FAO Training Manual

International Watercourses/River Basins including Law, Negotiation, Conflict Resolution and Simulation Training Exercises

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Preface

Introduction and Objectives of the Training Manual

The project which led to the development of this training manual grew out of discussions with Stefano Burchi, Director of the Food and Agriculture Organization of the United Nations (FAO) Legal Development Division at FAO in Rome, and his colleague Kerstin Mechlem at an FAO Nile Basin Initiative training session in Bujumbura, Burundi in the Spring of 2006.

Those discussions centered around two observations. The first observation was regarding the paucity of accessible international training materials succinctly integrating negotiation skills with international water law training. The second observation was that there appeared to be a niche for a more "learner centered" training approach to international waters focusing on analysis of experience and encouraging attendees to become increasingly self directed and more responsible for their own learning. Under such an approach, first hand and vicarious experiences, dialogue among learners as well as between instructors and learners, and analysis and interpretation become the focus of instruction.

This training manual responds to those observations and aims to provide the reader with practical and "learner-centered" training materials on international water law issues. The materials focus on international water law and policy education as well as on negotiation training. It is intended to train both experienced negotiators on the intricacies of negotiating international watercourses as well as inexperienced negotiators on developing effective negotiation skills and techniques. Further, this manual is aimed at informing both professionals and interested parties to aid in international negotiation and conflict resolution concerning international watercourses.

The manual begins with an introductory chapter entitled "Setting the Scene". The subsequent chapter includes materials on the hydrological cycle and international watercourses. Chapter 3 focuses on the legal aspects surrounding international watercourses. It is followed by a chapter entitled "Negotiation and Conflict Resolution". Finally, Chapter 5 provides a series of custom designed simulation training exercises. These exercises are based on simulation training exercises that the authors have had the privilege of testing in a number of international drainage basins throughout the world including the Nile River Basin, the Mekong River Basin, the Syr Darya and Amu Darya River Basins, the Columbia River Basin and international drainage basins in South America, Mexico/US and Nepal. The sixth and final chapter concludes with some parting remarks on being part of international negotiations and hopes for negotiating practice. Appendices contain copies of the key international documents referred to in the text.

This training manual is written in such a way that these materials can be sent to participants before the course as preparatory reading. There is also a Teaching Package for the use of instructors which accompanies this training manual.

DISCLAIMER

The materials in this training manual, including all of the simulation exercises, are entirely made up for teaching purposes only. Any resemblance between these simulation exercises and any real situations or real persons, living or dead, is purely coincidental.

This training manual does not necessarily represent the views of FAO or any other international entity or organization with which the authors are or may previously have been associated including without limiting the generality of the foregoing the World Bank, the United Nations Development Programme, the Global Environment Facility, the Mekong River Commission, the Nile Basin Organization, the Canadian International Development Agency and/or the Canadian Department of Foreign Affairs.

This draft training manual is a"work in progress". Comments, criticisms and experiences using this manual are strongly encouraged by emailing Richard Kyle Paisley, University of British Columbia, Vancouver, Canada at: rpaisley@interchange.ubc.ca

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The materials in this draft training manual were drawn from a variety of sources, such as the UN, UNTS, UNFAO, UNILC, World Bank, textbooks and journals, libraries of law schools, and the internet.

The initiative which led to the development of these training materials grew out of discussions with Stefano Burchi and Kerstin Mechlem, legal officers of the Development Law Service, Legal Office, Food and Agriculture Organization of the United Nations (FAO) on the occasion of the Program for the Regional Workshop on International Water Law and Negotiation Skills for Sharing Transboundary Resources in Bujumbura, Burundi in the Spring of 2006. Thank you Stefano and Kerstin for your support and encouragement.

Special thanks also to Bart Hilhorst and Jake Burke of FAO and the SVP Coordination Project and Information Products for Nile Basin Water Resources Management GCP/INT/945/ITA who also tremendously supported and encouraged the production of these training materials.

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All errors and omissions remain the sole responsibility of the author.

TABLE OF CONTENTS

Table of Contents

Table of Contents

Table of Contents

INTRODUCTION

Fresh water is vitally important to human life. Due to this truth, there is a global water crisis which requires worldwide attention. Nearly half of the world's population is located within one or more of over 260 international drainage basins shared by two or more states, and at least 145 nations have territory within international basins. In response to the emerging global crisis in water scarcity, there has been a global water agenda in the international forum since 1972. Governments, experts, and non-governmental organizations have been collaborating in response to this crisis, with transboundary water agreements being especially important in providing resolutions to this global water crisis. However, there has yet to be a focus on transboundary water issues and this manual, in part, has been created in response to that. Transboundary river agreements have played an increasingly critical role in building confidence in pursuit of peace and security on a regional and global scale. International agreements governing the utilization of transboundary water resources have the tendency to stabilize and enhance security on a regional level. Disagreements over water can heighten international tension and lead to conflict, but the very process of reaching an understanding for cooperation in a transboundary water context has a stabilizing effect and creates an increasingly transparent atmosphere. The mere task of negotiation usually widens political participation, builds political stability and spreads confidence between the basins states. Agreements have the ability to ameliorate tension and reduce the likelihood of war, but even where the riparians fail to reach an agreement and merely agree to share information and exchange data, increased confidence often emerges. Joint cooperation around transboundary watercourses paves the way for regional cooperation in other domains of politics, economics, environment, and culture.

Negotiation and implementation of transboundary water agreements contribute to peace and security. Collective action and greater cooperation on a global level are necessary for the achievement of goals in relation to the eminent global water crisis. Transboundary river agreements act as capacity building measures to enhance peace and security regionally and globally. The perception by countries of the water problem as a zero-sum game leads these countries to seek to increase control over water, even to the detriment of others, and tensions over water have contributed to an uneasy political climate in places such as Central Asia. The presence of a functional treaty can decrease the severity and frequency of water disputes. Lessons regarding negotiation and implementation of transboundary water agreements, by facilitating cooperation and learning, give countries the opportunity to exchange lessons and experiences with each other in a supportive environment.

WATERCOURSES AND RIVER BASINS

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, effecting commerce, transportation, recreation and travel. This chapter explains the hydrological cycle and introduces the reader into the particularities of international watercourses and river basins.

2.1 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 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

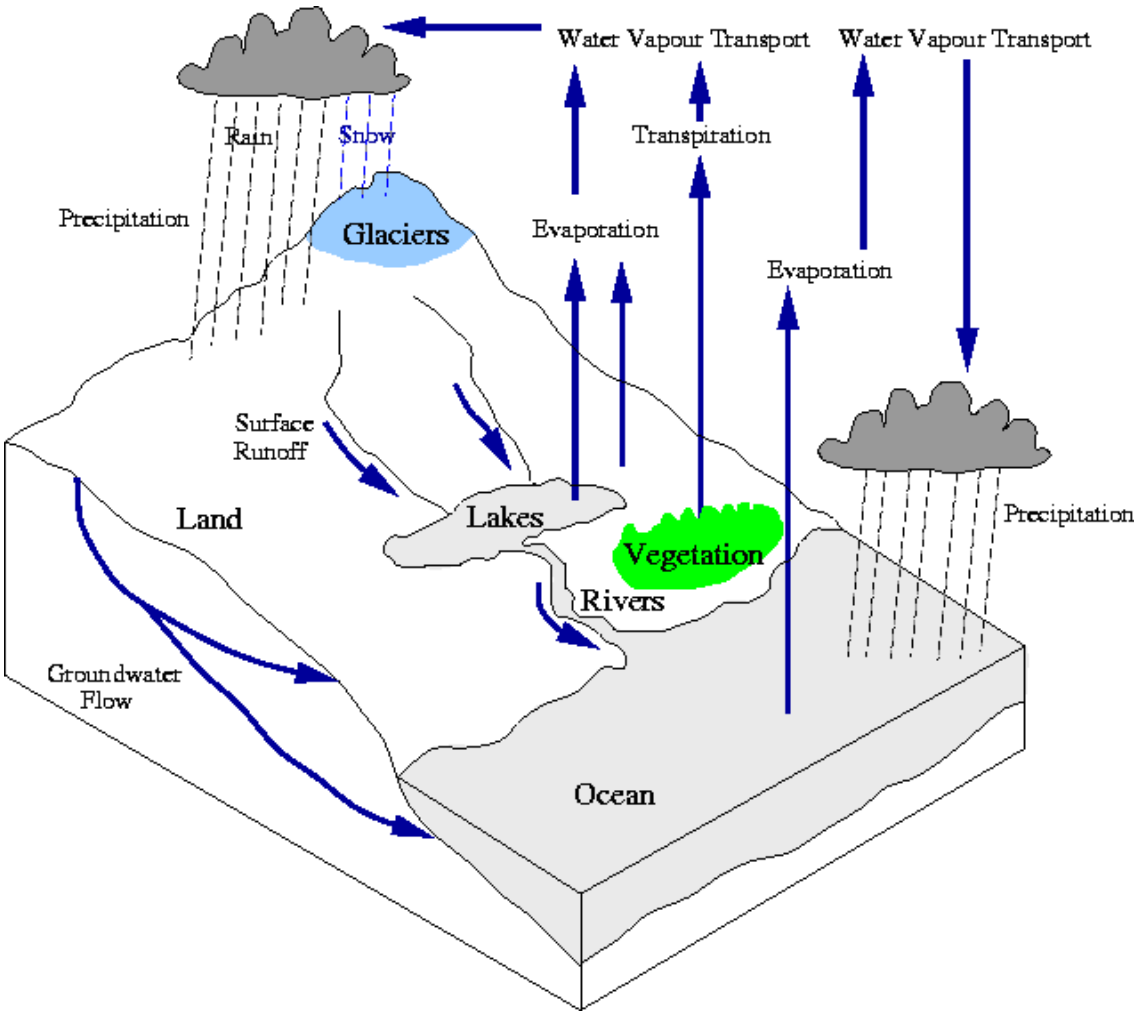
Source: Gleick, P. H., 1996: Water resources. In Encyclopedia of Climate and Weather, ed. by S. H. Schneider, Oxford University Press, New York, vol. 2, pp.817-823.

[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"

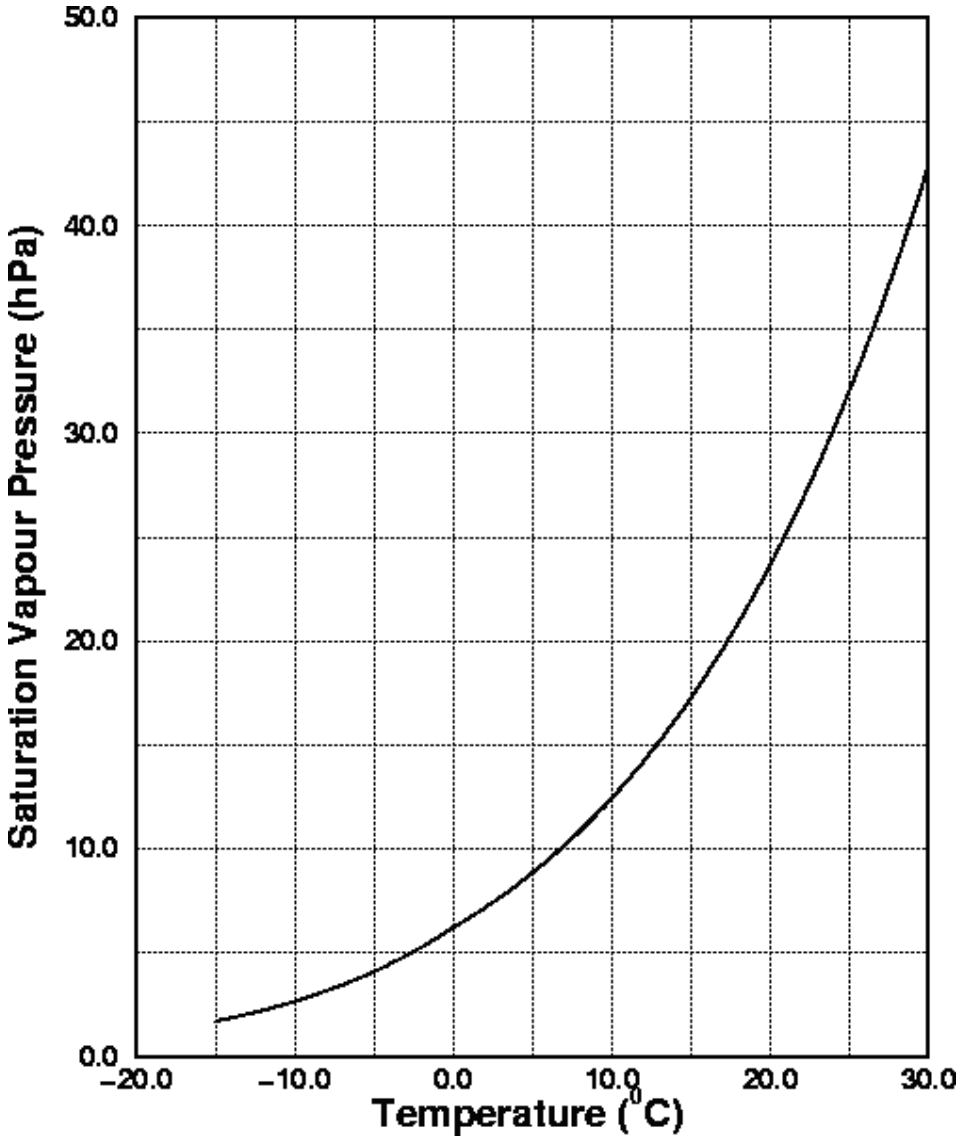


Source: School of Earth and Environment, University of Leeds.

