GEF international waters focal area has played a catalytic role through its emphasis on joint management of LME, their coastal assets, and linked river basins in an integrated manner. Through tests of these approaches, countries are starting to establish practical, science-based management regimes that address in collective and ecosystem-oriented ways the themes and programs under existing Agenda 21 and other global instruments.

While many of the multi-country-driven LME initiatives supported with GEF grant funding have just started, and in others the national and regional reforms in progress will take a number of years to achieve, several lessons are becoming evident for the world community to consider in reversing the decline of its coastal oceans. A geographic approach, based on the LMEs of the world, their adjacent coastal areas and linked freshwater contributing basins (where appropriate), is likely to overcome the limits of more thematically directed activities to address global environmental problems (e.g. fisheries, sewage, sediment, contaminants). In this manner, the different stresses that are important to each specific area can be addressed jointly through processes that result in collective national actions in different economic sectors where needed. Processes such as the TDA and SAP foster multi-stakeholder dialogue, inter-ministerial dialogue, and a discourse with the science community in unraveling complex situations so they can be divided into priority components for more effective management than is now in general practice. Fragmented, thematic, single purpose agency programs are just not able to harness stakeholder involvement sufficiently to drive needed reforms compared to geographic-based initiatives.

The assessment and management cycle based on the five modules in the TDA and SAP processes, fosters an adaptive management approach through establishment of monitoring and evaluation indicators that are periodically measured by the nations and tracked over time for reporting to stakeholders and the GEF. GEF agencies have fostered participation of multiple levels of institutions (multi-country, national-interministerial, and local government/communities) for buy-in and adoption of reforms. The geographic nature of LME areas is conducive for harnessing stakeholder participation and gaining political commitments to change. Thematic programs which are not place-based cannot garner real commitments for change in economic sectors without mobilizing local stakeholders as driving forces for reforms

[70]. The national interministerial committee established in each country to operationalize reforms and programs is particularly important to achieve practical integration of needed actions in different economic sectors. However, GEF was designed to play a minor, catalytic role and new Partnerships are needed to sustain the momentum that has been created.

13. New partnerships for sustaining momentum

Now, at the beginning of this new century, a global common understanding is emerging in recognition of the accelerated degradation of the world's largest marine ecosystems and that the decline is not just a problem of developing nations but is also driven by over-consumption from developed nations. The \$50 billion annual trade in fisheries makes those nations a stakeholder in LMEs of the South in addition to their own LMEs. Indeed, rich countries now acknowledge the need to adopt many reforms as well, not only for their degraded marine waters but also to provide a safety net to conserve marine waters of developing nations that are exploited for global commerce. The \$15 billion in annual fishing subsidies represent a powerful driving force for depletion and reforms in those countries are just as essential as the reforms needed in developing nations. Many developed nations share LMEs with developing nations and the GEF has shown that they can work together for adopting an ecosystem-based approach for joint assessment and management purposes.

If the spiraling degradation of coastal and marine ecosystems is to be reversed so that these ecosystems continue to provide both livelihood benefits to coastal communities as well as foreign exchange for governments, drastic reforms are necessary. Competing global programs, competing interests of donors, competing priorities of international finance institutions also face an imperative to collaborate in harmony if the early momentum catalyzed through the GEF is to be sustained. Donor organization assistance and international agency support for the strategic, country-driven reforms being identified through LME projects need to be delivered in a coordinated and sequenced manner to build capacity of nascent institutions that must learn to implement difficult reforms. New geographic-based partnerships are necessary to ensure completion of the reform processes and the North is an essential member of those partnerships.

Perhaps most importantly, the GEF LME projects are demonstrating that holistic, ecosystem-based approaches to managing human activities in LMEs, their coasts, and their linked watersheds are critical, and provide a needed place-based area within which to focus on multiple benefits to be gained from multiple global instruments. Instead of establishing competing programs with inefficiencies and duplication, which is the norm now, the LME projects foster action on priority transboundary issues ACROSS instruments in an integrated manner—across UNCLOS, Chapter 17 of Agenda 21, the Jakarta Mandate of the CBD, the GPA and its pollution loading reductions, and in dealing with inevitable adaptation issues under UNFCCC. In fact, this ecosystem-based approach, centered around LMEs

and participative processes for countries to undertake for building political and stakeholder commitment and interministerial buy-in, can serve as the way ahead on reversing the degradation of marine ecosystems consistent with Chapter 17.

The adaptive management framework resulting from iterative application of the GEF Operational Strategy allows for sequential capacity building, technology introduction, and investments to an ecosystem-based group of nations by the world community so that this collective response to global conventions and other instruments can be achieved in a practical manner. However, if international finance institutions, bilateral donors, and agencies cannot work collaboratively in partnership with their client countries that have identified their needs for reforms and investments, continued fragmentation and duplication will serve as a barrier to reversing the accelerated depletion of coastal and marine ecosystems. The five modules, including the results of joint surveys across the LMEs for transparency of information, capacity building and technology transfer, ensure that management institutions are engaged with the science community in joint efforts developed in conjunction with stakeholders. In this way, ecological surprises of the future such as those generated by fluctuating climate may be able to be handled by the joint institutions and may have a chance to insulate the poor communities that are the first to suffer adverse effects of inadequate management efforts.

This growing number of country-driven commitments to change as fostered by the GEF and the global imperative to change because of the degraded condition of the global coastal oceans provides an unprecedented opportunity for accelerating the transition to the sustainable use, the conservation, and the development of coastal and marine ecosystems. The social, economic, and environmental costs of inaction are just much too high for multilateral and bilateral institutions and international agencies not to support the fledgling efforts of 126 countries trying to implement Chapter 17 of Agenda 21 by focusing on specific, shared LMEs. A new partnership on ecosystem-based approaches to assessment and joint management of LMEs and linked watersheds is urgently needed to restore biomass and diversity. This is needed to broaden and deepen reforms and investments triggered by initial GEF catalytic action LME by LME and to involve both developed and developing nations that have a stake in each particular LME and linked watershed. Momentum must not be lost. The result may be irreversible damage to coastal and marine ecosystems, the livelihoods and security of poor communities depending on them, and the economy of many coastal nations.

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Effective Dispute Resolution

A Review of Options
For
Dispute Resolution Mechanisms and Procedures

Prepared for the fifth session of the
Multilateral High-Level Conference on the Conservation and Management
of Highly Migratory Fish Stocks
in the Western and Central Pacific

Prepared by the
Center for International Environmental Law
for the

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I. Introduction

Negotiators discussing the Draft Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Central and Western Pacific Region (Draft Pacific Convention) recognize the urgent need for cooperative action to achieve conservation and sustainable management of the highly migratory fish species in the region. Successful negotiation of a strong new Convention is vitally important. Yet as a recent treatise on international environmental law noted, “[i]t is not sufficient simply to develop new law. The law must be translated into action and it must lead to real improvements in environmental quality; it must be effective.”¹

To be effective, the new Convention must embody rules and norms whose implementation will ensure the achievement of conservation and sustainable use through effective management. It must provide for procedures and principles through which participants can elaborate and modify more detailed conservation measures in response to changing conditions. Equally important, it must provide for mechanisms to ensure implementation of its provisions and compliance with agreed-upon measures.

International agreements for conservation and environmental protection typically include both active measures to support compliance, and responsive measures to remedy cases of non-compliance. Positive measures include provisions for financial assistance to developing countries, including small island states, technology transfer, national reporting, cooperative research and monitoring, and centralized committees and secretariats that assemble and analyze compliance information.² Measures to respond to non-compliance include provisions for reporting and investigation of non-compliance, formulation of collective enforcement responses to non-compliance cases, and — the subject of this paper — resolution of disputes about non-compliance.³

In designing dispute resolution mechanisms and procedures, negotiators do not have to start with a blank slate. They will be guided by the goals of the negotiation, as well as the substantive principles of the 1982 United Nations Convention on the Law of the Sea (UNCLOS)⁴ and the 1994 United Nations Agreement on Highly Migratory and Straddling Fish Stocks (SSA).⁵ Equally important, they will be working within the flexible procedural framework for dispute resolution established by the UNCLOS and the SSA. The new Pacific Convention represents the first opportunity to apply the UNCLOS framework as elaborated and enriched by the SSA. Finally, they can draw on lessons learned from the experience with international dispute settlement, not only in the area of high seas fisheries but in other areas of international law.

This paper summarizes these sources of guidance. Part II of this paper reviews key features of the context for selection of dispute resolution procedures. Part II.A discusses the substantive background principles for dispute resolution established in the UNCLOS and the

¹ David Hunter, James Salzman and Durwood Zaelke, *INTERNATIONAL ENVIRONMENTAL LAW AND POLICY* 444 (New York: Foundation Press 1999).

² See Hunter, et al., *supra* note 1, at 471-78.

³ See *id.* at 478-99.

⁴ See United Nations Convention on the Law of the Sea, Dec. 10, 1982, U.N. Doc.A/Conf.62/122, *reprinted in* 21 I.L.M. 1261 (1982) (entered into force Nov. 16, 1994) [hereinafter UNCLOS].

⁵ See Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to Straddling Fish Stocks and Highly Migratory Fish Stocks, *opened for signature*, Dec. 4, 1995, U.N. Doc. A/Conf.164/37, *reprinted in* 34 I.L.M. 1542 (1995) [hereinafter SSA].

SSA, and incorporated by reference into the Draft Pacific Convention.⁶ Part II.B discusses the types of disputes that might arise under a future Pacific Convention. Part II.C reviews the values and criteria to which negotiators might refer in designing procedures to resolve those disputes, such as efficiency, a strong scientific basis, consistency with policies favoring information sharing and collective responsibility, precautionary and adaptive management, and authoritative legal interpretations.

Part III details the institutional and procedural framework for dispute resolution established in the UNCLOS and SSA as applicable to regional fisheries arrangements such as the one currently being negotiated. It reviews the International Court of Justice (ICJ), International Tribunal on the Law of the Sea (ITLOS), arbitration, and institutions and procedures provided for the Draft Pacific Convention.

As this discussion demonstrates, while the UNCLOS/SSA framework defines parameters for dispute settlement procedures under the Pacific Convention, that framework affords negotiators significant flexibility to design procedures under the new Convention, both to fit the situation in the region and to reflect lessons from experience in other contexts.

Part IV reviews highlights of actual experience with international dispute resolution mechanisms, both within the context of high seas fisheries and farther afield in international law, including active dispute resolution and compliance mechanisms used under the World Trade Organization (WTO), the International Labor Organization (ILO), the Montreal Protocol, the European Courts of Justice and of Human Rights, the World Bank, and the Commission on Environmental Cooperation (CEC) established under the North American Agreement on Environmental Cooperation (NAAEC). This Part also considers innovative models found under the International Finance Corporation (IFC) and the Nordic Convention.

Part V provides conclusions and recommendations. Based on the lessons learned in Part IV, it identifies options for enhancing efficiency, transparency, precautionary and adaptive management and collective responsibility, within the flexible framework of the UNCLOS and SSA.

II. The Context for Resolution of Disputes in Western and Central Pacific Fisheries

The significant progress achieved by the UNCLOS and the SSA in elaborating shared goals, cooperative institutions, and agreed-upon principles and rules has implications for the design of dispute resolution procedures in the new Pacific Convention (Part II.A). In spite of this common ground, however, several types of disputes could arise (Part II.B). The selection and design of mechanisms to resolve such disputes will be guided by certain shared criteria and values, including the desires for efficiency, transparency, timeliness, precaution, adaptive management, and collective responsibility to implement decisions based in science (III.C).

A. Background Principles for Resolving Disputes

At the outset, it is important to emphasize that participants in the regional arrangement resulting from the present negotiation will be united by their commitment to important shared principles. As reflected in the Draft Pacific Convention, all nations participating in the arrangement will acknowledge the shared interest in ensuring, “through effective management,

the long-term conservation and sustainable use of highly migratory fish stocks in the western and central Pacific Ocean in accordance with the UNCLOS and the SSA.”⁷

The Draft Pacific Convention’s provisions will elaborate and build upon the principles, rights and obligations relating to conservation and management of migratory and straddling stocks found in the UNCLOS and the SSA.⁸ The UNCLOS obligates States to cooperate on the conservation and management of straddling and highly migratory fish stocks.⁹ The SSA further requires all States fishing a given stock to cooperate with other interested States through a regional arrangement in which they provide for measures to conserve and manage target stocks sustainably, protect dependent and associated species, apply the precautionary approach, and cooperate on enforcement.¹⁰

With the continuing elaboration of the principles of the law of the sea — as reflected in the successive agreements of the UNCLOS, the SSA and now the treaty under negotiation — disputes arise in a context where the disputants have more and more common ground. Disputes should increasingly be avoidable through resort to this increasingly sophisticated body of rules and set of effective institutions for applying those rules in a cooperative fashion. In the narrowing spectrum of issues where these rules and institutions do not achieve satisfactory results, States are obligated to achieve peaceful resolution of disputes through the standard mechanisms of negotiation, inquiry, mediation, etc., and where those fail, resort to legally binding dispute settlement.¹¹

B. Values and Criteria Relevant to Design of Dispute Resolution Procedures

Related to, but distinct from, the legal principles outlined in Part II.A above, there are also a number of values and criteria relevant to the selection and design of dispute resolution procedures. Although the parties may anticipate viewing their interests in any particular case as opposed,¹² important shared values and interests should bring them together to develop and then

⁷ *Id.* art. 2.