2.1.1 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 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**.

$$\text{Relative humidity} = \frac{\text{vapour pressure}}{\text{saturation vapour pressure}} \times 100\ \%$$

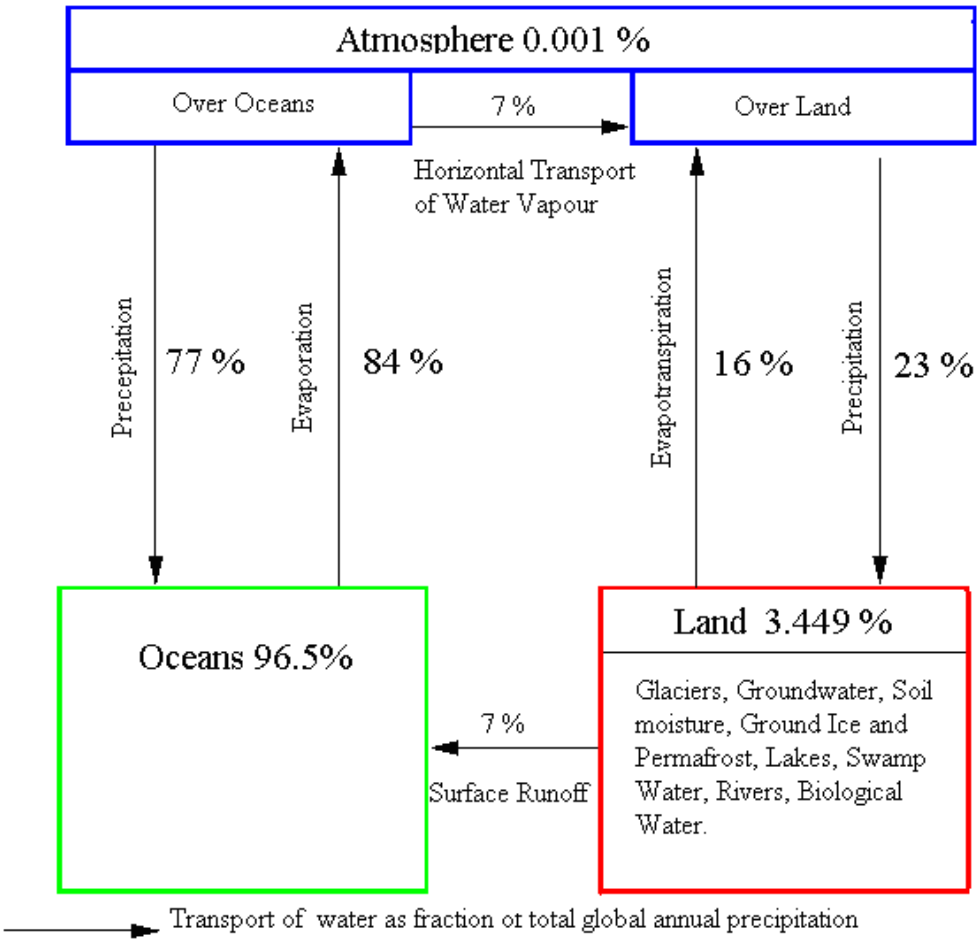
- As air cools, its relative humidity increases until it reaches 100%. Then condensation must occur if there is any further cooling.
- In reality, however, condensation cannot occur quite as easily as the above suggests. Condensation usually only takes place on the surface of small particles called aerosols.
- 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.

2.1.2 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.

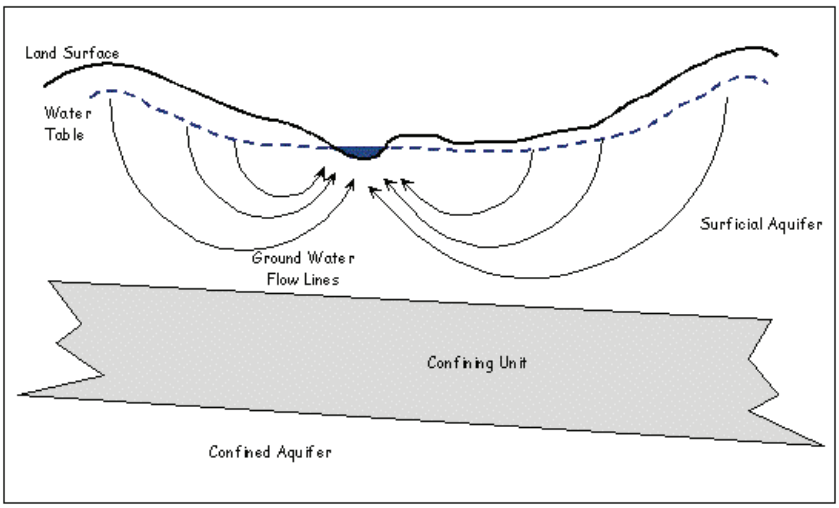
FIGURE 3: PRINCIPAL EXCHANGES AND RESERVOIRS IN THE HYDROLOGICAL CYCLE.



2.1.3 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.

2.1.4 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.
  - ◊ *Influent (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.

[3] The material in this section relies on material originally developed by Professor Aaron Wolf including Beach, L., J. Hamner, J. Hewitt, E. Kaufman, A. Kurki, J. Oppenheimer, and A. Wolf. *Transboundary Freshwater Dispute Resolution: Theory, Practice and Annotated References*. Tokyo and New York: United Nations University Press, 2000.

2.2 International Watercourses and River Basins[3]

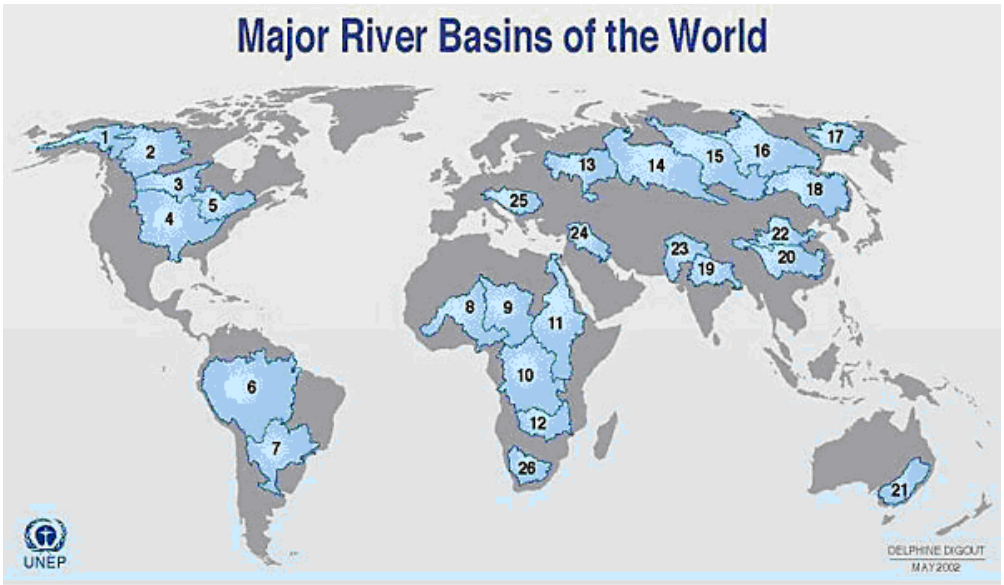
River basins and groundwater aquifers which cross international boundaries present increased challenges to effective water management where hydrologic needs are often overwhelmed by political considerations. While the potential for paralyzing disputes are especially high in these basins, the record of violence is actually greater within the boundaries of a nation. Moreover, history is rich with examples of water acting as a catalyst to dialogue and cooperation, even among contentious riparians.

2.2.1 Background to International Watercourses

There are over 260 watersheds and countless aquifers which cross the political boundaries of two or more countries. International basins cover 45.3% of the land surface of the earth, affect about 40% of the world's population, and account for approximately 80% of global river flow (Wolf et al. 1999).

These basins have certain characteristics that make their management especially difficult, 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.

FIGURE 5: INTERNATIONAL BASINS OF THE WORLD



Source: United Nations Environment Programme (UNEP); World Conservation Monitoring Centre (WCMC); World Resources Institute (WRI); American Association for the Advancement of Science (AAAS); *Atlas of Population and Environment*, 2001.

2.2.1.1. Traditional Chronology

According to Wolf, a general pattern has emerged for international basins over time. Generally riparians of an international basin implement water development projects unilaterally, first on water within their territory, in attempts to avoid the political intricacies of the shared resource. At some point, one of the riparians, usually the regional power, will implement a project which impacts at least one of its neighbours. This might be to continue to meet existing uses in the face of decreasing relative water availability, as for example Egypt's plans for a high dam on the Nile or Indian diversions of the Ganges to protect the port of Calcutta. It might also be to meet new needs reflecting new agricultural policy, such as Turkey's GAP project on the Euphrates. This project which impacts one's neighbours can, in the absence of relations or institutions be conducive to conflict resolution, or become a flash point for heightened tensions and regional instability requiring years or, more commonly, decades to resolve.

2.2.1.2. Preventive Diplomacy

Wolf notes:

> [T]he record of acute conflict over international water resources is overwhelmed by the record of cooperation. The last 50 years has seen only 37 acute disputes (those involving violence) and, during the same period, 157 treaties negotiated and signed. In fact, the last (and only) war fought specifically over water took place 4,500 years ago, between the city-states of Lagash and Umma along the Tigris River. Total numbers of events in the last 50 years are equally weighted towards cooperation: 507 conflict-related events, and 1,228 cooperative. The most vehement enemies around the world either have negotiated water sharing agreements, or are in the process of doing so as of this writing. Violence over water seems neither strategically rational, hydrographically effective, nor economically viable. Shared interests along a waterway seem to consistently outweigh water's conflict-inducing characteristics.

Furthermore, once cooperative water regimes are established through treaty, they turn out to be impressively resilient over time, even between otherwise hostile riparians, and even as conflict is waged over other issues. For example, the Mekong Committee has functioned since 1957, exchanging data throughout the Vietnam War. Secret 'picnic table' talks have been held between Israel and Jordan, since the unsuccessful Johnston negotiations of 1953-55, even as these riparian nations were in a legal state of war. Further, the Indus River Commission not only survived through two wars between India and Pakistan, but treaty-related payments continued unabated throughout the hostilities.

Despite their complexity, the historical record shows that water disputes get resolved, and that the resulting water institutions can be tremendously resilient. The challenge for the international community is to get ahead of the "crisis curve", to help develop institutional capacity and a culture of cooperation in advance of costly, time-consuming crises, which in turn threaten lives, regional stability, and ecosystem health.

One productive approach to the development of transboundary waters has been to examine the benefits in a basin from a multi-resource perspective. This has regularly required the riparians to get past looking at the water as a commodity to be divided, and rather to develop an approach which equitably allocates not the water, but the benefits derived.