⁸ *See id.* art. 4 (providing that “[t]his Convention shall be interpreted and applied in the context of and in a manner consistent with the [UNCLOS] and the [SSA]”).

⁹ The UNCLOS, termed a “new constitution for the oceans” when adopted in 1982, includes extensive coverage of marine living resources. One hundred and thirty-two States have acceded to or ratified the UNCLOS and in most respects it is recognized as customary law of the sea. Under Articles 63, 64, and 117-119, States are obligated to cooperate to conserve straddling stocks, highly migratory stocks, and marine living resources on the high seas.

¹⁰ The SSA was adopted by the UN General Assembly in 1995. It has been signed by 59 States and ratified by 23. *See* Current Status of the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea, *available at* URL: <http://www.un.org/Depts/los/STAT_164.txt>. It will enter into force after 30 States have ratified it. The SSA establishes principles for managing and conserving straddling and highly migratory stocks, intended to elaborate upon and define in detail the general requirement of cooperation found in the UNCLOS. Under the SSA, Parties shall cooperate through regional and sub-regional arrangements to establish and enforce measures for conservation and management of the stocks as well as protection of associated and dependent species, according to the precautionary approach. All Parties whose vessels fish in the region must comply with agreed-upon measures. Indeed, compliance with these measures is a condition of access to the relevant stocks. Participants in a regional arrangement are authorized to take action consistent with international law to deter activities by non-Parties to the arrangement as well as Parties that are inconsistent with the arrangement’s conservation restrictions.

¹¹ *See* SSA, *supra* note 5, at art. 27; UNCLOS, *supra* note 4, at arts.279-81; The Charter of the United Nations, art. 33, June 26, 1945, 59 Stat. 1031 (1945) (entered into force Oct. 24, 1945).

¹² For instance, they may perceive that the allocation of competing fishing quotas is a zero-sum game; Coastal States and distant water fishing (DWF) States may perceive their interests as in conflict.

⁶ *See* Draft Pacific Convention, art. 32, WP.1/Rev.2, prepared by the Chairman, 19 February 1999.

employ a dispute settlement procedure that maximizes their abilities to continue to work cooperatively and adaptively in the precautionary management of fish stocks.

Naturally all the parties have a common interest in the long term maintenance of the stocks in question. By the same token, all parties have an interest in preventing some participants from functioning as “free riders” that create a “tragedy of the commons” problem.

Dispute settlement procedures should operate efficiently (minimizing the duration and expense of proceedings). Indeed, the SSA specifically calls for decision-making procedures that facilitate adoption of conservation measures “in a timely and effective manner.”¹³ In addition, dispute resolution mechanisms should produce reasonably predictable outcomes and provide Parties some assurance that similar disputes result in similar outcomes.¹⁴ At the same time, it should maintain some flexibility in its procedures to respond effectively to different types of situations.

Dispute resolution procedures and mechanisms must ensure the collection and sharing of the best possible scientific evidence, consistent with the SSA’s principle that measures to ensure sustainability of stocks are based on the best scientific evidence available.¹⁵ At the same time, the procedure must reflect the SSA’s endorsement of the precautionary approach, such that “[t]he absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures.”¹⁶

Another set of values relate to fairness and due process. Dispute resolution mechanisms and procedures should be fair, equitable, impartial, and should achieve results based on sound legal reasoning and a solid base in fact. Its procedures should provide for the selection of competent and impartial decision-makers. There should be clarity regarding procedures for submission of evidence and argument, standards of proof, appeal, review and adoption of decisions, transparency and reporting, and rights of third party intervenors.

The equitable principle of shared but differentiated responsibility, now prevalent in international environmental law, mandates the provision of assistance to support participation by developing countries — and in the present context, small island states in particular. Indeed, the SSA explicitly requires States to cooperate to “enhance the ability of developing States, in particular the least-developed among them and small island developing States, to conserve and manage” straddling and highly migratory stocks.¹⁷ States shall “facilitate the participation of developing States in subregional and regional fisheries management organizations and arrangements.”¹⁸ This assistance shall include provision of financial assistance, technical assistance, and advisory and consultative services, and shall be directed toward compliance and enforcement.¹⁹ It is evident that these provisions support inclusion of provisions in the Draft Pacific Convention for assistance to developing and small island states to help them participate in whatever dispute resolution procedures are established under the Pacific Convention.

¹³ SSA, *supra* note 5, at art. 10(j).

¹⁴ Alan E. Boyle, *Dispute Settlement and the Law of the Sea Convention: Problems of Fragmentation and Jurisdiction*, 46 INT’L COMP. L.Q. 37, 40 (1997).

¹⁵ See SSA, *supra* note 5, at art. 5(b).

¹⁶ *Id.* art. 6(2).

¹⁷ *Id.* art. 25(1)(a).

¹⁸ *Id.* art. 25(1)(c).

¹⁹ See *id.* arts. 25(1), (2).

Effective remedies and enforcement are important in building the confidence of participants in a dispute settlement procedure. In recent decades, there has been a trend in a number of international institutions toward increasing transparency of procedures, aimed at enhancing the legal and factual basis of decisions and building the confidence of the public and of States not participating in a specific dispute in the overall process and its legitimacy. In contrast, where institutions have failed to make their decision-making procedures more transparent and open to public input, they have come under increasingly severe public criticism.

A central issue is whether the procedure is accepted as legitimate. As one commentator has observed, a State will:

submit a dispute to a third-party procedure entailing binding judgements ... only when [it] has full confidence in the ability of the pre-constituted international court in question, to discharge its responsibility fairly and squarely. Accordingly, confidence (or lack thereof) in a particular pre-constituted court is an important ingredient that governs the acceptability of such an institution.²⁰

Factors that enhance perceived legitimacy include the extent to which the features of a dispute settlement procedure are based on laws which already bind participants, on precedent, and on the lessons of experience with past successes and failures. These factors are discussed in subsequent Parts of this paper.

C. Types of Disputes That Might Arise

There are at least four types of disputes that might arise under a future Pacific Convention. The first three involve disputes about whether one or more States are complying with the requirements of the Convention. Distinctive issues are raised where the State in question is a coastal State applying compatible measures, or where the State in question is a non-Party to the Convention and a non-participant in its arrangements. A final category of possible disputes involves cases where a State questions the validity of a decision made by the Commission under the Convention. These different categories of disputes may involve the resolution of different types of substantive questions.

Complaints About Compliance. It is possible that a Party, a group of Parties or the Commission, might bring a complaint against another Party regarding the compliance of that Party’s regulations or vessels with the RFMO’s provisions, or with measures adopted by the Commission. In principle such disputes revolve around the resolution of scientific and technical issues, although a legal component might also arise to the extent it is necessary to interpret the meaning of terms of the Pacific Convention, the UNCLOS, the SSA, or measures adopted under the Convention.

Complaints About Compliance: Compatible Measures. Distinctive issues would arise where a concern about compliance was raised regarding whether a coastal State’s conservation and management measures within its own Exclusive Economic Zone (EEZ) are compatible with measures taken under the Pacific Convention. This is because the UNCLOS and SSA provisions on compulsory binding third party dispute settlement are different for such measures in light of the sovereign power of Coastal States within their own EEZs. In principle

²⁰ See Andronico O. Adede, *Avoidance, Prevention and Settlement of International Environmental Disputes*, in UNEP’S NEW WAY FORWARD: ENVIRONMENTAL LAW AND SUSTAINABLE DEVELOPMENT 64-65 (Sun Lin ed., 1995).

such disputes revolve around the resolution of scientific and technical issues, with a possible legal component possible as noted above.

Complaints About Compliance: Non-Parties. Distinctive issues also would arise if a complaint were raised concerning whether a non-Party to the Pacific Convention or its vessels were complying with provisions of the Convention or measures adopted by the Commission. Under international law, a non-Party to the Convention would be bound by customary international law (such as the provisions of the UNCLOS, most of which are universally recognized as such), but a State is not bound by the terms of an agreement to which it is not a Party. On the other hand, a Party to the SSA is bound to take cooperative measures to address non-Party non-compliance, and indeed under the SSA are obligated to take measures consistent with international law to deter activities of non-Parties' vessels that undermine the effectiveness of the Convention's measures.²¹ Decisions in this category, like those in the preceding two categories, would revolve around scientific and technical issues, but would very likely involve a legal component as well.

Complaints About Collective Decisions. A final category of dispute that might arise involves a challenge by one or more Parties to a decision or other action taken by the Commission or another organ established by the Convention. Challenged decisions might involve the establishment of the total allowable catch or other conservation measures — raising scientific and technical issues — or on the other hand the allocation of quotas among the fishing States — raising legal and political issues.

III. The Existing Framework for Resolution of Disputes Over Pacific Fish Stocks

As discussed in Part II.A, above, the Pacific Convention — including its provisions on dispute resolution — is taking shape within the framework established by the UNCLOS and the SSA. The UNCLOS includes elaborate provisions for the resolution of disputes concerning the interpretation or application of its terms.²² The SSA adopts the dispute resolution provisions of the UNCLOS, *mutatis mutandis* — that is, with changes as needed to adapt them to the new context.²³ Similarly, the Draft Pacific Convention provides that the dispute resolution provisions of the SSA “apply *mutatis mutandis* to any dispute between Contracting Parties concerning the interpretation and application of this Convention, whether or not they are also Parties to the [SSA].”²⁴

A. The Framework for Dispute Resolution under UNCLOS and SSA

The framework for dispute resolution under the SSA and the Draft Pacific Convention is defined by reference to the UNCLOS. The SSA incorporates the UNCLOS framework by reference with some relatively minor variations. The UNCLOS provides for exceptional treatment of disputes about a coastal State's management within its own EEZ, and the SSA similarly provides special treatment for “compatible measures” taken by a coastal State within its EEZ.

The UNCLOS. Part XV of the UNCLOS requires State Parties to the Convention to settle disputes concerning its interpretation or application peacefully in accordance with the

Charter of the United Nations.²⁵ Such means can include any means chosen by disputing State Parties, or optional conciliation.²⁶ Where, however, no settlement can be reached, Article 286 of the Convention stipulates that the dispute be submitted at the request of any party to the dispute to one of four mechanisms defined in Article 287:

- (a) The International Tribunal for the Law of the Sea (established in accordance with Annex VI of the Convention) including the Seabed Disputes Chamber;
- (b) The International Court of Justice;
- (c) A (general) arbitral tribunal constituted in accordance with Annex VII of the Convention;
- (d) A special arbitral tribunal constituted in accordance with Annex VIII for one or more of the categories of disputes specified therein (the categories include matters concerning fisheries).

When a State ratifies or accedes to the UNCLOS, it may select one or more of these mechanisms to which disputes in which it is involved shall be submitted.²⁷ If a State does not select a mechanism, then the default is general arbitration. If two States resort to binding dispute resolution, and they have chosen different mechanisms, then the applicable mechanism shall be arbitration in accordance with Annex VII, unless they agree otherwise.²⁸

Regardless of which mechanism a State selects, the UNCLOS vests the ITLOS with jurisdiction to determine what, if any, provisional measures may be taken to address a complaint that the State has violated the UNCLOS's obligations prior to the creation of an arbitral panel or at any time prior to the successful settlement of the dispute, if parties cannot themselves agree on an appropriate court or tribunal to make such prescriptions.²⁹ The SSA incorporates these provisions, too, by reference, *mutatis mutandis*, except that when a State acceding to or ratifying the SSA is not a Party to the UNCLOS, it may opt out of this clause upon ratification.³⁰

Dispute Resolution Under the SSA. The SSA incorporates, *mutatis mutandis*, Part XV of the UNCLOS for disputes among parties to the SSA concerning its interpretation or application, or concerning the interpretation or application of a subregional or regional fisheries agreement relating to straddling or highly migratory stocks.³¹ When a State ratifies or accedes to the SSA, it is bound by its choice of forum when it ratified the UNCLOS, if it is a party to the UNCLOS, unless it specifies a different choice when it ratifies the SSA. Non-Parties to the UNCLOS that ratify the SSA may select from the mechanisms specified in Article 287 of the UNCLOS, and may also participate in the procedures specified in Annexes V, VII and VIII of the UNCLOS (such as the nomination of experts and arbitrators) for the purposes of resolving disputes under the SSA.³²

²⁵ See UNCLOS, *supra* note 4, at art. 279 (consistent with UN Charter art. 2(3) and art. 33(1)).

²⁶ See *id.* at Annex V.

²⁷ See *id.* art. 287(1). As of the end of 1998, the ICJ had been accepted by the following UNCLOS Parties: Austria, Cape Verde, Finland, Germany, Italy, Netherlands, Norway, Oman, Portugal, Spain, Sweden and the UK. The ITLOS had been accepted by Argentina, Austria, Cape Verde, Chile, Finland, Germany, Greece, Italy, Oman, Portugal, Tanzania and Uruguay. Note that Cape Verde has accepted both.

²⁸ See *id.* art. 287(5).

²⁹ See *id.* art. 290.5.

³⁰ See *infra* note 38 and accompanying text.

³¹ See SSA, *supra* note 5, at art. 30. See also Francisco Orrego Vicuña, THE CHANGING INTERNATIONAL LAW OF HIGH SEAS FISHERIES 274 (1999).

³² See SSA, *supra* note 5, at art. 31(4).

²¹ See SSA, *supra* note 5, at art. 17(4).

²² See UNCLOS, *supra* note 4, at arts. 279-99.

²³ See SSA, *supra* note 5, at art. 30.

²⁴ Draft Pacific Convention, *supra* note 6, at art. 32.

The SSA also establishes an extra step following mediation, conciliation, etc., and prior to binding dispute settlement, by which States may refer a dispute to “an ad hoc expert panel established by them” when it “concerns a matter of a technical nature.”³³

Compatible Measures. The SSA explicitly requires coastal States and distant water fishing States to “cooperate for the purpose of achieving compatible measures” for the high seas and areas under national jurisdiction.³⁴ The SSA provides that if they fail to agree within a reasonable time, a party may submit the issue for dispute settlement, and may seek provisional measures pending final resolution, in accordance with Part VIII of the SSA.³⁵ Part VIII incorporates *mutatis mutandis* part XV of the UNCLOS, which provides for special treatment of disputes regarding measures within the EEZ. Compulsory dispute resolution is not available with respect to coastal States’ exercise of their rights and obligations regarding marine living resources in the EEZ, including determinations regarding “the allowable catch, its harvesting capacity, the allocation of surpluses to other States, and the terms and conditions established in its conservation and management laws and obligations.”³⁶ Instead, compulsory conciliation — which does not produce a legally binding result — is available for disputes about compatible measures where there is evidence that the coastal state has “manifestly” and “arbitrarily” failed to meet its obligations with regard to compatible measures.³⁷ Left unclear (under UNCLOS) is how such threshold determinations are to be made, and by what processes and institutions. Also less than clear is the relationship between the language on dispute settlement and provisional measures relating to compatible measures in Article 7 of the SSA, dispute settlement under Part VIII of the SSA, and dispute settlement under part XV of the UNCLOS, particularly as these clauses relate to coastal States’ rights and obligations within the EEZ.³⁸

Considerations for a New Regional Agreement. Standing alone, the UNCLOS framework is not without its limitations. The wide range of permissible forums for addressing dispute was necessary to secure States’ consent to binding dispute resolution in a “package deal” covering a broad range of issues arising under the UNCLOS, including, inter alia, seabed mining, navigation, maritime boundaries and fishing. A more specifically defined approach may be appropriate in the context of a specific regional fisheries management organization (RFMO).³⁹

The UNCLOS framework also reflects the traditional vision of one State’s claims that another State has breached its obligation to the first State, or violated the rights of the first State, under general principles of international law.⁴⁰ Arguably, the relevance of this paradigm decreases in proportion to the state of development of agreed-upon norms and the progressive development of cooperative institutions and procedures in a field of law.

³³ *Id.* art. 29.

³⁴ *Id.* art. 7(2).

³⁵ *See id.* art. 7(3).

³⁶ UNCLOS, *supra* note 4, at art. 297(3)(a); *see also* SSA, *supra* note 5, at art. 32. An exception to this exception arises when a State detains a ship flying the flag of another State and fails to release the vessel or its crew promptly. In such a case the ITLOS has jurisdiction to hear an application for release from the flag State, regardless of whether the detaining State has accepted the ITLOS’s compulsory jurisdiction. *See* UNCLOS, *supra* note 4, at art. 292.

³⁷ *See* UNCLOS, *supra* note 4, at art. 297(3)(b).

³⁸ For a detailed discussion of such issues, including treatment of dispute settlement procedure for provisional measures as to coastal states’ EEZs, see Orrego Vicuna, *supra* note 31, at 281-82.

³⁹ In addition, jurisdictional issues relating to different treatment of high seas and coastal states’ Exclusive Economic Zones (EEZs), and the source of authority for prescribing provisional measures pending the conclusion of dispute resolution proceedings remain to be fully addressed. *See* section III.A., below.

⁴⁰ *See* Martti Koskenniemi, *New Institutions and Procedures for Implementation Control and Reaction, in* GREENING INTERNATIONAL INSTITUTIONS 236, 237 (Jacob Werksman ed., 1996).

Similarly, it has been observed that the bilateral paradigm may not be well suited “for interpretation and application of a multilateral treaty.”⁴¹ In that context, the controversy typically concerns “the requirements and functioning of the regime, rather than whether one party has wronged the other and is obligated to make reparations.”⁴² With “many parties and a complex interacting set of issues, the bilateral, adversarial model” may not be the most useful model.⁴³ While the Parties will need a forum of last resort, they may wish to create other less adversarial mechanisms to avoid or defuse disagreements and concerns.

Where a controversy concerns the definition and validity of a norm itself, an adversarial process may be necessary. But in the current context, there is widespread agreement on an increasingly detailed set of principles and rules for managing a shared resource in which all parties have common interests. Thus, where controversy likely will concern the application rather than the definition of a norm, the bilateral adversarial approach may be less useful, at least in the first instance. Instead, dispute resolution, like treaty implementation, “becomes a technical problem, to be dealt with through advice and assistance, rather than a normative problem, raising disputes about blameworthiness and sanction.”⁴⁴ Fortunately, the UNCLOS framework provides the flexibility needed to design mechanisms and procedures that fit these conditions.

B. Institutional Mechanisms for Dispute Resolution

The UNCLOS allows its Parties to select from among four procedural mechanisms for binding dispute resolution. This provision is incorporated by reference into the SSA and the Draft Pacific Convention. Two of these mechanisms, the ICJ and the ITLOS, involve resort to established international institutions. In addition, the Draft Pacific Convention proposes a special mechanism for a dissenting Party to challenge a Commission decision on certain specific grounds. The Draft Pacific Convention also proposes formation of regional institutions in the form of a Technical and Compliance Committee and a Secretariat, both of which could logically have supportive roles in dispute resolution.

The International Court of Justice (ICJ). Cases may be brought before the ICJ by special agreement as well as through prior acceptance of the compulsory jurisdiction of the ICJ. The ICJ issues opinions on contentious cases between States, and issues advisory opinions when requested by the General Assembly or authorized organs of the United Nations. Only States may be parties in cases before the Court.⁴⁵ The Court may request that public international organizations provide information relevant to cases before it, and shall receive such information presented by such organizations on their own initiative.⁴⁶ The Court may ask the parties to the dispute to produce additional evidence or explanations, and “may itself seek other information” needed “for the elucidation of any aspect of the matters in issue.”⁴⁷ The Court may arrange for

⁴¹ Abram Chayes & Antonia Handler Chayes, *THE NEW SOVEREIGNTY, COMPLIANCE WITH INTERNATIONAL REGULATORY AGREEMENTS* 206 (Harvard Univ. Press 1995).

⁴² *Id.*

⁴³ *Id.*

⁴⁴ *See* Koskenniemi, *supra* note 40, at 247.

⁴⁵ *See* Statute for the International Court of Justice, art. 34 (1945) [hereinafter ICJ Statute].

⁴⁶ ICJ, Rules of Court, art. 69, adopted April 14, 1978, available at <<http://www.icj-cij.org/Basicdoc/Basetext/irulesofcourt.html>>.

⁴⁷ ICJ, Rules of Court, *supra* note 46, at art. 62.

testimony by witnesses and experts, or obtain evidence at a place relating to the case.⁴⁸ Other States may intervene in a case according to Article 62 of the ICJ Statute.⁴⁹

The Court applies international law, including the law of conventions — such as the UNCLOS, SSA and regional fisheries agreements; international custom, as evidence of a general practice accepted as law; the general principles of law recognized by civilized nations subject to the provisions of Article 59, and judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.⁵⁰

The International Tribunal for the Law of the Sea (ITLOS). The International Tribunal for the Law of the Sea (ITLOS) is a standing body of 21 independent jurists nominated by the State Parties to the UNCLOS.⁵¹ ITLOS hears all disputes and all applications submitted to it in accordance with the UNCLOS and all matters specifically provided for in any other agreement that confers jurisdiction on it, such as the SSA. Decisions of ITLOS are final and are to be complied with by all the parties to the dispute. However, decisions will not have a binding force except between dispute parties in connection with the matter immediately at issue.

For the most part, ITLOS has jurisdiction over a case only where both parties to the dispute have accepted its compulsory jurisdiction under the UNCLOS or the SSA. In certain situations, however, ITLOS has jurisdiction even over disputes involving a Party that has not explicitly consented to its jurisdiction. First, where Parties to the SSA or the UNCLOS are in a dispute under any mechanism, a disputant may appeal to the ITLOS to establish provisional measures to address the matter under dispute pending its resolution.⁵² Second, under the UNCLOS, where the authorities of a State has detained a vessel flying the flag of another State, the second State may bring a complaint to the ITLOS that the detaining State has not complied with the provisions of the UNCLOS for the prompt release of the vessel or its crew (as required upon the posting of a reasonable bond or other financial security), failing agreement between the Parties within ten days from the time of detention.⁵³

States Parties to the UNCLOS and the SSA have access to the ITLOS, as well as entities other than States in any case submitted pursuant to any other agreement conferring such jurisdiction on the Tribunal.⁵⁴ ITLOS may accept submissions from State Parties not directly involved in a dispute where it finds such States have legal interests in the outcome of the dispute.⁵⁵ As with the ICJ, the ITLOS may seek information “necessary for the elucidation of any aspect of the matters in issue,” may arrange for testimony by a witness or expert, may obtain evidence at a place relating to the case, may appoint a person to make an inquiry, and may

request a public international organization to provide information relevant to the case.⁵⁶ A public international organization may also submit relevant information on its own initiative.⁵⁷

Unless the President of ITLOS decides otherwise, or disputing parties insist, all hearings of the Tribunal are to be open to the public.⁵⁸ Similarly, documents submitted to the Tribunal are public unless the Tribunal decides otherwise, and the Tribunal will publish a record of public proceedings.⁵⁹

General Arbitration. Part XV of the UNCLOS on binding dispute resolution provides for two alternative forms of arbitration. The first is governed by Annex VII. Annex VII provides for the convening of arbitral panels of five members, preferably chosen from a list nominated by State Parties to the UNCLOS and maintained by the Secretary-General of the United Nations. Each disputant selects one arbitrator, and the parties must agree on the remaining three.⁶⁰ While Annex VII arbitrators set their own procedural rules (unless the parties otherwise agree and so direct), the Annex does direct States Parties to disclose all relevant information and acquiesce to the panel’s independent fact-finding through calling experts, other witnesses, and arranging site visits.⁶¹ Annex VII arbitration is binding upon the parties, with appeal of rulings only when parties agree in advance to allow it.⁶² Once constituted, an Annex VII panel can conclude its work and rule even where one party fails to appear or defend itself.⁶³

Special Arbitration. Special arbitration is governed by Annex VIII. This mechanism provides for resort to specialized expertise in resolving disputes that may arise in the contexts of fisheries, marine environmental protection, marine scientific research and navigation (including dumping issues).⁶⁴ States may nominate experts to separate lists for arbitral panels for the various specific issues. A list of experts on fisheries is maintained by the UN Food and Agriculture Organization (FAO).

One significant difference from Annex VII arbitration is that each party unilaterally chooses two, not one, panelist.⁶⁵ Another is that the Secretary-General of the United Nations, not the President of the ITLOS, steps in to appoint panelists when the parties fail to make nominations or agree on the selection of a panel President.⁶⁶

Beyond the selection of panelists, Annex VIII arbitration incorporates most of the features of Annex VII arbitration,⁶⁷ including the binding nature and finality of the decision. It

⁵⁶ *Id.* arts. 62, 66, 67, 69.

⁵⁷ *See id.* art. 69(2).

⁵⁸ *See* ITLOS, art. 26(2) of Annex VI of THE UNCLOS, *supra* note 4, at Annex VI.

⁵⁹ *See* ITLOS, *Rules of the Tribunal*, *supra* note 55, at arts. 67, 71(6). Indeed, the ITLOS has already posted on the Web transcripts of its August 1999 hearing on the request for provisional measures brought by Australia and New Zealand regarding Japan’s fishing for Southern blue fin tuna. *See* URL: <http://www.un.org/Depts/los/ITLOS/ITLOSproc.htm#Tuna_Cases>.

⁶⁰ Where the Parties fail to agree, then the ITLOS makes the appointments.

⁶¹ *See* UNCLOS, *supra* note 4, at Annex VII, art. 6.

⁶² *See id.* art. 6.

⁶³ *See id.* art. 9.

⁶⁴ *See id.* at Annex VIII, art. 1.

⁶⁵ *See id.* arts. 3(b),(c).

⁶⁶ *See id.* art. 3(e).

⁶⁷ *See id.* art. 4 (“Annex VII, article 4 to 13 [Functions of Arbitral Tribunal, Procedure, Duties of Parties to a Dispute, Expenses, Required Majority for Decisions, Default of Appearance, Award, Finality of Award, Interpretation or implementation of Award, Application to Entities other than States Parties], apply mutatis mutandis to the special arbitration proceedings in accordance with this Annex.”).

⁴⁸ *See id.* arts. 62, 66, 67.