According to Wolf, the most critical lessons learned from the global experience in international water resource issues are as follows:

1. Water crossing international boundaries can cause tensions between nations which share the basin. While the tension is not likely to lead to warfare, early coordination between riparian states can help ameliorate the issue.
2. Once international institutions are in place, they are tremendously resilient over time, even between otherwise hostile riparian nations, and even as conflicts are waged over other issues.
3. More likely than violent conflict occurring is a gradual decreasing of water quantity or quality, or both, which over time can affect the internal stability of a nation or region, and act as an irritant between ethnic groups, water sectors, or states/provinces. The resulting instability may have effects in the international arena.
4. The greatest threat of the global water crisis to human security comes from the fact that millions of people lack access to sufficient quantities of clean water for their well being.

2.2.1.3. Bi/multilateral Entities for Managing, Allocating, Protecting, and Developing Transboundary Waters

Commissions and other bi/multilateral organizations are especially relevant to the management, allocation, protection, and development of transboundary waters. Such entities have been employed on a multitude of transboundary rivers in Europe; in North America, on the Great Lakes, the Rio Grande and the Colorado River; in Africa on the Okavango and Zambezi Rivers and for Lake Chad; in Asia on the Mekong River; in Latin America on the frontier waters between Guatemala and Mexico and on the Uruguay River.

"Meaningful progress in improving water resources management across jurisdictional boundaries requires effective mechanisms to be developed for an informed and structured dialogue about contentious issues as a means of resolving disagreements as they arise, and an agreed means for implementing the decisions that are taken. This requires an open and transparent process to be put into effect, one that facilitates the development of mutual trust and understanding over time. Creating river basin organizations (RBOs) has been actively promoted as a way of peacefully managing shared water resources and there are many good examples of RBOs from across the globe." – John Scanlon, 2007

It has to be mentioned that often there exists no 'perfect' solution in a transboundary water issues—but only the 'best' possible under all of the current political, social, economic and environmental circumstances.

Negotiations surrounding the role and functions of bi/multilateral entities have revolved around power; politics; history; culture; the economy and the environment.

2.2.2 Further Reading

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INTERNATIONAL LAW IN CONTEXT[4]

3.1 International Law[4]

International law is the set of rules that states use to manage their relations. International law is different from national law. In a national legal system, a central law-making body or legislature makes the laws, the executive implements the laws and secures their observance and the judiciary interprets and applies the law. There are no equivalents to these bodies in the international legal system.

The main concept of international law is sovereignty, defined as the supreme, absolute and uncontrollable power by which any state is governed. A state's sovereign power to control activities inside its boundaries is limited by the international legal rules that the state has agreed to follow. In the international law field, the tension between sovereignty and protection of the environment often surfaces.

Sovereign states make the rules that govern their citizens and that apply within the limits of their territorial jurisdiction, including the land within their borders, internal waters, territorial sea and the air above these areas extending to the point at which the legal regime of outer space begins. Each of these territorial areas is defined by legal rules. Areas outside the national jurisdiction of each state include the high seas, deep sea bed, atmosphere and outer space, and certain limited land areas in Antarctica. These areas are sometimes called the "global commons" and international rules also govern these areas.

International legal rules develop by consent among states. Treaties affect only those states that consent or agree to be legally bound by the written agreement. International laws are formed when states need to cooperate with other states. This need to cooperate creates an incentive to comply with international law. However, conditions do change, which can lead to violations of international law. Law breaking states may attract diplomatic pressures, sanctions, reprisals, and in extreme cases, military intervention.

International law is derived from express written agreements between states, usually called treaties, as well as from other sources such as custom, the customary practice of states who believe they are legally required to conform to certain practices.

International law encompasses global, multilateral or bilateral agreements, as well as customary law, state practice, institutions that develop and administer the law and the extra-territorial application of domestic law. Among other things, international law attempts to control, limit and prevent environmental damage and promote a clean and healthy environment. Environment is a broad topic, including fresh and salt water, soil, land, atmosphere, all living creatures and all other aspects of the physical environment.

International law is not confined to purely environmental subjects, but is very much intertwined with other pressing issues facing the world: the North-South divide; excessive and inequitable consumption patterns; poverty; human health; human rights; international and national trade; and investment and financial regimes.

[4] The material in this section relies on materials originally developed by Linda Nowlan including in Nowlan, Linda et. al., "Kyoto, Pops and Straddling Stocks: Understanding Environmental Treaties", West Coast Environmental Law Association, Vancouver, Canada. (2003).

3.2 Hard Law and Soft Law

The sources of international law are sometimes characterized as "hard law" and "soft law". Treaties are hard law. States that negotiate and ratify treaties intend to be legally bound and are expected to make all efforts to comply with these laws. However, soft law is increasingly important in the development of international law. Soft law has been called more flexible, dynamic, and democratic than hard law. Its creation does not depend on formal negotiations between authorized diplomats. Soft law can be initiated or substantially influenced by NGOs, international institutions like UNEP or the World Bank. Different groupings of states can also significantly affect soft law development as in the case of the Organization for Economic Cooperation and Development (OECD).

Hard law includes conventions, treaties, agreements and protocols, all different names for legally binding written agreements between states. In the field of international environmental law, treaties or MEAs contain most international legal obligations. Treaties are created to codify existing and emerging practices and to create new binding rules. All the international rules concerning treaties that have developed over years of state practice have been collected and codified in a treaty called the *Vienna Convention on the Law of Treaties*. The Vienna Convention defines what a treaty is, outlines the procedures for states to demonstrate their consent to be bound by the treaty, sets the rules for treaty procedure, and addresses other matters such as determining priority between treaties.

Soft law refers to documents like declarations, guidelines, resolutions and statements of principle or codes of conduct that are not legally binding. It includes United Nations resolutions, conference declarations such as the *Rio* and *Stockholm Declarations* and statements from major UN bodies such as the United Nations Environment Program (UNEP). Some observers would also classify statements from major non-governmental organizations such as the IUCN – WWF *World Conservation Strategy* as being a form of soft law.

Soft law declarations may also be negotiated by private sector corporations, or by these corporations in partnership with an international organization. Examples include UNEP's *Statement on Financial Institutions and the Environment* and the numerous corporate social responsibility commitments made by individual corporations or by geographical or industry sectors. Some soft law statements like the *Global Reporting Initiative*, an attempt to harmonize corporate social and environmental reporting procedures, cut across industry sectors.

Soft law is becoming more common internationally. Soft law instruments may lay the foundation for later legally binding agreements. For example, the 1989 UNEP – FAO Prior Informed Consent (PIC) guidelines for certain toxic chemicals and pesticides led to the 1998 *Rotterdam Prior Informed Consent (PIC) Convention*, and the FAO's 1983 *International Undertaking on Plant Genetic Resources* led to the adoption of the 2001 *International Treaty on Plant Genetic Resources for Food and Agriculture.*

Though soft law generally creates aspirational goals rather than strict legal duties, this is not always the case. On occasion a non-binding document is so precise and detailed that it could easily be mistaken for a treaty. An example is the OECD *Guidelines for Multinational Enterprises*, revised in 2000. As the Foreword from the OECD Secretary General states: the *Guidelines* are an example of the type of multilateral instrument that will be used more and more in future to set rules, which, though not legally binding, are meant to work, be implemented, followed up and monitored.

An important aspect of soft law is decisions of "Conferences of the Parties" (or COPs) to various treaties. Technically, these decisions are not legally binding unless they are incorporated into the

treaty, but they often flesh out essential details of treaties. For instance, extensive detailed decisions of the *UN Framework Convention on Climate Change* are essential to the working and effectiveness of the *Kyoto Protocol*. Although technically not legally binding, the COP decisions on implementation of the *Kyoto Protocol* have a force that is almost equivalent to the Protocol itself, setting out in detail how compliance will be determined and what states are required to do.

Whether states and others comply with soft law commitments in the same manner as they do binding treaty law remains a subject of debate. Initial research findings suggest that soft law compliance is more likely when the soft law instruments are linked to binding international agreements or to existing regional and national legal arrangements.

3.3 What is a treaty?

A treaty between nations is similar to a legal contract between individuals. It is a written agreement that all parties involved consented to and intend to guide their actions. In the international arena treaties are agreements between states to take common action on a problem that transcends national boundaries. Treaties have a fixed geographic scope. A treaty creates an international organization to carry out the work defined by the Parties, take new decisions and further develop the applicable international law.

The *Vienna Convention* defines a treaty as "an international agreement concluded between states in written form and governed by international law whether embodied in a single instrument or in two or more related instruments and whatever its particular designation".

Treaties may be known by other names, such as conventions, protocols, covenants, pacts, charters or agreements, but the different names have no legal significance. If the agreement is between states, in written form, and is intended to be legally binding and governed by international law, then it is a treaty.

To decide whether a particular agreement is a treaty, the intent of negotiating parties must be examined. If they intended to be bound by international law, there will usually be some evidence of that intent in the words of the agreement. If the agreement says "The Contracting Parties hereby agree …", or uses other terms such as "rights" or "obligations", that is evidence of an intention to be bound. If the agreement says that the states (not Parties) "declare" their intent, as in the *Declaration on the Establishment of the Arctic Council*, that is evidence that the states did not intend to create a legally binding treaty. The Rio Declaration on Environment and Development is another example of a non-binding statement by states. States intentionally use the title 'Declaration' when they do not intend to create legally binding commitments, and on occasion even more explicitly emphasize that a document is not a treaty, as in the "Non-Legally Binding" Forest Principles adopted in Rio.

A treaty cannot conflict with a "peremptory norm" of international law (*jus cogens* norm). These norms are universal, applicable to all states and cannot be contracted out of through the treaty process. Further, Article 53 of the *Vienna Convention* states that a treaty is void if it conflicts with a peremptory norm of international law. The most widely known examples of these norms are prohibitions against genocide and slavery.

3.4 Who can Agree to be Legally Bound by a Treaty

Nation states are the primary subjects of the international legal system. The majority of treaties are between states. Some other entities such as associations of states, like the European Union or the United Nations also have the "legal personality" which allows them to conclude treaties. A treaty can be concluded between a state and an international organization, or between two or more international organizations.

3.4.1 Bilateral or Multilateral

Treaties may be bilateral—i.e., have two states as Parties—or multilateral—i.e., have more than two states as Parties. The major environmental treaties, such as the climate change and biodiversity agreements, are multilateral. Both these treaties have 186 Parties as of 2002. These are very high rates of membership—there are 192 states that are members of the United Nations.

3.4.2 Framework and Self-contained Treaties

A "framework treaty" is a type of treaty that contains general obligations, usually with a procedure for reaching more detailed agreement on specific obligations through protocols or subsequent legal agreements in the future. This type of multilateral treaty has become common for global environmental subjects. Examples of framework treaties include the *UN Framework Convention on Climate Change*, the *Convention on Biological Diversity* and the *Vienna Convention for the Protection of the Ozone Layer.* All three of these treaties have at least one Protocol: the *Kyoto Protocol* under the UNFCC; the *Biosafety Protocol* under the CBD; and the *Montreal Protocol* on ozone.

A self-contained treaty works through annexes or appendices which are revised periodically by the Contracting Parties at Conferences or meetings. Examples of this type of Convention include the *World Heritage Convention*, which maintains a World Heritage List of natural and cultural sites whose outstanding values should be preserved for all humanity, and the *Convention on International Trade in Endangered Species* (CITES), which maintains three different Appendices of species at risk. Revising an Appendix or List is usually easier than negotiating a new Protocol or addition to a treaty, but is only suitable for subjects that can easily be set out in a list.

3.4.3 Protocols

In the environmental field, the term "Protocol" is usually used to describe a legally binding agreement that elaborates on, or contains detailed substantive commitments to implement the objectives of a framework treaty. For example, a number of Protocols for specific air pollutants exist under the UNECE *Convention on Long-Range Transboundary Air Pollution.* Protocols must be agreed, signed and ratified separately from the framework treaty. An Optional Protocol to a treaty establishes additional rights and obligations, and allows some willing Parties to go farther than the original treaty. An example from the human rights field is the *Optional Protocol to the International Covenant on Civil and Political Rights.*

3.4.4 How Does a State Agree to a Treaty?

The *Vienna Convention* provides that states can demonstrate their intent to be legally bound by a treaty in a variety of ways, including: signature, exchange of instruments constituting a treaty, ratification, acceptance or approval, accession, or any other agreed means.

3.5.4.1 Signature

Most often a state will indicate its intention to become a Party by first signing the treaty. Two different purposes for signature must be distinguished: a state can sign a treaty to indicate approval of the final text or to show consent to be bound by the treaty. Signature alone is usually insufficient to show consent to be legally bound to a multilateral treaty, but shows that the state is willing to proceed with the international law-making process. Additional steps, such as ratification, are usually required. Environmental treaties commonly state that they will be "open for signature" until a specified date. When a state signs a treaty, it agrees to refrain from any acts which would defeat the object and purpose of the treaty.

3.5.4.2 Exchange of Instruments

This procedure allows states to exchange instruments, or written documents, to conclude the treaty. Usually, an exchange of instruments will be used to formalize a bilateral treaty.

3.5.4.3 Ratification

This is the most common way states show consent to be bound by environmental treaties. The *Vienna Convention* defines ratification as "the international act so named whereby a state establishes on the international plane its consent to be bound by a treaty". Ratification occurs when a state completes the necessary formal procedures for executing an instrument of ratification, and then exchanges this document with another state for a bilateral treaty or, for a multilateral treaty, sends it to a depository, the place where all the documents of ratification are collected.

3.5.4.4 Acceptance or Approval

These are alternatives to ratification which have the same legal effect as ratification. Many environmental treaties say that they are "subject to ratification, acceptance or approval", leaving it up to the state to decide which procedure to follow.

3.5.4.5 Accession

This procedure allows a state to agree to be bound by a treaty that has already been concluded by other states. Accession will be used, for example, if the treaty has come into force. Accession has the same legal effect as ratification.

3.5.4.6 Party to a Treaty

Before a treaty enters into force, a state that has demonstrated its intent to be bound is called a "contracting state." Only after the treaty has entered into force is a state that has consented to be

bound called a "Party." Throughout this Guide, when the term "Party" is used, it refers to a state that is legally bound by a particular treaty.

3.5.4.7 Depositary

To demonstrate that a state has agreed to the treaty, an instrument or document showing ratification (or its equivalent) is deposited, or placed, in a specified location. A treaty will usually designate a depositary such as a location in a country or, more often today, an international organization like the United Nations. The UN Secretary General is the depositary for over 500 multilateral treaties. Depositaries must accept all ratifications and documents related to the treaty, examine whether all formal requirements have been met, deposit them, register the treaty and notify Parties of all new developments regarding the treaty.

3.4.5 Reservations

A state does not usually need to agree to every single provision of a treaty in order to become a Party to that treaty. It can contract out of one or more of the treaty's obligations by entering a reservation to the treaty. A reservation is defined by the *Vienna Convention on the Law of Treaties* as:

> "A unilateral statement, however phrased or named, made by a state, when signing, ratifying, accepting, approving or acceding to a treaty, whereby it purports to exclude or to modify the legal effect of certain provisions of the treaty in their application to that state."

For example, Norway is a party to the *International Convention for the Regulation of Whaling* but has issued a reservation about the catch quotes on whaling imposed by the treaty. The *Convention on International Trade in Endangered Species of Wild Flora and Fauna* (CITES) allows Parties to enter reservations or a unilateral statement that it will not be bound by the provisions of the Convention relating to trade in a particular species listed in the Appendices as endangered. This procedure has been used, for example, by some African states for the elephant, and France, Denmark and Finland for the mountain weasel. The underlying purpose of a more permissive policy regarding reservations is based on the interest of encouraging as many states as possible to join treaties.

Reservations are allowed unless the treaty specifically states that they are not allowed. For example, the UN *Convention on the Law of the Sea* and the *Kyoto Protocol* do not allow for reservations. A state must agree to be legally bound by every provision of those treaties or decide not to consent to them at all.

Reservations are forbidden if they are incompatible with the object and purpose of the treaty.

3.4.6 Entry into Force

A treaty enters into force and becomes binding law for those states that have consented to be bound (and those states only) in a manner and on the date provided for in the treaty or as the negotiating states may agree. The treaty itself will usually specify how it enters into force.

The most common way for a treaty to enter into force is when ratification by a set number of the negotiating states occurs. For example, Canada signed and ratified the UN *Fish Agreement* (UNFA), or the *Agreement on Highly Migratory or Straddling Stocks*, but it was not legally binding on Canada until it

entered into force. That treaty required thirty states to ratify it before it entered into force. The required number of ratifications was reached in 2001, and UNFA entered into force on December 11, 2001. After a state signs a treaty, but before it enters into force and becomes legally binding, a contracting state is obliged to refrain from acts which would defeat the object and purpose of the treaty. In the context of environmental treaties, this obligation means that a state would be prohibited from taking any environmentally damaging action covered by the treaty before it entered into force.

Sometimes, to enter into force, a treaty specifies that additional requirements must be met by the states that agree to be legally bound. The 1984 *Protocol to the Convention on Long-Range Transboundary Air Pollution* required ratification by 19 states within the geographical scope of the protocol, namely Europe, before it came into force. The *Montreal Protocol on Substances that Deplete the Ozone Layer* came into force only after ratification by 11 states representing at least two-thirds of the 1986 estimated global consumption of the controlled ozone depleting substances. The rules for entry into force of the *Kyoto Protocol* require two conditions to be met: ratification by 55 Parties to the climate change convention and ratification by Annex I Parties (developed countries) that accounted for 55% of that group's carbon dioxide emissions in 1990.

3.4.7 Amendments of Treaties

Treaties may be amended by agreement between the Parties, normally by concluding an additional written agreement. Amendments change the original treaty provisions only for those Parties that adopt the amendment. A state is not required to adopt any amendments to the original treaty and is allowed to remain a Party to the treaty, but not to the subsequent amendments. A treaty will often specify particular amendment procedures. If it does not contain these procedures, any amendments will require the consent of all Parties.

3.4.8 Which Treaty Takes Precedence in the Event of a Conflict?

If there are two treaties with conflicting provisions, and both treaties have identical Parties, then the law is clear. The later treaty will take precedence to the extent of the conflict. The earlier treaty will apply only to the extent that its terms are compatible with those of the later treaty.

Treaties often contain provisions about their relationship to subsequent treaties. "Conflict clauses" or "savings clauses" can be used to prevent disputes. The clauses are used to record the intention of negotiators and not leave the dispute to be resolved by the rules of the Vienna Convention. In the environmental arena, the *North American Free Trade Agreement* (NAFTA) contains a unique clause, Article 104, "Relation to Environmental and Conservation Agreements", which states that the trade provisions in listed MEAs all "trump" NAFTA in the event of an inconsistency between their provisions and those in NAFTA:

> *Nothing in this Agreement shall be construed to affect the existing rights and obligations of the Parties under other international environmental agreements, including conservation agreements, to which such Parties are party.*

Other trade treaties, such as the WTO Agreements, do not contain similar provisions.

Another example of this type of clause appears in one of the Preamble paragraphs to the *Biosafety Protocol*: emphasizing that this Protocol shall not be interpreted as implying a change in the rights and obligations of a Party under any existing international agreements.

3.4.9 Registration and Publication

The *United Nations Charter* requires every treaty and every international agreement entered into by any member of the United Nations to be first registered and then published by the United Nations Secretariat. Over 40,000 treaties of all types (not just environmental) were registered with the UN by 1998. In the ten years from 1988 to 1998, on average 1,200 treaties were registered each year. The United Nations Treaty Series (UNTS) is the definitive published source for treaties. A treaty is not published in the UNTS until it has entered into force and been registered.

3.4.10 Interpreting Treaties

The general rule of interpretation as set out in Article 31 of the *Vienna Convention* is that treaties "shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its objects and purpose". If the treaty's meaning is still ambiguous, obscure or manifestly absurd or unreasonable after reading the full treaty text and any other agreements which may have been made between the Parties about the treaty, then other interpretative aids may be used, such as the *travaux preparatoires* (preparatory works) for the treaty. These rules of interpretation for treaties are similar to the rules used to determine the meaning of domestic laws.

3.4.11 Stages of Treaty-Making

MEAs, including international water law treaties can be proposed by an individual state, a small group of states, one or more nongovernmental organizations, or, the most common method, by a resolution approved by the members of an inter-governmental body, usually a UN body. UNEP's Governing Council initiated a number of MEAs, including the *Montreal Protocol*, the *Basel Convention*, and the *Convention on Biodiversity*. In the case of recent MEAs, it is usually up to governments to voluntarily contribute the financial support needed to support the negotiations. It is generally not practical to launch and conduct negotiations without the support of an international body.

Environmental treaties are driven by scientific consensus that action needs to be taken by the global community. Treaties develop in stages, from the time the problem is identified through to full implementation of the treaty at the national level.

The stages of developing a treaty typically are:

- Identification of the scientific problem;
- Building political consensus to address the problem;
- Convening global meetings to draft the treaty text by negotiation;
- Signing the completed treaty;
- Ratification, acceptance, approval or accession to the treaty (alternate procedures for making the treaty binding on a state);
- The treaty comes into force;
- Elaborating on the treaty, or developing more detailed actions that must be taken, either in a protocol to the treaty or through Plans of Action or programmes of work that set out what needs to be done;
- Amendments to the treaty and expanding on the treaty secretariat's programme of work.

Proceeding through these stages can happen relatively quickly, as with the ozone treaty regime that was rapidly developed. Or the process can be very slow—the *United Nations Convention on the Law of the Sea* took 10 years to negotiate and another 12 years before it came into force in 1994.

3.4.12 At a Treaty Negotiation

The alphabet soup of acronyms used at MEA negotiations can be confusing to a neophyte.

The most common negotiating groups at MEA meetings are:

- The European Union (EU). The 27-member states of the EU (as of January 2007) coordinate a single negotiating position at MEA meetings. Usually only one representative speaks for the EU during the plenary session.
- JUSCANZ: Non-EU developed countries. The core is normally Japan, USA, Canada, Australia and New Zealand but also can include Norway, Switzerland, Iceland, Korea, Mexico and sometimes Israel. The group was formed to allow non-EU developed countries to coordinate their positions. The JUSCANZ group may coordinate a negotiating position, but each state which is part of the group speaks individually at the plenary session.
- G-77 and China. This group takes its name from the group of 77 developing countries which was influential in the UN in the post-colonial period of the 1960s and 70s. The group now includes virtually all developing countries, numbering over 130 states, and is subdivided into geographic groups, e.g., Africa, Asia and Pacific, Latin America and the Caribbean.
- Eastern Europe. The countries of the Eastern Europe and most countries of the former Soviet Union also meet as a group.

Other groups may play a role at negotiating meetings. For example, AOSIS is the Alliance of Small Island States, an influential group at climate change meetings due to the direct and disproportionate impacts that these states will suffer from climate change. The Umbrella Group was the name given to the negotiating bloc representing most non-EU industrialized countries including Canada, Russia and the US throughout the climate change negotiations. The Miami Group, a coalition of the major exporters of genetically modified seed and crops including Canada, Argentina, Australia, Chile, the US and Uruguay, played a significant role in the *Biosafety Protocol* negotiations. Other alliances emerge and dissolve as the issues under discussion change.

A unique feature of the politics of MEA negotiations is that "most global environmental agreements have been negotiated and adopted despite significant reservations – and in some cases, the active opposition – on the part of the most powerful of all countries, the US, a situation that is entirely inconceivable in the GATT/WTO context."The US actively opposed and is not a Party to the *Biodiversity Convention*, for example. At the 2001 Bonn Climate Summit, the nations of the world reached agreement on an implementation plan for the *Kyoto Protocol*, while the current US administration has announced it does not plan to ratify the Protocol.