⁴⁹ If a State believes that it has “an interest of legal nature which may be affected by the decision in the case, it may submit a request to the Court to be permitted to intervene.” ICJ Statute, *supra* note 45, at art. 62.

⁵⁰ *See* ICJ Statute, *supra* note 45, at art. 38.

⁵¹ *See* UNCLOS, *supra* note 4, at Annex VI, Statute of the International Tribunal for the Law of the Sea [hereinafter ITLOS].

⁵² UNCLOS, *supra* note 4, at art. 290(5).

⁵³ *Id.* at art. 292.

⁵⁴ *See* ITLOS, art. 20 of Annex VI of UNCLOS, *supra* note 4, at Annex VI.

⁵⁵ *See* ITLOS, *Rules of the Tribunal*, art. 31, Doc. No. ITLOS/8, available at <http://www.un.org/Depts/los/rules_e.htm>.

does, however, provide a unique option with regard to fact finding, in which the Parties may agree to use the special tribunal to carry out a fact-finding inquiry; the fact finding is deemed conclusive unless the parties elect to treat the tribunal's findings as merely recommendations on which the parties can conduct further review of the issues between them.⁶⁸

Other Mechanisms. In addition to these four mechanisms, the Draft Pacific Convention discusses several other mechanisms relevant to dispute resolution, including an appeal process for Commission decisions, a Secretariat, a Technical and Compliance Committee, and the Commission itself.

First, it provides that a State that voted against a Commission decision or that was absent during a vote can bring a complaint that the decision is inconsistent with the UNCLOS, the SSA, or the Convention, or result in unjustifiable discrimination against such dissenters.⁶⁹ A review tribunal would hear such a complaint and make recommendations to the Commission.⁷⁰ If the tribunal concludes that the decision must be changed, then the Commission must convene a meeting within sixty days at which it “shall modify or amend its decision in order to conform with the findings and recommendations of the review tribunal or it may decide to revoke the decision.”⁷¹

This mechanism is broadly consistent with the general provisions of the SSA giving RFMOs' discretion to develop appropriate decision-making procedures “which facilitate the adoption of conservation and management measures in a timely and effective manner.”⁷² However, it could be useful to clarify that the Party's complaint must include an explanation of valid reasons for being absent from the meeting at which the vote was held, in order to prevent unreasonable delays in decision-making.

The draft also proposes a Technical and Compliance Committee that provides advice, recommendations and information to the Commission regarding “the implementation of, and compliance with, conservation and management measures.”⁷³ The Committee is charged with monitoring and reviewing compliance, investigating matters referred to it by the Commission, report its findings on compliance, and make recommendations regarding enforcement.⁷⁴

The Draft Pacific Convention also proposes a Secretariat which could play a supportive role in dispute resolution. Its functions would include facilitating compilation and distribution of data relevant to achieving the Convention's objectives, and administering agreed arrangements for monitoring and control.⁷⁵ Finally, the Draft Pacific Convention provides that the

Commission established under the Convention shall “promote the peaceful settlement of disputes.”⁷⁶

IV. Lessons from Experience with Various Dispute Settlement Procedures

This section discusses highlights of both experience and innovation involving dispute settlement procedures. Part IV.A reviews experience in the area of fisheries, while Part IV.B discusses analogous experience in other areas of international law.

A. Resolution of Disputes Involving Fisheries

The experience with dispute settlement in international law is often viewed as unsatisfactory. Formal procedures for binding resolution cases in which a State claims that another State has breached the first State's rights or failed to carry out a duty toward it have not often been used.⁷⁷ A variety of reasons have been offered for the disinclination of governments to resort to formal dispute settlement procedures: litigation style procedures are slow, cumbersome, risky, unpredictable, expensive, and intensify the confrontational aspects of a dispute in an “undiplomatic” manner.⁷⁸

Fisheries management is no exception to this tendency. Indeed, regional fisheries organizations negotiated prior to the entry into force of the UNCLOS and the negotiation of the SSA typically lacked binding dispute resolution procedures altogether. The failure of governments to resolve their disagreements and agree on conservation measures or quotas has hampered effective management of many fisheries. Similarly, collective action has often been hampered when individual governments dissatisfied with the majority's approach opt out of group decisions.

To date, dispute settlement procedures have not been particularly effective in resolving these problems. In general, regional fisheries organizations do not provide for binding dispute settlement procedures. The ICJ has dealt with relatively few of the many international problems involving fisheries management. The ITLOS, first constituted in 1996, just recently heard its first case on fisheries management. Countries have resorted to arbitration only occasionally. The result has been repeated, numerous, flagrant violations of conservation measures, in spite of the fact that those measures are internationally recognized to be necessary to protect fish stocks. Clearly, improvements are sorely needed in this area.

Dispute Settlement in Regional Fisheries Organizations. A review of a sampling of existing RFMOs indicates that binding dispute resolution has typically not been a part of their framework.⁷⁹ Arguably, this lack of mechanisms contributes to the inadequacy of the framework for managing straddling and highly migratory fish stocks that led to the current fisheries crisis and sparked the negotiation of the SSA.⁸⁰

⁶⁸ See *id.* art. 5.

⁶⁹ See Draft Pacific Convention, *supra* note 6, at art. 21(4). As an aside, this mechanism could be understood as pertaining to decision-making as well as to dispute resolution. WWF and CIEL produced a white paper on decision-making procedures for the last negotiating session, which remains available from either organization.

⁷⁰ See *id.* at Annex II. The review panel has the power to rule that the Commission decision be “modified, amended or revoked,” but it “shall not ... substitute its decision for that of the Commission.” See *id.* art. 21(5), and Annex II, art. 10.

⁷¹ *Id.* art. 21(5).

⁷² SSA, *supra* note 5, at art. 10(j).

⁷³ Draft Pacific Convention, *supra* note 6, at art. 14(1).

⁷⁴ See *id.* art. 15(2).

⁷⁵ See *id.* art. 16(4).

⁷⁶ *Id.* art. 10(1)(n).

⁷⁷ See Koskenniemi, *supra* note 40, at 238; Chayes & Chayes, *supra* note 41, at 205.

⁷⁸ See Chayes & Chayes, *supra* note 41, at 205; Koskenniemi, *supra* note 40, at 238.

⁷⁹ Reviewing the pre-SSA scene, one commentator concluded that “virtually no regional fisheries agreement contains procedures for compulsory, binding dispute settlement.” David A. Balton, *Strengthening the Law of the Sea: The New Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks*, 27 OCEAN DEVELOPMENT AND INTERNATIONAL LAW 125, 142 (1996), *quoted in* Orrego Vicuña, *supra* note 31, at 276.

⁸⁰ See generally, Orrego Vicuña, *supra* note 31, at 20.

The International Convention for the Conservation of Atlantic Tunas (ICCAT)⁸¹ is one example. ICCAT establishes a Commission charged with the monitoring and study of the status of Atlantic Tuna stocks.⁸² The Commission is empowered to make recommendations legally binding on its Parties regarding management strategies and practices in connection with tuna and “tuna-like” fishes. A dissenter to a recommendation may register the objection within a six-month window for objections before the recommendation goes into effect.⁸³

Two subsidiary bodies of the ICCAT Commission play quasi-dispute settlement roles: a Compliance Committee reviews Contracting Parties' compliance with recommendations of the Commission, to consider any infractions, and to seek effective ways to enforce such regulations. A Permanent Working Group on ICCAT Statistics and Conservation Measures (PWG) reviews the status of compliance or non-compliance of ICCAT conservation and management measures by non-Contracting Parties, to take effective action to encourage and enforce the Commission's measures by such Parties.⁸⁴ The Commission has voted to impose trade sanctions against non-Parties fishing relevant stocks in violation of ICCAT recommendations. The ICCAT lacks, however, an explicit binding third party mechanism to administer disputes between Parties.

Another example is the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR). CCAMLR's objective is the conservation of Antarctic marine living resources within the Southern Ocean, bounded by the Southern convergence. CCAMLR is precedent-setting in taking an ecosystem management approach. The Convention operates through a Commission, whose members consist of the Contracting Parties.⁸⁵ In addition, the Convention creates a Scientific Committee to provide advice and consultation to the Commission and establish criteria and methods to advance the Convention's goals of conservation and rational use of the Southern Ocean ecosystem. The CCAMLR has detailed provisions relating to information sharing and observation and inspections by and of Contracting Parties,⁸⁶ and obliges Contracting Parties to cooperate “to ensure the effective implementation of such obligations.”⁸⁷

However, CCAMLR's provisions relating to dispute resolution are noncompulsory. Disputing Contracting Parties are urged to consult each other “with a view to having the dispute resolved by negotiation, inquiry, mediation, conciliation, arbitration, judicial settlement or other peaceful means.”⁸⁸ Failing such resolution, the disputants are urged, but not required, to consent to the submittal of the dispute to the International Court of Justice or to arbitration. The CCAMLR provides guidelines for arbitral panels convened to hear disputes arising from the obligations of the Convention.⁸⁹

The International Court of Justice (ICJ). From 1958 until 1996 there were a total of seven ICJ cases relating to the law of the sea, but most of these involved disputes over

⁸¹ International Convention for the Conservation of Atlantic Tunas, 6 I.L.M. 293, signed May 14, 1966, (entered into force March 21, 1969), available at URL: <<http://www.iccat.es/orgdec.htm>> (official World Wide Web site of the International Commission For The Conservation Of Atlantic Tuna) [hereinafter ICCAT].

⁸² See *id.* art. 4.

⁸³ See *id.* art. 8(3).

⁸⁴ Report available at <<http://www.iccat.es/orgdec.htm>>

⁸⁵ Convention for the Conservation of Antarctic Marine Living Resources, art. 7(2), 19 I.L.M. 841 (1980), signed May 20, 1980 (entered into force April 7, 1981) [hereinafter CCAMLR].

⁸⁶ See, e.g., *id.* art. 21.

⁸⁷ *Id.* art. 24.

⁸⁸ *Id.* art. 25(1).

⁸⁹ See *id.* at Annex for an Arbitral Panel, ¶ 1.

delimitation of maritime boundaries.⁹⁰ The most recent fisheries dispute at the ICJ, and the only fisheries case since 1982, is Spain's case against Canada filed in March 1995. Spain argued that Canada's boarding and seizure of a Spanish fishing vessel on the high seas in March 1995 was inconsistent with Canada's obligations and Spain's rights under the customary law of the sea. Canada took this action pursuant to the Canadian Coastal Fisheries Protection Act and its implementing regulations, which purported to extend Canada's enforcement jurisdiction to the entire area regulated by the Northwest Atlantic Fisheries Organization (NAFO), which includes areas of the high seas. In essence, Canada sought to take upon itself the responsibility of enforcing NAFO quotas and other conservation measures on the high seas (NAFO having no enforcement powers of its own). Prior to the amendment of the Canadian Coastal Fisheries Protection Act to include these measures, Canada entered a reservation to its earlier declaration accepting the jurisdiction of the ICJ.⁹¹ Canada's reservation excluded disputes arising from management and conservation measures taken by Canada with respect to fishing vessels in the NAFO regulatory area and the enforcement of such measures.

Spain challenged Canada's seizure of the vessel at the ICJ, and argued that Canada's legislation itself was inconsistent with international law insofar as it purported to extend Canada's jurisdiction over the high seas. Canada asserted that the Court had no jurisdiction over the case. The ICJ did not resolve this question of jurisdiction, which precedes consideration of the merits of the case.

Experience with the ICJ and fisheries suggests several tentative conclusions. The ICJ does not provide speedy resolution of disputes.⁹² As illustrated by the Canada/Spain case, the ICJ not infrequently fails even to reach the merits of a dispute brought before it. Resort to the ICJ can also be costly. Further, the ICJ may not be as suitable as more specialized forums for the resolution of disputes in an area such as high seas fisheries where there is an increasingly elaborate body of treaty law.⁹³

The International Tribunal for the Law of the Seas (ITLOS). The ITLOS was established in Hamburg in 1994, pursuant to Annex VI of the UNCLOS. Its 21 judges were selected in 1996. The Tribunal is open to State parties to the UNCLOS, and is open to hear disputes from other agreements, such as the SSA, that provide for it to have a role in dispute resolution.⁹⁴ To date, twelve countries have accepted the Tribunal's jurisdiction to hear disputes involving them.⁹⁵ The Draft Pacific Convention incorporates by reference the UNCLOS package of dispute settlement procedures, meaning that Parties to the Convention could select the ITLOS as their preferred mechanism for dispute resolution.

So far, the ITLOS has ruled in two controversies. In the “Saiga” case, Saint Vincent & the Grenadines challenged the arrest by Guinea in 1997 of an oil tanker and its crew accused of piracy and smuggling. The Tribunal ruled in favor of St. Vincent & the Grenadines, ordering the

⁹⁰ See Boyle, *supra* note 14, at 41.

⁹¹ Canada's earlier declaration accepting ICJ jurisdiction was made independently of ratification of the UNCLOS.

⁹² Cf. Jonathan I. Charney, *Third Party Dispute Settlement and International Law*, 36 COLUM. J. TRANSNAT'L L. 65, 81 (1997).

⁹³ See *id.*

⁹⁴ States that ratify the SSA which are already Parties to the UNCLOS are bound by their selection of a tribunal under the UNCLOS, unless they explicitly specify a different one. Non-parties to the UNCLOS that ratify the SSA can also specify any of the UNCLOS dispute resolution options when they ratify.

⁹⁵ As mentioned above, these countries are Argentina, Austria, Cape Verde, Chile, Finland, Germany, Greece, Italy, Oman, Portugal, Tanzania and Uruguay.

prompt release of the vessel pursuant to the UNCLOS Article 292. The Tribunal rendered a decision in only three weeks, and later rendered a judgment for damages against Guinea.⁹⁶

The second case to come before the ITLOS was filed recently, on July 30, 1999, and concerned fishing of a highly migratory species. In that case, Australia and New Zealand requested prescription of provisional measures against Japan, during the pendency of an arbitration procedure which they had requested under Annex VII of the UNCLOS. The two States argued that Japan's commencement of a unilateral experimental fishing programme for Southern Bluefin Tuna (*Thunnus maccoyii*) in 1998 and 1999 poses "serious or irreversible damage to the Southern Bluefin Tuna," which is "significantly overfished and is below commonly accepted thresholds for biologically safe parental biomass."⁹⁷ Japan filed a response on August 9, and the ITLOS scheduled hearings for August 18-20.

On August 27, less than a month after the case was brought, the tribunal issued its decision. It found that "there is no disagreement between the parties that the stock of southern bluefin tuna is severely depleted and is at its historically lowest levels and that this is a cause for serious biological concern."⁹⁸ It declared that "the parties should in the circumstances act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of southern bluefin tuna."⁹⁹ While acknowledging that "there is scientific uncertainty" and disagreement among the parties regarding what conservation measures should be taken, the tribunal found that measures should be taken "as a matter of urgency" to prevent further deterioration. In particular, total catches shall not exceed previously set catch levels except by agreement among the parties. Thus, the Tribunal ruled that the three countries shall not exceed their previously set quotas, that they shall not conduct experimental fishing. If they do conduct experimental fishing, it counts toward the previously established quotas which they shall not exceed. The Tribunal also ruled that the parties to the dispute should renew their efforts to resolve their disagreement.

The experience to date with the ITLOS suggests that it may be able to render decisions in a more timely fashion than other forums such as the ICJ.¹⁰⁰ As a specialized forum, ITLOS can also bring to bear greater specialist expertise than can a generalist institution like the ICJ.¹⁰¹ The repeated resort to the ITLOS could also facilitate development of a consistent global understanding of the meaning of the UNCLOS and SSA, which in turn would promote predictability.¹⁰²

Arbitration. The actual experience with arbitration is similar to the experience with dispute settlement at the ICJ in that countries seem not to resort to its use very frequently. From 1958 to 1996, there were just seven cases of international arbitration regarding the law of the

sea.¹⁰³ The secrecy in which arbitration proceedings may be conducted renders it more difficult to evaluate the effectiveness of the mechanism.

In comparison with institutional forums like the ICJ or ITLOS, arbitration is perceived as having the advantage of flexibility. Traditionally, States have found arbitration useful in that it permits secrecy, allows control over the selection of adjudicators, hinders third-party interventions, and permits them to select the factual and legal issues to be adjudicated.¹⁰⁴ In addition, arbitration may appeal to States with sensitive disputes requiring the application of equitable principles as well as the rule of law.¹⁰⁵ The power to select arbitrators and establish procedural rules can respond to States' desire that the process be sensitive to their "social or legal culture" or their "historical experience."¹⁰⁶ Arbitral decisions carry less weight as precedent than do formal rulings of standing international law tribunals, which some disputants may find appealing.

It is unclear, however, whether these considerations continue to be compelling in light of the evolving landscape of the international law of fisheries. The new Pacific Convention, in the context of the UNCLOS and SSA, will embody an elaborate set of principles, rules, procedures and institutions agreed upon by the participants. This constitutes a shared "social [and] legal culture" in itself. While equitable principles will always play a part, they are embedded in the context of specific legal rules for determining the outcomes of decisions. Secret decision-making would be particularly incongruous with the SSA's emphasis on reliance on science, as the collection, testing and verification of scientific findings is inherently a public, cooperative process involving the open exchange of information and spirited critical debate. Finally, the reliance on arbitration would reduce the significance of any given decision, and could reduce "uniformity in the outcome of similar cases between different tribunals,"¹⁰⁷ slowing the clarification and rationalization of international law of fisheries.

Collective Action against Non-Compliant States. Consistent with the exploration of alternatives to the bilateral adversarial model of dispute resolution, there have been efforts to respond to problems of non-compliance through mechanisms that constitute a kind of middle ground between the bilateral dispute model and collective legislative-style decision-making.

One example involves the ICCAT sanctions against non-Parties violating its conservation measures. At its annual meeting in November 1996, ICCAT authorized member countries to impose bans on the import of bluefin tuna from Belize, Honduras and Panama.¹⁰⁸ These non-member countries had failed to comply with ICCAT catch restrictions after their non-compliance had been highlighted at the ICCAT's 1995 meeting, based on investigation into data on trade, vessel sightings and port inspection. At the same time, ICCAT established penalties to be imposed on members if they overharvest tuna beyond specified quotas. Successively severe penalties include fines equivalent to the value of overharvests, reductions in future quotas, and

⁹⁶ ITLOS documents related to this case are available on the web page for the UN Office on the Law of the Sea and Ocean Affairs at URL: <<http://www.un.org/Depts/los/index.htm>>.

⁹⁷ ITLOS, Press Release, *Dispute Concerning Southern Bluefin Tuna: Australia And New Zealand Versus Japan: Provisional Measures Requested*, ITLOS/Press 24, available at URL: <http://www.un.org/Depts/los/Press/ITLOS/ITLOS_24.htm>.

⁹⁸ ITLOS, *Southern Bluefin Tuna Cases: Requests for provisional measures: Order*, ¶ 71, Case Nos. 3 & 4 (Aug. 27, 1999), available at URL: <<http://www.un.org/Depts/los/ITLOS/Order-tuna34.htm>>.

⁹⁹ *Southern Bluefin Tuna Cases*, ¶ 77.

¹⁰⁰ See John E. Noyes, *The International Tribunal for the Law of the Sea*, 32 CORNELL INT'L L.J. 109, 111 (1998).

¹⁰¹ See *id.*

¹⁰² Cf. Charney, *supra* note 92, at 84-85.

¹⁰³ See Boyle, *supra* note 14, at 41.

¹⁰⁴ See Christine Gray & Benedict Kingsbury, *Inter-State Arbitration Since 1945: Overview and Evaluation*, in INTERNATIONAL COURTS FOR THE TWENTY-FIRST CENTURY 55, 63 (Mark W. Janis ed., 1992) (noting dearth of information about the resolution of cases involving several high-profile arbitrations); Charney, *supra* note 92, at 70; Adede, *supra* note 20, at 64-65.

¹⁰⁵ Gray & Kingsbury, *supra* note 104, at 56.

¹⁰⁶ *Id.* at 64.

¹⁰⁷ Boyle, *supra* note 14, at 40.

¹⁰⁸ See U.S. National Oceanic and Atmospheric Administration, Office of Legislative Affairs, *NOAA Legislative Informer*, Jan. 1997, Issue #21, at 1.

import bans as a last resort. In 1997, the US acted pursuant to this decision to prohibit imports of bluefin tuna from Panama, Honduras and Belize.¹⁰⁹

Challenges to Collective Decision-Making. As discussed, the Draft Pacific Convention contains a provision for a dissenting State Party to bring a complaint to a review panel on the basis that a decision of the Commission was contrary to the terms of the UNCLOS, the SSA or the Pacific Convention, or discriminated unjustifiably against the complaining Party.¹¹⁰ Few procedures exist in international law that provide for challenges to decisions of an intergovernmental body like a Commission of a RFMO. Examples are reviewed in Part III.B below, including the World Bank Independent Inspection Panel and the European Court of Justice.

B. Lessons From Other Areas Of International Law

This section discusses highlights from the experience in other areas of international law. Part IV.B.1 reviews mechanisms that are actively used, some of which have strong provisions for enforcement of judgments. These include the WTO, the European Court of Justice, the European Court of Human Rights, the Montreal Non-Compliance Procedure, the World Bank Independent Inspection Panel, and the Commission on Environmental Cooperation.

Part IV.B.2 reviews other mechanisms that are not as well known, nor necessarily as actively used, but that offer interesting models that might be relevant to discussions of options for use in the Pacific Convention.

1. Experience With Active Dispute Settlement Procedures

We begin with the WTO, which has an active dispute settlement system with provisions for enforcement that is widely regarded as one of the most effective in the world today. Although not as well known, and without the binding nature of the WTO, the ILO's procedures for addressing complaints about compliance are well developed and frequently used. The World Bank has established an Independent Inspection Panel to hear complaints about projects that it funds in violation of its own policies and procedures; several other international financial institutions have established similar mechanisms. The World Bank mechanism, too, is fairly active and significant experience has developed with its use.

The World Trade Organization (WTO). The WTO was established in 1995 as a result of the Agreement Establishing the World Trade Organization (WTO Agreement), the product of the Uruguay Round of multilateral trade negotiations. The WTO Agreement contains a set of interrelated agreements, which together establish the bulk of the multilateral rules governing international trade, and which are binding on the WTO's 134 members. The basic principles of the world trading system are embodied in the General Agreement on Tariffs and Trade (GATT); originally signed in 1947, this agreement was incorporated into the Uruguay Round agreements.

Also among the WTO Agreements is the WTO Understanding on the Settlement of Disputes.¹¹¹ This agreement establishes an elaborate mechanism, in the Dispute Settlement Body (DSB), for binding resolution of disputes according to trade rules defined in other WTO Agreements. The dispute settlement mechanism is intended to maintain a rules-based system to prevent trading nations from engaging in unconstrained use of economic power to impose protectionist, excessively burdensome, arbitrary or discriminatory measures on trading partners. The WTO DSB is widely viewed as perhaps the most potent dispute settlement system in existence at the international level.

As in the predecessor procedures under the GATT, a dispute is initiated by a request for consultation by the complainant(s).¹¹² Consultations are a prerequisite to further dispute settlement proceedings. If the consultation fails, the complainant government may initiate a panel process.¹¹³ The dispute settlement panel assesses the facts of the case and the applicability of and conformity with the relevant covered agreements.¹¹⁴ It receives oral and written arguments from and consults regularly with the parties.¹¹⁵ The Panel has discretion to seek information from other sources, including outside experts in any relevant discipline.¹¹⁶ The panel formulates a report which is published after the parties have opportunities to comment and to put forward changes.¹¹⁷

Under the DSB, dispute panels drawn from a roster of trade experts have compulsory jurisdiction of complaints brought by WTO Members concerning violations of WTO rules. A losing party has the right of appeal to the Appellate Body, and in practice the loser generally exercises its right. An Appellate Body decision becomes binding unless it is rejected by a consensus of the General Council, which is the governing body of the WTO during the interims between Ministerial Conferences. This is an advance on procedures under the predecessor to the WTO — the GATT 1947 — in which the final panel report had to gain approval from a consensus of all the GATT Parties, giving each Party — including the loser of the dispute itself — a right of veto.¹¹⁸ The departure from the positive consensus system marks a further shift in a direction already begun under the GATT,¹¹⁹ from a diplomacy/negotiation approach based on political compromise between specific parties to a dispute to an adjudicative approach based on the impartial application of general rules.¹²⁰

Unlike the dispute-resolution mechanisms defined under many other international agreements, the WTO dispute settlement system can handle large numbers of disputes with relative efficiency (although at present the legal division, which provides technical support to the panels, is understaffed relative to the number of cases pending and anticipated). Since the WTO's establishment in 1995, the DSB has entertained 179 consultation requests involving 138

¹¹¹ See Understanding on Rules and Procedures Governing the Settlement of Disputes, Annex 2 of the Final Act Embodying the Results of the Uruguay Round of Trade Negotiations, Dec. 15, 1993, Multilateral Trade Negotiations Doc. MTN/FA, 33 I.L.M.1 (1994) [hereinafter DSU].

¹¹² See *id.* art. 4. Under the DSU, the relief for non-violation cases is only negotiation for appropriate compensation. See *id.* art. 26.

¹¹³ See *id.* art. 6.

¹¹⁴ See *id.* art. 11.

¹¹⁵ See *id.* arts. 11, 12(6).

¹¹⁶ See *id.* art. 13.2.

¹¹⁷ See *id.* art. 12(7).

¹¹⁸ See Jose Maria Beneyto, *The EU and the WTO*, EuZW 10/1996, at 295, 296; see also Chayes & Chayes, *supra* note 41, at 220.

¹¹⁹ See John H. Jackson, *THE WORLD TRADE ORGANIZATION, CONSTITUTION AND JURISPRUDENCE* 66-71 (Royal Institute of International Affairs 1998).

¹²⁰ See Maria Beneyto, *supra* note 118, at 295, 296; see also Chayes & Chayes, *supra* note 41, at 220.

¹⁰⁹ See NOAA, *U.S. Bans Bluefin Tuna Imports from Three Nations Fishing in Violation of ICCAT*, press release dated Aug. 21, 1997, available at URL: <<http://www.noaa.gov/public-affairs/pr97/aug97/noaa97-r158.html>>.