3.4.13 Key Features of (Environmental) Treaties

Most modern MEAs typically have the following main components:

1. An introductory preamble and statement of guiding principles.
2. A statement of objectives of the agreement.
3. Definition of key terms used in the treaty.
4. Substantive commitments by the Parties.
   These commitments may be very specific, such as to reduce greenhouse gas emissions by a specified amount within a set deadline, or more general, such as to identify threats to biodiversity and attempt to eliminate these threats. The Canadian MEA database has grouped commitments under these headings: assistance, compliance, conservation measures, consultation, control measures, cooperation, development of science and technology, education and training, emergency response, enforcement, exchange of information, financial obligations, further international measures, general pollution control/prevention, impact assessment, implementation, indigenous and local communities, monitoring, national inventories, national legislation/policy development, notification, public participation and information, remediation, reporting, review, scientific cooperation, sharing of benefits, trade measures and transfer of technologies.
5. Provisions for regular meetings of the parties to develop and approve work programs, to discuss implementation issues and to update the agreement through decisions, Protocols, amendments or Annexes.
   Decisions about the MEA are usually made at a periodic Conference of the Parties (COP) or Meeting of the Parties (MOP). The term "Conference of the Parties" generally refers to conferences of parties to a framework convention, while "Meeting of the Parties" is used for meetings of parties to a Protocol. Combined meetings are referred to as "COP/MOPs". At these meetings, the budget and programme of work to implement the treaty are established. National reports on implementation are reviewed. A COP can also decide on the need for a new Protocol to make more specific rules on one of the topics covered by the MEA. Another COP function is to revise Annexes, or lists regulated by the treaty, such as the list of wetland sites designated by the *Ramsar Convention*.
6. Provisions to establish a secretariat or similar organizational body with administrative and coordinating functions. A secretariat acts as the host or home office for the treaty. Secretariats for MEAs provide the ongoing support for meetings of the Parties and may also implement projects or programmes of work. Many MEA secretariats are located in common locations, such as Geneva, home to numerous other UN and trade organizations such as the WTO.
7. Provisions to establish Advisory bodies. Advisory bodies can be established by treaty or by international organizations. For instance, the UNFCCC establishes a Subsidiary Body on Scientific and Technological Advice (SBSTA). Despite its name, SBSTA is a highly political forum that negotiates recommendations to the COP. In contrast, the WMO and UNEP set up the Intergovernmental Panel on Climate Change (IPCC) as a truly scientific, independent expert group to provide necessary technical and scientific advice to the international community. Although the IPCC has a tradition of independence, there have been recent criticisms that US interference has lead to selection of a chairperson affiliated with the oil industry. Advisory bodies can also be created to deal with discrete issues, as for example, with the *Biodiversity Convention's* Expert Panel on Access and Benefit Sharing.
8. Reporting and information sharing obligations.
   MEAs typically require Parties to report on their efforts to implement and comply, as well as to

share information through a Clearing House Mechanism (CHM) designed to collect and share scientific, technical, environmental or legal information about the MEA. A CHM can promote best practices, share experiences of different countries on implementation and share solutions for common problems. The CHM of the *Biodiversity Convention* includes case studies, national and other reports and information on programmes such as the *Global Taxonomy Initiative*. Other examples of CHMs are found under the *Montreal Protocol*, the *Global Plan of Action to Address Land Based Sources of Marine Pollution* and the *POPs Convention*.

9. Compliance mechanisms, including specific compliance and non-compliance procedures. Compliance mechanisms range from minimal to sophisticated procedures. Compliance provisions adopted under the *Kyoto Protocol* set a fairly high standard, establishing both a process to facilitate compliance through assistance and a judicial process to make determinations of non-compliance and impose consequences for non-compliance.
10. Dispute settlement provisions.
    Dispute settlement mechanisms are underdeveloped. Only a few MEAs use a body unique to the treaty, such as the Law of the Sea's International Tribunal on the Law of the Sea. Many MEAs follow a graduated process for dispute resolution. The same untried non-binding provisions are incorporated into most MEAs without much discussion. The Parties are bound to try to settle their dispute by negotiation, then mediation, and if that doesn't work, they may resort to a court, usually the International Court of Justice (ICJ), though resort to the ICJ is generally seen as impractical and is rarely used.
11. A financial mechanism.
    Financial mechanisms may be created by the terms of the treaty. One example is the Multilateral Fund for the Implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer, established by an amendment to the Protocol in 1990. This Fund distributes funds from developed country Parties to developing country Parties to help them with the costs of compliance. Another financial mechanism, the Global Environment Facility (GEF), jointly administered by the World Bank, UNEP and the UN Development Programme (UNDP) is used to fund environmental projects with global benefits by developing countries and countries in economic transition. The GEF is the designated financial mechanism for international agreements on biodiversity, climate change and persistent organic pollutants, and it also supports projects that combat decertification, protect international waters and protect the ozone layer.

3.4.14 Financing MEAs

The costs of operating a secretariat, convening COPs, holding advisory body meetings, enabling participation of civil society in treaty negotiations and carrying out programmes of work are high. Various methods are used to finance these activities. Trust funds, composed of mandatory or voluntary contributions from Parties, are the most common funding source. The actions required by MEAs may also be funded by multilateral financial mechanisms, such as the GEF, the only new funding source for international environmental commitments that has become operational since 1992. Most recent MEAs have voluntary funding arrangements based on the UN scale of assessments (the amount that each nation must pay as annual dues to support the United Nations, assessed by means of an agreed on scale). Few MEAs benefit from any mandatory assessed funding from the UN's general budget.

3.4.15 Civil Society Involvement in MEAs

The term "Civil Society Involvement" or "CSO" generally refers to any non-profit, voluntary citizens' group which is organized on a local, national or international level. Examples abound of neighbourhood associations, producers associations, NGOs, and trade unions. The term civil society is used increasingly to describe NGOs working for the public good. Perhaps more than any other branch of international law, international environmental law is influenced by civil society groups at all stages throughout the formation, negotiation, implementation and enforcement of agreements.

Civil society groups such as NGOs play multiple roles in MEAs, which have been classified by UNEP as:

- Providing technical knowledge;
- Raising awareness;
- Assisting the secretariat in communicating with non-parties;
- Promoting implementation in the field;
- Gathering and transmitting information about possible non-compliance;
- Implementing relevant national policies;
- Pressuring governments to implement the MEAs; and
- Participating in the decision-making process.

No set of rules about participation applies universally to MEAs. The new regional UNECE *Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters* may point the way towards standardization of public participation rules in the domestic context, eventually paving the way for internationally agreed rules on public participation.

Most modern MEAs apply rules of procedure based on those developed for the Rio Earth Summit that allow accredited NGOs to play an active role at MEA meetings. Participation is often limited to lobbying delegates of Parties in the corridors of MEA meetings and observing the meetings. Sometimes NGOs are given opportunities to address meetings. NGOs may also be excluded from some treaty meetings if a state party objects, and have restricted participation rights in plenary sessions of MEA meetings.

NGOs influence legal and policy developments by taking part in government delegations, preparing law reform briefs and issuing report cards such as WCEL's recent report card on OECD nations' role in climate change negotiations.

3.5 Principles of International Environmental Law

No general treaty establishes a framework and principles for international environmental law. Instead, this body of law has developed piece-meal, in response to specific threats. Many concepts are repeated in each new treaty, and various shared principles have emerged from the patchwork of treaties.

The principles of international environmental law are evolving. Most of these principles are found in bilateral or multilateral environmental agreements, but also in non-binding declarations, such as the 1972 *Stockholm Declaration on the Human Environment* and the 1992 *Rio Declaration on Environment and Development* (also known as the "Rio Principles").

Often, principles first set out in non-binding declarations are later translated into binding enforceable treaties. A concept included in a binding treaty has more weight and authority than one that is

contained only in soft law declarations.

The following list of principles, emphasizing the Rio Principles, is meant to illustrate the wide range of potential legal principles that may be included in international environmental law agreements and is not exhaustive.

The sources of international law are enumerated in Article 38(1) of the *Statute of the International Court of Justice* and, in addition to treaties, include customary international law, the general principles of law recognized by civilized nations and as a subsidiary means for the determination of the law, even the writings of the leading publicists.

3.5.1 Sovereignty Over Natural Resources

Each state has sovereignty, or supreme controlling power, over its natural resources. Each state has the right of possession and the right to freely manage and dispose of natural resources within the limits of international law. Sovereignty should be exercised in an environmentally responsible way. The sovereign right of control is limited by the state's duty to limit damage to the environment beyond its borders.

Principle 21 of the *Stockholm Declaration* and Principle 2 of the *Rio Declaration* codify this principle. These two related and linked concepts, sovereignty over natural resources and the duty not to cause harm beyond national borders, are repeated in binding agreements such as UNCLOS, the *Climate Change Convention*, and the *Convention on Biological Diversity* which says in Article 3:

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

3.5.2 Duty to Prevent Transboundary Pollution and Environmental Harm

The idea that states have a duty to not harm neighbouring states was first explored in the Trail Smelter case in which a tribunal established by the International Joint Commission, an agency set up by a Canada-US treaty, found that sulphur dioxide air emissions from a copper smelter in Trail, BC, Canada were harming US territory.[5] The case is one of the few examples of a tribunal establishing an important principle of international environmental law and has been widely cited as confirming the principle that a state is responsible for environmental damage to foreign countries that is caused by activities within its borders. As noted above, the duty not to cause harm is often linked to the concept of sovereign control over natural resources.

3.5.3 Sustainable Use of Natural Resources

This principle requires states to pay due care to the environment and to make rational use of the natural resources within their jurisdictions. The concept has evolved over time, from Principle 2 of the *Stockholm Declaration* which states that: "the natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or

[5] Trail Smelter Arbitration (1939) 33 AJIL 182 & (1941) 35 AJIL 684.

management, as appropriate", to Rio Principle 7 which says states shall cooperate to conserve, protect and restore the health and integrity of the earth's ecosystem.

MEAs also incorporate this principle. Sustainable use is one of the three themes of the *Biodiversity Convention*; the objective of the *UN Fish Agreement* is to "ensure the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks"; and one of the objectives of the *International Tropical Timber Agreement* is to encourage members to develop national policies aimed at sustainable utilization and conservation of timber producing forests and their genetic resources.

3.5.4 Sustainable Development

One of the key goals for MEAs is to ensure 'sustainable development' defined by the Brundtland Commission as "… development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

Sustainable development contains within it two key concepts:

- the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs."

Rio Principle 4 states that in order to achieve sustainable development, environmental protection shall constitute an integral part of the development process. Rio Principle 8 links the achievement of sustainable development to the reduction and elimination of unsustainable patterns of production and consumption. Rio Principle 12 states that nations must cooperate to promote international trade policies that will lead to economic growth and sustainable development in all countries. Predicating sustainable development on economic growth is not a universally accepted position.

Environmental treaties referring to this principle include those on climate change. Notably, the treaty which established the World Trade Organization and the treaty governing the European Union, also list 'sustainable development' as an objective.

3.5.5 Water and Human Rights

As the *Stockholm Declaration on the Human Environment* notes, the environment is essential to the enjoyment of basic human rights, even the right to life itself. There are many links between environment and human rights, two major new branches of public international law which have developed over the past half-century.

With a global water crisis looming, extensive discussion has arisen debating whether water should be designated a human right. However, the debate over the formal acknowledgement of water as a human right and its global implications are beyond the scope of this manual.

3.5.6 Precautionary Approach

Preventing damage to the environment, natural resources and human health has become a key concern of environmental law. The precautionary principle holds that 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. The meaning of this principle in international law is evolving. Rio Principle 15 states that in order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. The *Stockholm POPS Convention* states in Article 1: "Mindful of the precautionary approach as set out in Principle 15 of the Rio Declaration on Environment and Development, the objective of this Convention is to protect human health and the environment from the effects of persistent organic pollutants." The principle has also been adopted in the 2001 OECD Environmental Strategy.

3.5.7 Common Heritage of Mankind/Common Concern of Humankind

Agreements relating to the global commons have included the principle of 'common heritage of mankind', most notably in the UNESCO *World Heritage Convention*, the *Law of the Sea Convention* and the 1979 *Agreement Governing the Activities on the Moon and Other Celestial Bodies*. The concept applies to resources in the global commons, those areas outside the recognized jurisdiction of any state, such as the high seas, deep-sea bed, atmosphere, outer space and even Antarctica. All states share the responsibility to protect the global environment, including areas within their own jurisdiction and those in the global commons.

'Common heritage' has four characteristics: non-appropriation of resources by any one state, international management of the global resources, sharing of benefits from the use of the resources, and using the resources for peaceful purposes.

A weaker version of this principle, 'common concern of humankind' is used in both the *Climate Change* and *Biodiversity Conventions* in their preambles and in substantive provisions on burden sharing, financing and transfer of technology. 'Common heritage' was rejected by the drafters of these Conventions, because developed countries objected to the resource benefit sharing implications, and developing countries resisted the idea of international management of sovereign biological resources.