¹¹⁰ See Draft Pacific Convention, *supra* note 6, at art. 21(4).

distinct matters. These included 105 matters initiated by developed countries, thirty matters initiated by developing countries, and four matters involving complaints from both developed and developing countries. Twenty-two cases were carried through to a final step in the dispute settlement process, while thirty-seven were settled or inactive.¹²¹

The WTO DSB is also unusual in that significant measures are available to enforce compliance with judgments. If a WTO Member's trade measure is ruled inconsistent with its WTO obligations by the DSB, the Member faces a difficult choice. It must lift the measure, or it will be required either to compensate the challenging party for the harm caused by the measures, or to suffer the effects of proportionate retaliatory measures from the challenging Member.

Traditionally, dispute resolution under the WTO, and its predecessor, the GATT, has been non-transparent. Hearings have been closed. Documents submitted by disputants have been confidential. There appears, however, to be a slow trend toward greater transparency. Some disputants have attached friend of the court briefs by NGOs to their submissions. The WTO posts the decisions from DSB proceedings (once approved) on its web site. The Appellate Body recently confirmed that under the DSU dispute panels have the discretion to accept submissions from NGOs in the course of proceedings, as part of their power to seek information from any source.¹²²

Another significant difference between the WTO procedures and their predecessors under the GATT is the creation of the Appellate Body and the provision for appeals of right. An appeal of a dispute settlement panel report stays the binding effect of that report. The Appellate Body receives arguments of the parties again and writes its own report. This second report becomes adopted, unless a negative consensus emerges among WTO Members to block it.¹²³

Importantly, the DSU includes specific limits on the duration of proceedings. Delay in the panel process should be avoided and, generally, is not to exceed six months.¹²⁴ Specific deadlines for intermediate steps in dispute settlement appear as well.¹²⁵ For instance, Article 17(5) provides that "[a]s a general rule, the proceedings shall not exceed 60 days from the date a party to the dispute formally notifies its decision to appeal to the date the Appellate Body circulates its report. . . . In no case shall the proceeding exceed 90 days."

The credibility of the procedures and the acceptance of the reports and the enforcement measures depend on the persons who sit in the panels and in the Appellate Body and the application of the procedural guarantees.¹²⁶ According to Art. 8(1) the panels can be composed of well-qualified governmental and/or non-governmental individuals, while the members of the Appellate Body should be unaffiliated with any government under Art. 17(3). The members of the panels are drawn as appropriate from a list maintained by the Secretariat.¹²⁷ The DSB

appoints persons to serve on the Appellate Body for a four-year term.¹²⁸ Of the actual seven members of the Appellate Body three were chosen by the largest trading powers (US, EC, Japan), while the others come from less powerful countries.¹²⁹ This permanent roster of seven members draws the Appellate Body made by three individuals.¹³⁰ Though, by exchange of documents and gathering together all seven members of the roster are integrated in and part of the decision process.¹³¹

Conclusions. The WTO model offers both advantages and drawbacks. Strict time limits and experienced decision-makers have made the process far more efficient and less time consuming than is typical at the international level. Panelists drawn from the roster set up for the DSB tend to have significant trade expertise. The potential for imposition of trade sanctions or judgments requiring compensation constitutes an unusual enforcement mechanism in international law.

Yet a number of problems have arisen as well. Conflicts continue over the question of implementation of judgments. Controversy and dissatisfaction have arisen about the DSB's handling of disputes that involve mixed issues of trade and environment or trade and public health. In particular, critics have charged that the DSB's methods for getting access to environmental or health experts are inadequate, so that decisions do not properly take account of other policy objectives or of the realities of science, regulation and risk assessment in those areas. The lack of transparency in procedures that can have a major impact on the economies, laws and policies of Member nations has also been severely criticized. Finally, the difficulties that developing countries have in participating on an equal basis in dispute settlement has been identified as a serious problem.

International Labor Organization (ILO). The International Labor Organization (ILO) has several mechanisms for resolving disputes about the interpretation and application of the many conventions formed under its auspices. One mechanism is primarily designed to handle disputes between and among State Parties to the ILO. Another involves a standing committee which meets to review governments' periodic reports on implementation as well as information submitted by voluntary associations of employees or employers. A third consists of a combination of two Commissions mandated to investigate claims of significant impairment of the freedom of labor groups to organize within the jurisdiction of one or more State Parties.

Complaints About State Failure to Implement a Convention. Complaints concerning a State's implementation of an ILO Convention go to the ILO's Governing Body.¹³² The Governing Body also may initiate the complaint and investigation procedures on its own, or on a motion by a delegate to the periodic governing Conference of the ILO (delegates can be representatives of employer's or employees' associations as well as of governments).¹³³ If the Governing Body does not receive a satisfactory response from the State in question, it may appoint a Commission of Inquiry, which investigates and recommends remedial action in a

¹²¹ See WTO Secretariat, OVERVIEW OF THE STATE-OF-PLAY OF WTO DISPUTES, available at URL: <<http://www.wto.org/dispute/bulletin.htm>> (updated Aug. 6, 1999).

¹²² See World Trade Organization, *United States – Import Prohibition of Certain Shrimp and Shrimp Products: AB-1998-4: Report of the Appellate Body*, Doc. No. WT/DS58/AB/R, available at URL: <<http://www.wto.org>>.

¹²³ See DSU, *supra* note 111, at art. 17(14).

¹²⁴ See *id.* arts. 12(2), (8).

¹²⁵ Other terms are established with the articles 4(4), 4(7), 4(8), 4(11), 5(4), 8(5), 8(7), 12(8), 12(9), 16(1), 16(2), 16(4), 17(5), 17(14), 20, 21(3), 21(5), 21(6), 22(2), 22(6).

¹²⁶ Article 17(9) of the DSU empowers the Appellate Body to draw up working procedures in consultation with the Chairman of the DSB and the Director General.

¹²⁷ See *id.* art. 8(4).

¹²⁸ See *id.* art. 17(2).

¹²⁹ See Jackson, *supra* note 119, at 78.

¹³⁰ See DSU, *supra* note 111, at art. 17(1).

¹³¹ See Jackson, *supra* note 119, at 80.

¹³² The Governing Body of the ILO consists of 56 persons, (28 government representatives, 14 employer representatives, and 14 labor representatives). The Governing Body elects the ILO Director-General. The Governing Body was established by art. 7 of the Constitution of the International Labour Organization, adopted April, 1919 (becoming Part XIII of the Treaty of Versailles, available at <[URL: http://www.ilo.org](http://www.ilo.org)>).

¹³³ Hector Bartolomei de la Cruz et al., THE INTERNATIONAL LABOR ORGANIZATION: THE INTERNATIONAL STANDARDS SYSTEM AND BASIC HUMAN RIGHTS 93 (1996).

report to the disputants and the Governing Body. Where the Commission recommends remedial action, the State in question must notify the Governing Body whether it intends to adhere to the ruling or not, and if not, whether it consents to an appeal to the ICJ. Such ICJ review, if it occurs, becomes a final judgment.¹³⁴

From 1961 until 1994, 22 complaints were filed according to this procedure. As a practical matter, it is reported that the later steps in dispute resolution are rarely necessary, as governments generally accept the Commission's recommendations at least in part.¹³⁵ Only twice have governments not accepted the initial judgment of the Commission of Inquiry, and a dispute has never been submitted to the ICJ.¹³⁶

Procedurally, Commissions of Inquiry can solicit information from government parties, hear witnesses, and also make investigations on their own into the circumstances of the disputes. Matters of procedure are left to each specially appointed Commission, but such procedures have consistently included:

- Hearing witnesses and independently seeking information from intergovernmental organizations of employers and workers, and other international associations;
- Investigative trip to country complained of, with interviews of public authorities, employers associations, unions, academics, journalists, church representatives, etc. (Commission solicits guarantees from host nation that interviewees will not suffer "reprisals").
- Drafting final report and submission to the GB.

Reviews of Implementation. A second procedure involves periodic reviews of States' implementation of Conventions to which they are Parties. Parties to a convention submit reports every five years regarding their compliance. A Committee of Experts on the Application of Conventions and Recommendations meets yearly to review and make comments on all reports submitted. The Committee may also make requests to governments for further information. Members of the ILO, which include employees' and employers' associations as well as governments, may also submit information to the Committee. The Committee makes requests to governments concerning improved compliance, and publishes comments on reports, which can influence a government's compliance with its legal obligations.

Investigation of Freedom of Association. The ILO has paid particular attention to the question of whether governments are ensuring that workers have the freedom needed to organize. The Governing Body has established a Committee on Freedom of Association, which conducts preliminary examinations of complaints about violations of freedom of association, and Fact-Finding and Conciliation Commission on Freedom of Association, which investigates alleged violations and consults with the relevant government to seek solutions.

The Committee can consider complaints submitted by governments, employers associations or workers associations. Proceedings are private, and representatives of the government complained against as well as the complaining organization are excluded. The Committee may request additional information from the complainant or the government complained against, but has little additional investigative power. Where trade unionists are

detained, the Commission's practice is to place the burden on the government to prove that the detention is not related to trade union activities.¹³⁷

In urgent situations the Committee may make preliminary recommendations to the government to ameliorate a problem. In serious cases the Committee may ask the ILO Director-General to consult with the government or hold a hearing. The Committee may conclude its examination with submission of a report including suggestions for corrective measures to be taken by the government. In cases where governments have not cooperated the Governing Body may publicize the Committee's negative findings.

This procedure has been used some 1,800 times from 1951 through 1994.¹³⁸ Over the years the Commission has created a significant body of "jurisprudence" which clarifies and illustrates the meaning of the Conventions concerning freedom of association.

The Fact-Finding and Conciliation Commission, in contrast, can respond to a complaint only when the government in question consents.¹³⁹ It has the power to take testimony from interested parties, and to consult in search of solutions with the government. Since governments have been reluctant to consent to its intervention, the Commission carried out only five inquiries from 1964 to 1994.¹⁴⁰

Conclusions. These procedures have clear drawbacks. They do not produce legally binding results. There are few powers of enforcement available other than the negative sanction resulting from bad publicity. Yet observers argue that they have had significant positive impacts. The institutions have built up significant authority and respectability over the years. They offer remedies to people suffering from violations of their rights who otherwise might have nowhere to turn. It is claimed that the Committee's activities often encourage governments to resolve problems, to avoid measures that would violate their obligations under ILO Conventions, and in as many as 500 cases to release wrongfully imprisoned trade union members.¹⁴¹

In the present context, the following features are worthy of note. First, the right of non-governmental entities to trigger collective action distributes the work of monitoring and enforcement, reducing the burden on governments themselves. Second, transparency and reporting of results promotes publicity, which in turn encourages good behavior. Third, the repeated use of the procedure over the years helps create a "jurisprudence" with significant authority and legitimacy, that gives Parties guidance as to the nature of their obligations under international law.

Montreal Protocol Non-Compliance Procedure (Implementation Committee). The parties to the Montreal Protocol have developed a Non-Compliance Procedure that has become a model for other treaty regimes.¹⁴² The procedure is a flexible mechanism adopted at the Fourth

¹³⁷ *Id.* at 106.

¹³⁸ *See id.* at 101.

¹³⁹ *See id.* at 107.

¹⁴⁰ *See id.* at 108.

¹⁴¹ *See id.* at 106.

¹⁴² Protocols adopted under the UN-ECE Convention on Long-Range Transboundary Air Pollution have called for compliance provisions similar to the Montreal Protocol. *See* Protocol on Further Reductions of Sulphur Emissions, art.7, *reprinted in* 33 I.L.M. 1540 (1994); Protocol Concerning the Control of Emissions of Volatile Organic Compounds or Their Transboundary Fluxes, art. 3(3), *reprinted in* 31 I.L.M. 568 (1992) (directing the parties to establish a compliance monitoring mechanism once the protocol enters into force). The legal drafting

¹³⁴ *See id.* at 94-95. If the losing disputant does not comply with the findings of the Commission of Inquiry or the ICJ (if applicable), the Governing Body can recommend to the full conference of ILO members measures it believes will secure compliance. This step has never been taken in practice. *See id.* at 95.

¹³⁵ *See id.*

¹³⁶ *See id.*

Meeting of the Parties in 1992, pursuant to Article 8 of the Montreal Protocol.¹⁴³ The procedure was intended “to create a multilateral mechanism that would build confidence through non-confrontational discussion rather than adjudication” and help parties pursue “amicable solutions” to noncompliance problems.¹⁴⁴

According to one commentator, the procedure has efficiently contributed to compliance with the Montreal Protocol regime. It has informally resolved disputes about procedural compliance, principally reporting of baseline and annual data.¹⁴⁵ Substantive issues addressed have included failures to phase out the use of ozone-depleting substances (ODS) as required under the Protocol.

The primary institution under the Non-Compliance Procedure is the Implementation Committee (IC). The IC functions as both a standing body with regular meetings, and as an ad hoc mechanism to respond to compliance problems as they are brought to its attention.¹⁴⁶ The IC consists of 10 members with balanced geographical representation of both industrialized and developing nations, appointed by a meeting of the Parties.¹⁴⁷ Only IC members, the Secretariat and Parties involved in submissions have the right to participate in IC proceedings.¹⁴⁸ The IC may, however, solicit participation of others as needed, and representatives of the Multilateral Fund (MLF) and Global Environmental Facility (GEF) representatives frequently participate in IC procedures in order to stay informed about compliance of recipient nations with international commitments.

The IC’s functions include discussion, the making of recommendations to the Parties regarding compliance issues, and publicizing information about the adequacy of Parties’ compliance.¹⁴⁹ A separate Technology and Economic Assessment Panel advises the IC about issues beyond the scope of the IC’s expertise. While it has no power to make decisions in its own right, and disavows any power to interpret the provisions of the Protocol,¹⁵⁰ the IC’s recommendations and proposals are frequently adopted without change by the Meeting of the Parties (MOP). The IC’s “invitations” to countries to attend IC meetings to explain questions about their compliance have inspired some culprits to rectify violations of reporting requirements.¹⁵¹

Most data-reporting problems come to the IC’s attention via the Secretariat or the IC members themselves. The Montreal Protocol Secretariat compiles baseline and annual statistics regarding use of ozone-depleting substances, and alerts the IC to States’ failures or anticipated

failures to meet such reporting requirements.¹⁵² Issues about compliance with substantive obligations to phase out ozone-depleting substances arise primarily through Parties’ submissions.¹⁵³ Parties may make submissions about their own implementation of Protocol obligations or about another Party’s compliance or lack thereof. In one case a Party’s request for a special grace period for the phase-out of certain ODCs was “rerouted” from the MOP to the IC, where the request was addressed as a “submission” (in essence, a self-accusation) regarding noncompliance.¹⁵⁴

The IC’s recommendations were lent force by a 1994 decision at a Meeting of the Parties (MOP) to cut the MLF assistance to Parties that fail to report baseline data and progress on institutional capacity building in connection with meeting their treaty obligations.¹⁵⁵ As a result, the IC sometimes recommends to the MOP that Parties lose their MLF funding because of lapses of compliance, although such measures have been recommended only for failures to supply initial baseline data.¹⁵⁶

The activities of this committee appear to have contributed significantly to compliance. The IC’s public findings and recommendations about Parties’ non-compliance have repeatedly spurred those Parties to improve their performance. One notable shortcoming of the procedure, however, is that it seems to be applied inequitably as between developed and developing countries: there is no measure for promoting compliance by developed countries equivalent to the placing of conditions on financial assistance that is employed with developing countries.

The World Bank Independent Inspection Panel. Critics have charged that the development policies of international financial institutions (IFIs) like the World Bank or the International Monetary Fund have contributed significantly to the mismanagement of the world’s fisheries, by contributing to the overcapacity now universally recognized as a principal underlying cause of over-fishing.¹⁵⁷ Nevertheless, the World Bank has been a leader in creating an innovative mechanism for international dispute resolution that offers interesting lessons for negotiators in the current fisheries context.

The Bank’s Independent Inspection Panel is precedent-setting in that it provides an avenue to bring complaints to an international tribunal concerning the conduct of an intergovernmental organization. In this sense it is relevant to the question of how to manage challenges by dissenting governments to Commission decisions. It is also unusual among international tribunals in that it gives standing to citizens and non-governmental organizations. In this respect it is relevant to the question of how to distribute the function of monitoring and

group of the Sulphur Protocol has proposed a compliance regime that follows closely the Montreal Protocol model. See U.N. Doc. EB.AIR/WG.5/24, March 10, 1994, Annex I.

¹⁴³ Article 8 directs the parties to “consider and approve procedures and institutional mechanisms” for determining non-compliance with the protocol’s requirements and dealing with parties found to be in non-compliance. The non-compliance procedure was adopted at the Fourth Meeting of the Parties held in Copenhagen, 23-25 December 1992, Decision IV/5, Annex IV.

¹⁴⁴ David G. Victor, *The Operation and Effectiveness of the Montreal Protocol’s Non-Compliance Procedure*, in THE IMPLEMENTATION AND EFFECTIVENESS OF INTERNATIONAL ENVIRONMENTAL COMMITMENTS 137, 141 (1998).

¹⁴⁵ See *id.* at 141, 149.

¹⁴⁶ See *id.* at 141.

¹⁴⁷ See *id.* at 141-42.

¹⁴⁸ See *id.* at 142.

¹⁴⁹ See *id.* at 149.

¹⁵⁰ See *id.* at 164.

¹⁵¹ See *id.* at 151.

¹⁵² The Secretariat’s active role in reviewing compliance information and distributing it to Parties is not unique. The Secretariat of the Convention on International Trade in Endangered Species (CITES) also organizes information that it receives regarding compliance from a variety of sources and makes it available to CITES parties in the Standing Committee. If the Standing Committee determines that a Party is significantly faltering in implementation, it may recommend that Parties take stricter domestic measures with respect to wildlife trade with that Party, and the Secretariat will distribute the recommendation to all Parties.

¹⁵³ See Victor, *supra* note 144, at 149.

¹⁵⁴ See *id.* at 156.

¹⁵⁵ See *id.* at 146-47. Developing countries that are Parties to the Montreal Protocol are eligible for funds from the MLF to help them meet their obligations to reduce the manufacture and use of ozone-depleting substances. Former Soviet bloc states (those in “economic transition”) are not eligible, but have access to funds from the Global Environmental Facility (GEF) in connection with meeting their Montreal Protocol obligations.

¹⁵⁶ See *id.* at 151, 165-66.

¹⁵⁷ See Claudia Carr, *The Legacy and Challenge of International Aid in Marine Resource Development, in FREEDOM FOR THE SEAS IN THE 21ST CENTURY* 340, 345-47, 349 (Jon M. Van Dyke, Durwood Zaelke, & Grant Hewison eds., Washington Island Press 1993).

enforcing compliance with Pacific Convention obligations.

The World Bank's Independent Inspection Panel was created in 1993.¹⁵⁸ The Panel, composed of three independent individuals selected for their expertise by the Bank President and Board, is empowered to consider claims brought by citizens whose environments have been harmed by a World Bank-financed project due to the Bank's failure to follow its own policies or procedures.

After receiving a claim, the Panel initiates a two-stage fact-finding investigation to determine whether World Bank policies or loan covenants were violated. The Panel first conducts a preliminary assessment, including a site visit and a review of the claim and the Bank's response. Based on this assessment, the Panel recommends to the Bank's Board of Executive Directors (the political leadership of the Bank) whether a full inspection is warranted. The Executive Directors retain sole power to authorize a full inspection. For inspections that go forward to the second stage, the Panel enjoys broad investigative powers including access to all Bank Management and staff. After the investigation, the Panel issues a report with its recommendations to Bank Management and the Executive Directors. In most cases, the Panel process has resulted in the Bank adopting some form of an action plan to address the underlying harms alleged in the claims.

As of the end of 1998, thirteen claims had been filed at the World Bank Inspection Panel. Seven of these had passed through the Panel's initial screens and three were pending. In five of the seven the Panel recommended an investigation. Only one of these received full Board approval. That case did not make it completely through the process, because, after the Panel completed its investigation and presented its report to the Board, the President of the World Bank cancelled the Bank's support for the Project. Although the process has become highly politicized, the cases have identified problems of non-compliance, and have resulted in some relief, while at the same time triggering high level discussions about broader policy issues.¹⁵⁹

In addition to the World Bank, both the InterAmerican Development Bank (IDB) and the Asian Development Bank have created inspection panels. As of the end of 1998, one claim had been filed with the IDB and one with the the Asian Development Bank.

European Court of Justice. The European Court of Justice and its subordinate Court of First Instance (together "ECJ") adjudicate a wide variety of economic, social and environmental disputes at the supranational level in the European Union. For instance, in its first twenty years the ECJ Instance addressed over 150 cases with significant environmental dimensions.¹⁶⁰ The Courts operate in the context of the increasingly integrated economic, financial and regulatory European Union.

The ECJ has jurisdiction to hear complaints from Member States that other Member States have breached their Treaty obligations, although such invocations in the context of environmental issues is rare.¹⁶¹ The European Commission can, and frequently does, bring cases

to the ECJ when it determines or suspects that member States have violated their obligations under the EC Treaty.¹⁶² Conversely, Members States, the EC Council, and in many cases the European Parliament and Central Bank, can petition the ECJ to review Commission decisions on the basis that the Commission acted beyond its competence or authority, violated procedural norms, or otherwise violated the EC Treaty.¹⁶³ Even individuals or nongovernmental organizations can bring claims if they demonstrate that the acts complained of concerned them individually and particularly.¹⁶⁴

Analogies with the Pacific fisheries situation are necessarily distant, as the ECJ's nature and context are radically different. Yet the ECJ is striking in a number of respects. Its decisions are legally binding and compliance is strong. States, supranational organizations, non-governmental organizations and individuals all have standing to bring cases. The ECJ has jurisdiction over cases brought against a supranational entity such as the Commission. Its procedures are transparent.

European Court of Human Rights. While human rights and fisheries law are far afield from one another, they have in common that both seek to protect values and interests that are not purely defined by the relationships between States – fundamental human rights in one instance and the integrity of a natural resource on the other. In light of this, resolution of disputes over resource conservation might benefit from several features of the European human rights system — a body that can bring investigative and conciliatory powers to bear in response to complaints, a transparent process, and the opportunity for appeal.

The European Court of Human Rights (ECHR), founded in 1959 and with its seat in Strasbourg, along with the European Commission on Human Rights, was created in connection with the European Convention for the Protection of Human Rights and Fundamental Freedoms (the European Convention).¹⁶⁵

An individual petition under the European Convention can be made by "any person, NGO or group of individuals claiming to be the victim of a violation" of a European Convention right by one of the Parties to the European Convention.¹⁶⁶ States also have the right to bring complaints of European Convention violations.¹⁶⁷ The complainant must have exhausted all available domestic remedies prior to filing the petition, and the complaint cannot be the focus of any other international investigation.

The petitioner can complete the process in a reasonable period of time, and is rewarded at the end with a specific judgment which is final under the new Protocol 11 procedures and binding on the European Convention Parties. The European Council of Ministers is responsible for supervising their execution. The European Court has broad discretion to fashion remedies. In one case, for example, the Court ordered the Kingdom of Belgium to reorganize its educational system to accommodate the language needs of a significant minority populations.

¹⁶² See EC Treaty, *supra* note 161, at art. 169; see also Sands, *supra* note 160, at 228.

¹⁶³ See EC Treaty, *supra* note 161, at art. 173; see also Sands, *supra* note 160, at 228.

¹⁶⁴ Sands, *supra* note 160, at 228.

¹⁶⁵ See European Convention for the Protection of Human Rights and Fundamental Freedoms, E.T.S. No. 005, signed in Rome on June 4, 1950, 213 U.N.T.S. 222 (entered into force Sept. 3, 1953) [hereinafter European Convention]. Amended by Protocols 3 (Sept. 21, 1970), 5 (Dec. 20, 1971), 8 (Jan 1, 1990) and 11 (May, 11, 1994).

¹⁶⁶ *Id.* art. 25(1). Currently, petitions are examined first by the European Commission, but soon they will go directly into the European Court system.

¹⁶⁷ See *id.* art. 24.

¹⁵⁸ See World Bank Inspection Panel, *IBRD Resolution No. 93-10* (Sept. 23, 1993); World Bank Inspection Panel, *Operating Procedures* (Aug. 1994); Dana Clark & Michael Hsu, A CITIZEN'S GUIDE TO THE WORLD BANK INSPECTION PANEL (CIEL 1997).

¹⁵⁹ See Lori Udall, THE WORLD BANK INSPECTION PANEL: A THREE YEAR REVIEW (Washington, Bank Information Center 1997).

¹⁶⁰ See Phillipe Sands, *The International Court of Justice and The European Court of Justice*, in GREENING INTERNATIONAL INSTITUTIONS 219, 227 (Jacob Werksman ed., 1996).

¹⁶¹ See EC Treaty, art. 170; see also Sands, *supra* note 160, at 228.

The Commission carries out the initial review of a complaint, may perform an investigation, and tries to facilitate negotiated resolution. Absent resolution, the Commission prepares a report and preliminary legal judgment on possible violations of the Convention. As such, the Commission operates as a “gatekeeper” to more formal dispute resolution before the ECHR.¹⁶⁸

After the Commission investigation and report is completed, either the Commission or the State defendant can bring a case to the Court itself.¹⁶⁹ From its inception until 1987, the Commission completed over twelve thousand reports concerning applications for dispute resolution. The Court, in contrast, hears between twenty and forty cases per year.¹⁷⁰

Commission on Environmental Cooperation. In conjunction with the formation of North American Free Trade Agreement (NAFTA), Canada, the United States and Mexico also entered into the North American Agreement on Environmental Cooperation (NAAEC). The NAAEC established the Commission on Environmental Cooperation (CEC). The CEC is governed by the Council, including the Environment Ministers of Canada and Mexico and the Administrator of the US Environmental Protection Agency. The CEC’s day-to-day operations are run by the Secretariat.