3.5.8 Common but Differentiated Responsibility

'Common but differentiated responsibilities' provides that states share common responsibilities to protect the environment, but the actions they take to remedy these problems may be different because not all states have contributed equally to causing environmental problems (i.e., climate change caused by greenhouse gas emissions is largely due to the actions of industrialized, developed countries) and not all states have similar resources to invest in environmental protection. Rio Principle 7 states that developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command. The climate treaties demonstrate the application of this principle through the differing commitments for developed and developing countries to reduce emissions. Treating countries differently according to their economic circumstances is also an integral part of trade agreements, expressed in the WTO Agreements as 'special and differential treatment'.

3.5.9 Intergenerational Equity

Recognition that the current generation holds the earth in trust for future generations, and that the environment must be managed to meet the needs of both present and future generations, is a relatively new concept in international law. Intergenerational equity is based on three principles:

1. Each generation should be required to conserve the diversity of natural and cultural resource base so it does not unduly restrict the options available to future generations;
2. Each generation should maintain the planet's quality so that it is bequeathed on balance in no worse condition than received; and
3. Members of every generation should have comparable rights of access to the legacy of past generations and should conserve this access for future generations.

Both the Stockholm and Rio Declarations refer to future generations (Principles 1 and 2, respectively). The Stockholm POPs Convention is an example of a treaty that incorporates this principle.

3.5.10 Public Participation

Procedural principles are common to many MEAs, emphasizing the "three pillars" of environmental democracy: public participation, access to information, and access to justice. These are found, among other places, in Rio Principle 10, which states that environmental issues are best handled with the participation of all concerned citizens.

Significant procedural rights are also included in the regional UN Economic Commission for Europe *"Aarhus Convention on Access to Information, Public Participation in Environmental Decision-Making and Access to Justice in Environmental Matters"*.

3.5.11 Polluter Pays

This principle requires polluters to pay the full costs of remedying the damage they cause to the environment. The cost of pollution prevention and control should be internalized or reflected in the cost of goods and services which cause pollution or environmental damage. Rio Principle 16 asks states to internalize environmental costs and to use economic instruments for this purpose. First used by the OECD in the 1970s, this term is found in Agenda 21, many MEAs, and many national environmental laws.

3.5.12 Liability and Compensation for Environmental Damage

Stockholm Principle 22 concerns compensation, and says that states shall cooperate to develop international law regarding liability and compensations for victims of pollution and other environmental damage. Twenty years later in Rio, states called for "expeditious" and "determined" progress on these issues in Rio Principle 13. *The Basel Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Waste and Their Disposal* is an example of this principle in practice. Funds established under two International Maritime Organization (IMO) treaties, the 1992 *Civil Liability Convention for Oil Pollution* and the 1992 *International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage* compensate victims of oil pollution from ships. Two other IMO conventions on liability for damage from carriage of hazardous and noxious substances and bunker oil pollution are not in force as of 2002. In 2002,

UNEP renewed efforts to clarify the international law on liability and compensation for environmental damage and transboundary harm.

3.5.13 Duty to Conduct Environmental Impact Assessments

Assessing the probable impacts of new projects, policies or plans on the environment in advance of granting final approval is an established part of the decision-making process of most states and international agencies. The duty to conduct environmental impact assessments (EIAs) is found in many environmental treaties such as the *Biodiversity* and *Climate Change Conventions*. Impacts should ideally be assessed as early as possible before irrevocable decisions are taken and should not be limited solely to impacts within a state's own territory. One regional treaty, the *Convention on Environmental Impact Assessment in a Transboundary Context*, also known as the *Espoo Convention*, has been developed to address transboundary EIA.

3.5.14 Duty of Non-discrimination/Environmental Justice

This principle requires states not to discriminate in relation to environmental harm. Rio Principle 14 holds that states should discourage the relocation or transfer to other states of activities or substances that cause environmental degradation. The *North American Free Trade Agreement* (NAFTA) includes this principle in Article 1114 stating that the Parties agree it is inappropriate to encourage investment by relaxing domestic health, safety or environmental measures.

3.5.15 Right to Development

The right to development is a highly contested concept and is the topic of annual battles at the UN Commission on Human Rights. Its meaning and implications have not been defined and it is not part of any of the six "core" human rights treaties. The right to development was established in a UN General Assembly Declaration in 1986, which states that 'the right to development is an inalienable human right by virtue of which every human person and all peoples are entitled to participate in, contribute to, and enjoy economic, social, cultural and political development, in which all human rights and fundamental freedoms can be fully realized.' It was reaffirmed at the Vienna Conference on Human Rights in the 1993 *Vienna Declaration and Programme of Action*. Rio Principle 3 also restates this right. There is no internationally agreed or legally accepted definition of the right, though the UN Commission on Human Rights has established a dual mechanism to explore in greater depth ways of implementing the right to development: an open-ended Working Group on the Right to Development and an independent expert on the right to development.

3.5.16 Other Principles

This listing of principles is not exhaustive. The Rio Declaration contains other principles such as cooperation to eradicate poverty, enacting effective environmental legislation, the role of youth, women and indigenous people and the peaceful resolution of disputes. Since Rio, experts have listed principles of international sustainable development law, and have also attempted, unsuccessfully to date, to codify these principles.

3.6 International Water Law[6]

International water law may take either of two general forms, treaty law or customary international law. If states sharing international freshwater resources are not parties to an applicable treaty, their rights and obligations are governed by customary international law.[7]

The most salient international water law treaty, even though not in force yet, is that which was concluded under United Nations auspices in 1997. It is entitled the United Nations Convention on the Law of the Non-navigational Uses of International Watercourses.[8] The UN Convention is generally regarded as reflecting the fundamental rules of customary international law applicable in the field. This proposition was reinforced by the judgment of the International Court of Justice in the Case Concerning the Gabčíkovo - Nagymaros Project (Hungary/Slovakia).[9]

Also of key historical importance are the 1966 Helsinki Rules.[10]

A number of key terms are generally used in international water law including:

"Watercourse": The term used in the UN Convention to refer to a river, stream, or lake, as well as many types of aquifers, is "watercourse". This term is also in general use internationally. However, this expression should not be conceived of restrictively, for example, as applying only to the main stem of a stream. Instead, it refers to the entire system of waters in a drainage basin or catchment. Thus it would include tributary flows, whether consisting of surface water or groundwater.

The UN Convention defines the term "watercourse" in the following way:

"Watercourse" means a system of surface waters and ground waters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus.[11]

While it may seem to refer only to the "course", channel or bed in which water flows, the term "watercourse" is taken to embrace both the water and the bed, aquifer, etc., in which it is physically contained.

[6] The material in this section relies on materials originally developed by Professor Stephen McCaffrey included in Stephen McCaffrey, The *Law of International Watercourses* (2001)

[7] See: Caponera, Dante A., *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). SEE APPENDIX G

[8] United Nations, 21 May 1997, annexed to U.N. Doc. A/RES/51/229, of 8 July 1997. SEE APPENDIX A.

[9] 1997 ICJ 7, judgment of 25 Sept. 1997.

[10] The Helsinki Rules (Campioni Consolidation) and the 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. SEE APPENDICES C and D. Coming from the non-governmental International Law Association (ILA), the Helsinki Rules, a predecessor to the 1997 UN Watercourses Convention, are not intergovernmentally authoritative, technically speaking. However, they reflect many years of research by a representative body of international law experts, and therefore come within the terms of Article 38(i.)(d) of the Statute of the International Court of Justice.

[11] UN Convention, art. 2*(a)*.

An "International Watercourse" is a "watercourse" that is shared by two or more countries. The UN Convention defines this term as follows: "International Watercourse" means a watercourse, parts of which are situated in different States.[12]

The breadth of these definitions means that the rules of international law concerning shared freshwater apply to any and all "parts" of an international watercourse that may be located in a given country. Thus they would apply, for example, to: headwaters or tributaries in State A of a stream that flows into State B; a groundwater basin that straddles the border between States A and B and is fed by surface water in State A;[13] or a groundwater basin wholly located in State A that feeds a tributary of a stream flowing into State B.

3.6.1 General Rules of Law concerning the Use of International Watercourses

According to McCaffrey there are several rules of international law of a general and fundamental nature that govern the conduct of states in relation to international watercourses.

The most basic of these are the following requirements:

- A state use an international watercourse in a way that is "equitable and reasonable" vis-à-vis other states sharing the watercourse.
- International watercourse states take "all appropriate measures" to prevent the causing of "significant harm" to co-riparian states.
- The requirement that international watercourse states provide "prior and timely notification" to other international watercourse states concerning any "new use or change in existing uses" of an international watercourse, together with relevant technical information, and that it "consult" with the other international watercourse states.

It is probable that there is also an emerging rule requiring the protection of the ecosystems of international watercourses.

The following paragraphs provide an overview of these general rules and some of their implications.

[12] UN Convention, art. 2*(b)*.

[13] There is some question as to the extent to which the rules of international law described herein apply to so-called "confined transboundary groundwater" – i.e., groundwater intersected by an international boundary that does not interact in any way with surface water or other groundwater. The UN International Law Commission, which prepared the draft upon which the UN Convention is based, made this form of groundwater the subject of a separate resolution. That resolution, however, recommends that states, in their relations concerning confined transboundary groundwater, be guided by the principles governing international watercourses.

3.6.2 Equitable Utilization

According to McCaffrey, there is no more fundamental rule of international law concerning the use of international watercourses than that of equitable and reasonable utilization. In its judgment in the Danube Case the International Court of Justice referred to the "basic right" of a state to "an equitable and reasonable sharing of the resources of an international watercourse."[14]

This obligation 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 (climate, hydrography, etc.) and human-related (social and economic needs of the riparian states, effects of uses in one state on co-riparians, existing and potential uses, etc.).[15]

How States value water is an especially relevant issue for resolving conflicts and negotiating over transboundary freshwater resources. The idea of valuation often is at the core of disputes over fresh water resources pitting farmers against municipalities, businesses against environmentalists, and those who have fresh water against those who don't.

Furthermore, conditions may change over time producing consequential changes in the weight assigned to given factors. For example, a drought would reduce the available water supply; a population increase would result in greater need for water; etc. Maintaining a regime of utilization that is equitable in relation to other riparian states is therefore necessarily a dynamic process. It requires regular communication between the countries sharing the watercourse – communication regarding data and information relating to the condition of the watercourse (flow and any regulation thereof, pollution, meteorological factors that could influence utilization, etc.) and regarding any new projects or changes in existing uses. Many countries sharing international watercourses have found that this kind of systematic communication may be effectively and efficiently accomplished through a joint management mechanism, such as a commission.

Absent such an organization or some other system allowing regular communication, it can be challenging at best to maintain a regime of utilization that is equitable vis-à-vis a state's co-riparians.

3.6.3 Equitable participation

Often a river or other form of watercourse will be used so intensively by co-riparian states that it will be necessary for them to take affirmative steps, such as construction or maintenance of works or other forms of regulation of the watercourse, to make it possible for other riparians to utilize the shared watercourse equitably. This notion is captured in the concept of "equitable participation", a principle reflected in the UN Convention.[16] In the Danube Case the International Court of Justice laid stress on the importance of equitable participation in the "common utilization of shared water resources for the achievement of the several objectives mentioned in the Treaty [in question]".[17]

[14] 1997 ICJ p. 54, para. 78.
[15] UN Convention, art. 6.
[16] See art. 5(2) of the UN Convention, setting forth this concept. See also Paisley, Richard Kyle, "Adversaries into Partners: International Water Law and Down Stream Benefits". 3 (2) Melbourne Journal of International Law 280 (2002).
[17] 1997 ICJ p. 80, para. 147. The objectives referred to included hydropower production, improvement of navigation, protection from floods and protection of water quality and riverine ecosystems

3.6.4 Prevention of Significant Harm

According to McCaffrey, it is a fundamental rule of international law that one state should not cause "significant harm" to another. This principle has been recognized in several important decisions in international cases.[18] However, the application of the principle to international watercourses is highly controversial. While it is clear that one state may not intentionally cause harm to another through, for example, flooding or deliberate releases of toxic pollution, there is dispute 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, it should not be prohibited.

Otherwise, for example, a later-developing upstream state would be prevented from developing the portion of an international watercourse in its territory to the extent that such development impaired existing uses in downstream states. This view – that in respect of apportionment the principle of equitable utilization prevails over that of harm prevention if the two come into conflict – would appear to be borne out by the UN Convention.[19]

Moreover, the International Court of Justice in the Danube Case referred only to the principle of equitable utilization when addressing the parties' respective rights to the uses and benefits of the river; the principle of prevention of harm figured only, although importantly, as a constraint on actions that would affect the environment of other states.

Regardless of its relationship to equitable utilization, the duty to prevent significant harm to other states is not absolute; it requires that a country exercise its best efforts[20] to prevent harm. Whether a state has complied with this obligation will thus be, in part, a function of its capability to do so. Presumably, therefore, developing countries would generally have more leeway in this regard than developed countries by virtue of the greater capacity of the latter to prevent harm to co-riparians.

3.6.5 Rules concerning New Uses

Although it has been controversial in the past, today there is little doubt that customary international law 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 that have the potential to change the regime of the watercourse in a way that would be prejudicial to other riparian states. In its classical conception it applies to projects (including both new uses and changes in existing uses) that may have adverse factual impacts upon other states. More recently it has been recognized that adverse legal effects should also be covered by the rule. Thus, for example, a planned project in a downstream state might, when implemented, make it impossible for an upstream state to implement a project of its own without running the risk that its project would result in its overall utilization being considered inequitable. Because of this possibility, notification should be provided to co-riparian states of all planned projects of significance, even if they do not have the potential for causing adverse factual effects in those states.

Once notification has been provided, the state in which the project is planned has a duty to consult with the potentially affected state or states. The planning and potentially affected states are expected to arrive at an equitable resolution of any differences between them with regard to the project.

[18] Chiefly the Trail Smelter, Lake Lanoux, and Corfu Channel cases.
[19] See art. 7 of the UN Convention, and especially para. 2 of that article.
[20] Article 7 of the UN Convention requires states to "take all appropriate measures" to prevent harm to other states.

3.6.6 Rules concerning Pollution

The UN Convention provides that states sharing an international watercourse have an obligation to protect and preserve the watercourse's ecosystems. While this obligation is not tied to harm to other states, it seems unlikely that a co-riparian would assert a violation unless it had suffered some harm. More specifically, states are required to prevent, reduce and control pollution that may cause significant harm to co-riparians. Like the obligation to prevent significant harm, this duty is one of due diligence.

3.6.7 The Special Case of Shared Groundwater

According to McCaffrey, the rules discussed above apply to all components of an international watercourse system, including groundwater. However, in view of the different characteristics of groundwater, the rules may apply somewhat differently. The UNILC has produced 19 draft articles for the management and utilization of transboundary aquifers. Those articles are currently under review and represent and UNILC's effort to interpret and, where appropriate, progressively develop international law on the subject. However, this is a developing area of the law and therefore it is not clear to what extent the existing rules, or their application, differ in the case of groundwater.

According to McCaffrey, it does seem possible to arrive at certain general conclusions:

> First, the obligation of equitable and reasonable utilization applies equally to surface and groundwater. Second, the obligation to prevent significant harm may be somewhat more stringent in the case of groundwater because of the greater importance of prevention where it is concerned; harm occasioned through an aquifer often takes longer to remedy than in the case of surface water. This is particularly the case with pollution, which may cause contamination of an aquifer that cannot be remedied for many years, if at all. And third, the special characteristics of groundwater make close cooperation between states sharing it particularly important. Prior notification, the sharing of data and information on a regular basis, and where possible, the establishment of joint management mechanisms take on greater significance with regard to shared groundwater.

3.6.8 Links with World Bank Procedures

There are at least three key World Bank documents that are relevant to the law of international watercourses:

- Bank Operational Policies (OP 7.50): Projects on International Waterways.
- Bank Procedures (BP 7.50): Projects on International Waterways.
- Bank Good Practices (GP 7.50): Projects on International Waterways.

These documents indicate Bank policy and set forth procedures to be followed in respect of projects on international watercourses.

The documents essentially provide that:

- International water rights issues be assessed as early as possible in project identification; and
- The Bank advise the state proposing the project that it should formally notify the other states sharing the watercourse of the proposed project, including project details, if it has not already done so. (BP 7.50, paras. 1 and 2.)

The information provided should be sufficient to enable the other states to determine whether the proposed project has potential for causing appreciable harm through water deprivation or pollution or otherwise.

If other states object, the Bank assesses the objection and decides whether and how to proceed. The opinion of independent experts may be sought if needed.

These procedures are generally consistent with the law of international watercourses.

SEE APPENDIX B

3.6.9 Bibliography

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NEGOTIATIONS AND CONFLICT RESOLUTION

The objective of the next chapter is to build a common vocabulary and understanding of conflict dynamics and analysis and negotiation techniques. It will also provide the opportunity to apply this learning in a variety of increasingly sophisticated and complex negotiation simulation exercises including those involving international watercourses.

Each section of this chapter is a separate learning unit and contains multiple sections which detail key ideas or skills that are needed by decision makers, negotiators, or third party neutrals. The chapters are ordered in a building-block fashion; therefore, an understanding of material presented later in the resource manual is often dependent upon information described in earlier sections.

4.1 Introduction

Negotiation is one of the most common approaches used to make decisions and manage disputes. Negotiation occurs between spouses, parents and children, managers and staff, employers and employees, professionals and clients, within and between organizations and between agencies and the public. Negotiation is a problem-solving process in which two or more people voluntarily discuss their differences and attempt to reach a joint decision on their common concerns. Negotiation requires participants to identify issues about which they differ, educate each other about their needs and interests, generate possible settlement options and bargain over the terms of the final agreement. Successful negotiations generally result in some kind of exchange or promise being made by the negotiators to each other. The exchange may be tangible, such as money, a commitment of time or a particular behaviour, or intangible, such as an agreement to change an attitude or expectation or an apology.

Negotiation is the principle way that people redefine an old relationship that is not working to their satisfaction or establish a new relationship where none existed before. Because negotiation is such a common problem-solving process, it is in everyone's interest to become familiar with negotiating dynamics and skills. This chapter is designed to introduce you to some basic concepts of negotiation and to present procedures and strategies that generally produce more efficient and productive problem solving.

Negotiation is important in the context of international water law. International watercourses can be either a source of cooperation of conflict. The very process of reaching an understanding creates a stabilizing and more transparent atmosphere. Negotiation alone serves to widen political participation, build political stability, and spread confidence between the basin states. Even where the parties fail to reach a definite agreement or agree only to share information or exchange data, negotiation can lead to increased trust and confidence. Cooperation on transboundary water issues catalyzes regional cooperation which is important to the resolution of many serious water problems. This can then pave a way for cooperation in other domains, such as politics, economics, and environmental conservation. Negotiation and transboundary water agreements can help countries move away from the detrimental view that water conflicts are a zero-sum game. If negotiation is successful, each party will benefit.

4.2 Conditions for Negotiation

A variety of conditions can affect the success or failure of negotiations. According to a recent article in the July 30th, 2006 edition of the New York Times:

The Basics: When the Table Itself is a Negotiating Ploy[21]

When Secretary of State Condoleezza Rice met in Rome last week with European and Middle Eastern diplomats to discuss the Israeli-Hezbollah conflict, the talks sputtered over a few words. Ms. Rice wanted the diplomats' communiqué to urge governments to "work immediately" for a cease-fire, while most of the other negotiators wanted it to urge work toward an "immediate cease-fire." The dispute, which was resolved in Ms. Rice's favor after an hour or so, wasn't the first time that diplomatic negotiations have hinged on small details. Many of them have nothing to do with language. Here are some examples.

STICKING POINT	EXAMPLE	WHAT HAPPENED
Shape of Table	1969 Vietnam War Peace Talks	• Months of discussion over merits of a round versus a square table. • The compromise: a round table flanked by smaller square tables.
Speaking Time	1991 Mid East Peace Talks	• Israel objected to both Jordan and Palestine leaders of joint delegation getting 45 minutes each for opening speeches.
Venue	2001 Israeli Palestine Truce Talks 2006 Sri Lanka Peace Talks	• Two sides spent weeks arguing over choice of Egypt or Erez crossing between Israel and Gaza. • Government and Tamil rebels disagreed over numerous proposed sites, including Japan, Oslo and Sri Lanka's main airport.
Seating Arrangements	1648 Peace of Westphalia 1994 Irish Peace Talks	• Delegates took six months to decide who would enter the negotiating room first. • Manoeuvring over who would sit next to Gerry Adams of Sinn Fein, the IRA political wing.

The following conditions generally make success in negotiations more likely:

Identifiable parties who are willing to participate.

The people or groups who have a stake in the negotiations must be identifiable and willing to sit down at the bargaining table if productive negotiations are to occur. If a critical party is either absent or unwilling to commit to good faith bargaining, the potential for agreement will decline.

Interdependence.

For productive negotiations to occur, the participants must be dependent upon each other to have their needs met or interests satisfied. The participants need either each other's goodwill, or restraint of negative action, for their interests to be satisfied. If one party can get his/her needs met without the cooperation of the other, there will be little impetus to negotiate.

Readiness to negotiate.

People must be ready to negotiate for dialogue to begin. When participants are not psychologically prepared to talk with the other party or parties, when adequate information is not available or when a negotiation strategy has not been prepared, people may be reluctant to begin the process.

[21] By Henry Fountain, New York Times, July 30, 2006.

Means of influence or leverage.

For people to reach an agreement over issues about which they disagree, they must have some means to influence the attitudes and/or behaviour of another negotiator. Often influence is seen as the power to threaten or inflict pain or undesirable costs, but this is only one way to encourage another to change. Asking thought provoking questions, providing needed information, seeking the advice of experts, appealing to influential associates of a party, exercising legitimate authority or providing rewards are all means of exerting influence in negotiations. Negotiation is one of the most common approaches used to make decisions and manage disputes.

Agreement on the issues and some interests.

People must be able to agree upon some common issues and interests for progress to be made in negotiations. Generally, participants will have some issues and interests in common and others that are of concern to only one party. The number and importance of the common issues and interests influence whether negotiations begin and terminate in agreement. Parties must have enough issues and interests in common to commit themselves to a common decision-making process.

Will to settle.

For negotiations to succeed, participants have to want to settle. If continuing a conflict is more important than settlement, or if maintaining the conflict is useful to one or more parties, then negotiations are doomed to failure. Often parties want to keep conflicts going to preserve a relationship (a negative one is better than no relationship at all), to mobilize public opinion or support in their favour or to maintain a conflict relationship which gives meaning to their lives. These factors promote continued division and work against settlement. The negative consequences of not settling must be more significant and greater than those of settling for an agreement to be reached.

Unpredictability of outcome.

People negotiate because they need something from another person. They also negotiate because other means of resolution are unpredictable as to outcome. For example, if by going to court, a person has a 50/50 chance of winning, he or she may decide to negotiate rather than take the risk of losing. Negotiation is more predictable than court because if negotiation is successful, the party will at least win something. Chances for a decisive and one sided victory need to be unpredictable or minimal for parties to enter into negotiations.

A sense of urgency and deadline.

Negotiations generally occur when there is some pressure or urgency to reach a decision. Urgency may be imposed by either external or internal time constraints of potential negative or positive consequences if settlement is or is not reached. External constraints include: court dates, imminent executive or administrative decisions, or predictable changes in the environment. Internal constraints may be artificial deadlines selected by a negotiator to enhance the motivation of another to settle. For negotiations to be successful, the participants must jointly feel a sense of urgency and be aware that they are vulnerable to adverse action or loss of benefits if a timely decision is not reached. If procrastination is advantageous to one side, negotiations are less likely to occur, and if they do, there is less impetus to settle.

No major psychological barriers to settlement.

Strong emotions, feelings about another party and psychological readiness to negotiate can sharply affect a person's ability to bargain with another party. Psychological barriers to settlement must be lowered if successful negotiations are to occur.

Issues must be negotiable.

For successful negotiation to occur, negotiators must believe that there are acceptable settlement options open to them as a result of participation in the process. If negotiations appear to have only win/lose settlement possibilities so that a party's needs will not be met as a result of participation, he/she will be reluctant and, in fact, will have little reason to enter into dialogue.