Articles 14 and 15 of the NAAEC provides for citizen submissions in cases in which it is alleged that environmental laws are not being enforced or are otherwise not effective. Under Article 14, any non-governmental organization or person established or residing in the territory of a NAAEC Party may make a submission to the CEC Secretariat asserting that a Party is failing to enforce its environmental law effectively.¹⁷¹

Section 14(1) of the NAAEC lays out criteria for submissions, and the Secretariat has provided additional guidance on the 14(1) criteria.¹⁷² The submitting party must identify the applicable statute or regulation that is not being enforced and must show that they have exhausted domestic remedies. A submission must appear to be aimed at promoting enforcement rather than at harassing industry. The Secretariat has also made clear that the submission must involve a current or ongoing failure to enforce and not a past failure to enforce.¹⁷³

If the Secretariat determines that the Article 14(1) criteria are met, then the Secretariat determines whether to request a response from the Party named in the submission under Article

¹⁶⁸ See Daniel S. Sullivan, *Effective International Dispute Settlement Mechanisms and the Necessary Condition of Liberal Democracy*, 81 GEO. L.J. 2369, 2375-76 (1993).

¹⁶⁹ See *id.* at 2376.

¹⁷⁰ See *id.*

¹⁷¹ See North American Agreement on Environmental cooperation between the Government of the United States of America, The Government of Canada, and the Government of the United Mexican States, art. 14, Sept. 14, 1993, 32 I.L.M. 1480 (1993) (*entered into force* Jan. 1, 1994) [hereinafter NAAEC].

¹⁷² See *Guidelines for Submissions on Enforcement Matters under Articles 14 and 15 of the North American Agreement on Environmental Cooperation* (“Guidelines”), available at URL: <<http://www.cec.org/>>.

¹⁷³ A submission challenging Canada for failing to conduct the appropriate environmental assessment of The Atlantic Groudfish Strategy (TAGS) – Canada’s response to the collapse of the Atlantic cod fishery – was rejected because it was not brought in a timely manner. Submission No. SEM-97-004. The submission was made in 1997 challenging adoption of the TAGS in 1994. The environmental assessment legislation that Canada was charged with failing to enforce had already been replaced at the time of the submission; the new environmental assessment legislation did not cover government policies or procedures, such as the TAGs. The Secretariat found that one of the requirements of Article 14(1) is that the failure to enforce environmental law be current or ongoing and not wholly in the past. In essence the submission was rejected because it was not brought in a timely manner.

14(2). The Secretariat will forward to the Party a copy of the submission and any supporting information provided by the submitting party. The Secretariat may not proceed if the matter raised in the submission is the subject of a pending judicial or administrative proceeding.

The Secretariat may recommend that a factual record be prepared in accordance with Article 15 of the NAAEC, depending upon the response of the party. The CEC Council can instruct the Secretariat to prepare a factual record on the submission. Assuming that the Secretariat is allowed to conduct its inquiry, the final factual records prepared by the Secretariat will contain: (a) a summary of the submission that initiated the process; (b) a summary of the response, if any, provided by the concerned Party; (c) a summary of any other relevant factual information; and (d) the facts presented by the Secretariat with respect to the matters raised in the submission. The final factual record will be made publicly available if at least two of the countries on the Council vote for it to be made available.

Although the only remedy available under the Article 14 submission procedure is preparation of a factual record, this can prompt action by the Party to increase enforcement. A factual record can also be used for non-traditional enforcement through media, campaigning and boycotts. The Secretariat keeps a registry of submissions, which is available over the Internet.

2. Innovative Mechanisms

While the mechanisms reviewed in this section do not have such wide application or such extensive experience as those in the preceding section, they are included here because they offer models that may be of interest to negotiators as they consider options for dispute settlement procedures to be included in the Pacific Convention. Discussed below are the ombudsman position created recently by the International Finance Corporation, and the Nordic Convention’s provision for citizens’ reciprocal access to the national courts of the other parties.

International Finance Corporation’s Ombudsman. The International Finance Corporation (IFC) is the arm of the World Bank Group that lends at near-market rates to the private sector in the developing world. The IFC has recently created an ombudsman position to investigate environmental problems relating to activities supported through IFC lending. The ombudsman will investigate complaints about the environmental impacts of IFC-funded projects from citizens living in the project area. This mechanism provides an opportunity for the public to raise concerns and submit evidence to an official with investigative powers who is part of the intergovernmental organization whose conduct is in question, while avoiding the confrontational aspects of direct dispute settlement procedures. The specific guidelines governing the ombudsman’s duties and powers have yet to be developed.

Nordic Convention: Reciprocal Access to National Remedies. The Nordic Convention embodies an unusual mechanism for resolving disputes involving international environmental problems. It provides reciprocal access to administrative and judicial authorities of each party for the citizens of each participating nation. The purpose is to provide affected individuals the ability to bring an action against the source of an environmental “nuisance” located in another State in that State’s tribunals. Under the Nordic Convention, the complaining foreign national must be accorded the same treatment that a host country national would have under purely domestic circumstances.¹⁷⁴ An affected individual may seek both to prevent environmental harm

¹⁷⁴ Convention on the Protection of the Environment between Denmark, Finland, Norway and Sweden, done February 19, 1974, at art. 3, 1092 U.N.T.S. 279 (1974), *reprinted in* 13 I.L.M. 591 (1974) [hereinafter *Nordic Convention on Protecting the Environment*].

and to recover compensation for damages already suffered.¹⁷⁵ Analogous reciprocity in the regional fisheries context might involve a provision that that nationals of any Party whose interest in the fishery is injured by illegal conduct of vessels flying the flag of another Party have the right to bring claims against those vessels in the courts of the second Party.

V. Conclusions and Recommendations

The framework established by the UNCLOS and SSA for dispute settlement procedures affords negotiators of a new Pacific Convention significant flexibility to design procedures that respond to their shared objectives and values, to the situation in the region, and to lessons from experience in other contexts. Experience with dispute resolution both in connection with fisheries management and in other areas of international law suggests that there are a number of useful mechanisms and techniques that negotiators can employ to enrich and complement the UNCLOS/SSA structure.

The standard package of the UNCLOS procedures discussed in Part II appears to contemplate bilateral disputes between two parties that perceive that they have mutually exclusive interests.¹⁷⁶ In contrast, however, many of the disputes likely to arise under a Pacific Convention, as noted in Part II above, would involve questions whether a State has complied with *collectively* determined norms. A State's failure to comply with those norms would conflict with collective interests, not merely with the interest of one other Party.

For these types of disputes, the bilateral State-to-State paradigm of the UNCLOS package could be enriched by reference to the mechanisms developed in other forums for addressing problems involving compliance and enforcement by specific States. These include the standing commissions/committees found under the ILO, the Montreal Protocol and the ombudsman model recently implemented by the IFC. Adaptation of these models for consideration in the context of the current negotiations would likely involve the assignment of monitoring, information gathering and enforcement functions to the Commission, the Technical and Compliance Committee and the Secretariat envisioned under the Draft Pacific Convention.

Timely Precaution and Adaptive Management. As discussed in Part __, timely response to non-compliance is critical in order to ensure a precautionary approach and adaptive management. There must be effective mechanisms for identifying compliance issues, including those that could lead to disputes.¹⁷⁷ This will involve an ensemble of institutions carrying out monitoring, information gathering, reporting, investigative and conciliatory or mediating functions.

The Secretariat of the new Pacific Convention can collect and distribute compliance information from all reliable sources, as do other Secretariats such as those of the CITES and Montreal Protocol. The Secretariat could also play an active role in following up and confirming reports, as do the organs of the ILO, and in certain cases the World Bank Independent Inspection

¹⁷⁵ *Id.*

¹⁷⁶ Thus, typical ICJ and arbitration cases involving the law of the sea have involved delineation of maritime boundaries, fisheries jurisdiction and continental shelves. See Boyle, *supra* note 14, at 40-41.

¹⁷⁷ Timeliness is particularly important in connection with disputes about the management and conservation of limited natural resources, like fish stocks, because "in the field of the environment, certain damage may occur for which no monetary compensation, however large, and no efforts at restoration, however diligent, would ever return the ... resources to their original conditions." Adede, *supra* note 20, at 53 (arguing for, where possible, the avoidance of disputes).

Panel and the Commission on Environmental Cooperation. Where a dispute arises outside of the Pacific Convention's institutions, the Secretariat might initiate contact with disputing Parties and even make recommendations as to the choice, where necessary, of appropriate forums or procedures for resolving the issue.

Where dispute resolution procedures are invoked, it will be important to provide for adherence to strict deadlines such as those that have contributed to the success of the WTO Dispute Settlement Body, and prompt responses to complaints such as those provided to date by the ITLOS, and keep information publicly available about conflict resolution and changes in fish stocks management that result. The need for timely response also suggests that it would be valuable for the Technical and Compliance Committee to receive frequent updates from the Secretariat, to meet regularly, and perhaps communicate through electronic means and telephone between meetings.

The precautionary approach may also have implications for the allocation of the burden of proof in dispute resolution proceedings. Scientific uncertainty should not be a basis for delaying protective action. On the contrary, the burden of proof should be placed upon the party proposing a reduction in the level of protection.

Scientific Basis for Decisions. Experience suggests several ways to enhance implementation of the SSA's strong emphasis on science. A strong role for both the Scientific and the Technical and Compliance Committees will be important, with regular consultations and openness to input from all sources. The Montreal Protocol's linkage between the Implementation Committee and a technical and scientific advisory panel suggests that a linkage between the Scientific Committee and the Technical and Compliance Committee could be valuable, and other linkages to expertise could be considered. The Secretariat should have adequate expertise and staffing resources to support these bodies.

Transparency. Transparency of proceedings is particularly important as science depends on the open exchange of information and an open, vigorous debate about the strength of observations and validity of conclusions. Transparency is also vital for building legitimacy of the institution in the public eye, as well as validating the outcome of a proceeding involving a small number of Parties to an agreement in the eyes of other Parties who also are likely to have a direct or indirect interest in the outcome. In light of these factors, procedures under the new Convention should incorporate maximum transparency consistent with a continuing trend as evidenced by regional, supranational and international institutions such as the ILO, CEC, ECJ, and the European Court of Human Rights.

Cost. Dispute resolution procedures must take account of the need to minimize costs in the interest of efficiency. This can be addressed in part through measures such as strict deadlines for each step of the procedure, and simplified and informal procedures, at least at the early stages to *facilitate* negotiated solutions before resort to formal, adversarial dispute settlement mechanisms becomes necessary. Another option is to distribute the burden of monitoring and enforcement by empowering a variety of parties to bring forward evidence regarding compliance, as is the practice in institutions such as the ILO, Commission on Environmental Cooperation, World Bank Independent Inspection Panel, and Nordic Convention. Concerns about efficiency and overburdening of forums could be addressed through appropriate design of procedural requirements (e.g. variations in formality, as under the ILO and ECHR, binding versus non-binding mechanisms, as under the ILO and CEC, or procedural and evidentiary requirements as under the CEC).

Fairness. Fairness demands procedural clarity and rule-based, impartial consideration of each case. Yet this must be balanced with flexibility and equitable consideration as well. Particularly important and unequivocal is the need to provide financial and technical assistance to developing countries, including least developed countries and small island states, so that they can participate effectively in whatever dispute resolution procedures are defined under the new Convention. A procedure for appeal, for instance to the ITLOS as suggested below, could provide a check on erroneous decisions in the first instance.

Range of Measures for Compliance. Dispute resolution procedures are one of a set of mechanisms for promoting compliance and implementation. Consistent with the SSA, the Convention should also provide for assistance to developing countries, technology transfer, and reporting and information sharing. This panoply of measures is characteristic of contemporary multilateral agreements on environment and sustainable development.

Ensemble of Institutions. Experience indicates that the range of mechanisms for compliance should be administered through an appropriate set of institutions. An active Secretariat contributes significantly to effectiveness, as evidenced by the Montreal Protocol and CITES. The IFC Ombudsman could be the model for according the Secretariat investigative powers in response to submissions about compliance, at least in certain defined situations. The Technical and Compliance Committee also has a significant role in assessing compliance, serving as a forum for discussion of compliance disputes, and developing collective responses to non-compliance.

Graduated Series of Responses to Disputes. Experience suggests that there should be a graduated series of options for dispute resolution along the spectrum from non-adversarial to adversarial. It is not generally constructive to move immediately into a confrontational proceeding. Active, if non-binding, facilitation or conciliation may be important roles for negotiators to consider for the Secretariat, the Technical and Compliance Committee, or a specially-created committee. Initial mechanisms should involve submissions to a Secretariat or compliance committee, as under the Montreal Protocol, ILO, Commission on Environmental Cooperation, and other forums. If warranted, the next step would be an inquiry to the Party. Further steps could include investigation, conciliation, and only then formal dispute settlement. There may be value in defining a clear route of appeal, as is found in the WTO or ECJ. A process that involves appeal from an initial non-binding investigation or hearing before a panel, to a formal forum for binding resolution, would be an option, as is found in the ILO.

If the ITLOS were the endpoint for this process, there would be both drawbacks and advantages. The ITLOS would probably not have expertise most relevant to the area and stocks covered by the Convention, although it would have the power to seek out relevant information and advice. On the other hand, it could help develop a consistent jurisprudence interpreting the SSA, which would be of value not only for the Pacific Convention but for other fisheries organizations and arrangements. Furthermore, the ITLOS could hear cases authorized under the Pacific Convention involving disputes between a dissenting Party and the Commission itself, thus providing a procedure for appeal from Commission decisions (if the Convention were drafted accordingly).