The people must have the authority to decide.

For a successful outcome, participants must have the authority to actually make a decision. If they do not have a legitimate and recognized right to decide, or if a clear ratification process has not been established, negotiations will be limited to information exchange.

A willingness to compromise.

Not all negotiations require compromise. On occasion, an agreement can be reached which meets all the participants' needs and does not require a sacrifice on any party's part. In other disputes, compromise, or willingness to have less than 100 percent of needs or interests satisfied, may be necessary for the parties to reach a satisfactory conclusion. Where the physical division of assets, strong values or principles preclude compromise, negotiations are not possible.

The agreement must be reasonable and implementable.

Some settlements look good regarding substance, but may be impossible to implement. Participants in negotiations must be able to establish a realistic and workable plan to carry out their agreement if the final settlement is to be acceptable and hold over time.

External factors favourable to settlement.

Often factors external to negotiations inhibit or encourage participants regarding settlement. Views of associates or friends, the political climate of an institution, public opinion, or economic conditions may foster agreement or continued turmoil. Some external conditions can be managed by negotiators while others cannot. Favourable external conditions for settlement should be developed whenever possible.

Resources to negotiate.

Participants in negotiations must have the interpersonal skills necessary for bargaining and, where appropriate, the money and time to engage fully in procedure dialogue. Inadequate or unequal resources may block the initiation of negotiations or hinder settlement.

4.3 Types of Negotiation

Any negotiation between more than two people may involve multiple bargaining relationships. In this section we will look at the following types of negotiations:

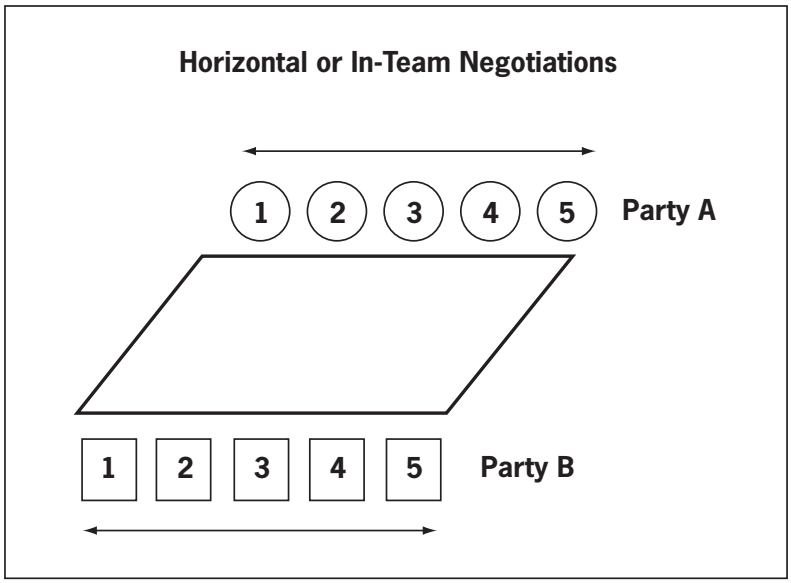
- Horizontal or in-team negotiations.
- Vertical negotiations with superiors or constituents.
- Vested interest negotiations.
- Conciliatory negotiations.
- Sidebar negotiations.
- Subcommittee negotiations.
- Bilateral or multilateral negotiations.
- External negotiations.

4.3.1 Horizontal or In-Team Negotiations

These negotiations occur between members of a negotiation team. They are necessary to coordinate individual actions and meld the people involved into a smoothly functioning team. Team members may differ as to authority, substantive expertise and negotiation or communication skills. In-team negotiation enables diverse members to:

- Bargain on items of personal concern.
- Arrive at a group definition of the problems to be handled in joint session.
- Develop settlement options that have broad team acceptance.
- Develop individual and team strategies.
- Assign roles and responsibilities.

In-team decision making is usually handled by reaching a consensus, as it is imperative for team members to be able to support and present verbally a common viewpoint on issues in joint sessions. Command decisions and voting are usually not efficient or appropriate for in-team negotiations since they may produce undesirable divisions on the team.

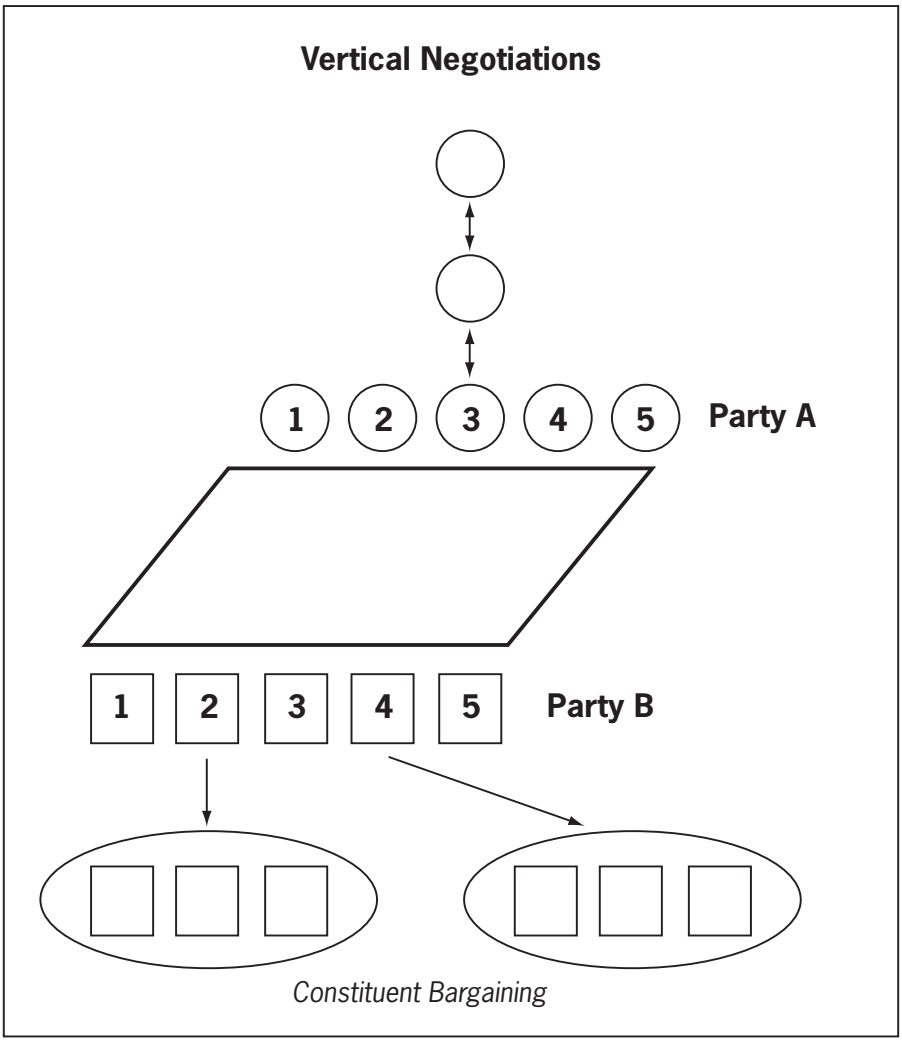


4.3.2 Vertical Negotiations

Frequently, the parties at the table do not have absolute authority to make a final decision on an issue in question. The parties may have to check with others to gain final approval. Vertical negotiations take two forms: 1) bureaucratic bargaining and 2) constituency bargaining.

Bureaucratic bargaining occurs when a team must gain approval from parties higher in an organization for an agreement to be finalized. Most bureaucratic organizations see negotiators as representatives of the organization, but not final decision-makers. Negotiators at the table often have to develop ratification procedures internal to the organization.

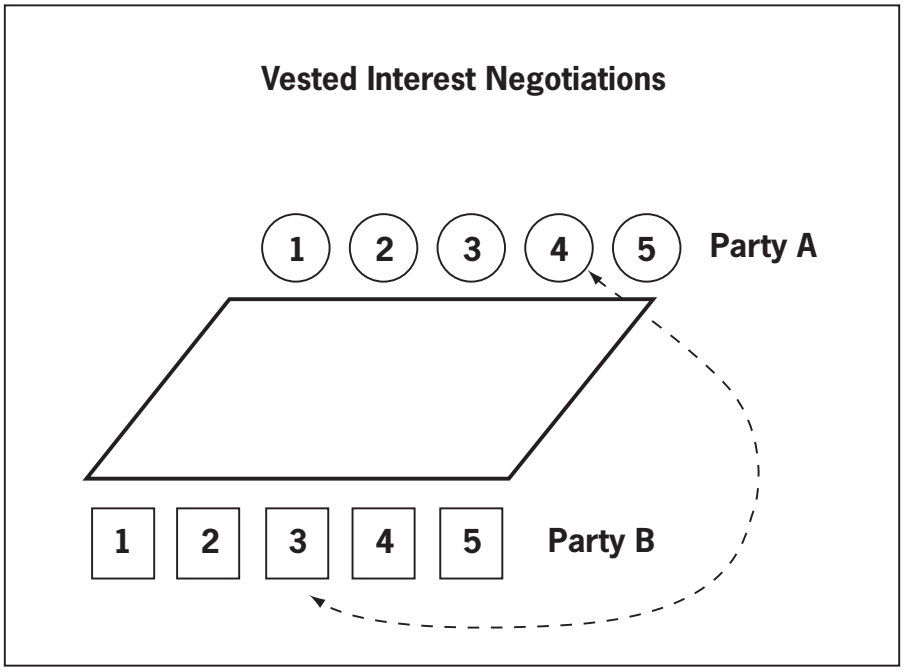
Constituent bargaining occurs when the parties at the table represent a larger group. For final approval of a settlement, the broader group must approve the agreement developed by the team at the table. The approval process most commonly used to determine constituent satisfaction is voting. Labour/management contracts or settlements developed by public interest groups in public policy dialogues are classic examples of settlements that must have constituent approval before the agreement can be formalized.



4.3.3 Vested Interest Negotiations

On occasion, an individual may decide to negotiate with members of another team "under the table" or without his or her own team's knowledge. The individual "sells out" his or her team, organization or wider public for exclusively personal benefits. While this form of negotiation is not recommended, it is important for team members to be aware of the possibility of its occurrence and the costs that it may impose on the team or organization.

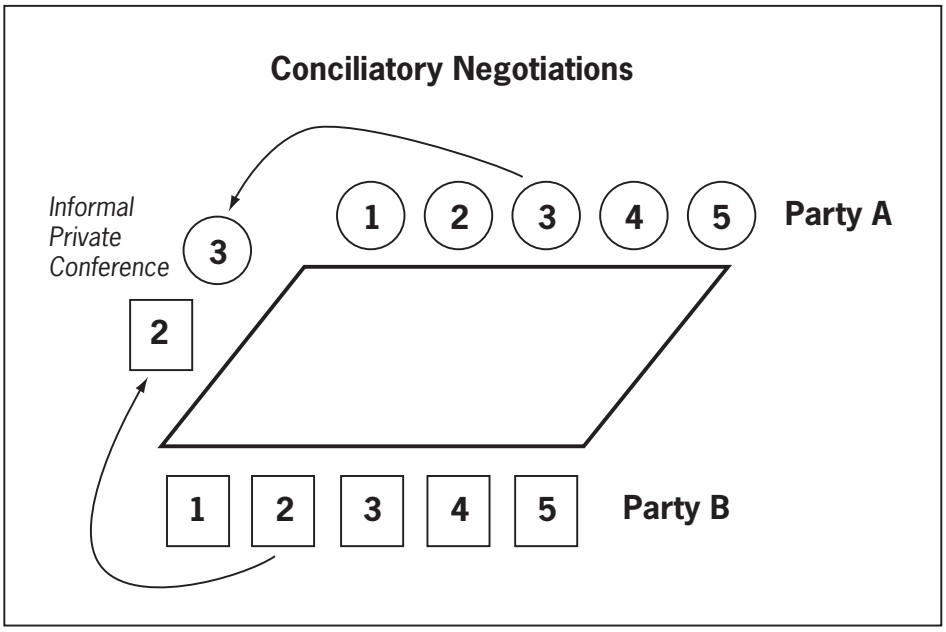
In this case #4 of Party A negotiates with #3 of Party B.



4.3.4 Conciliatory Negotiations

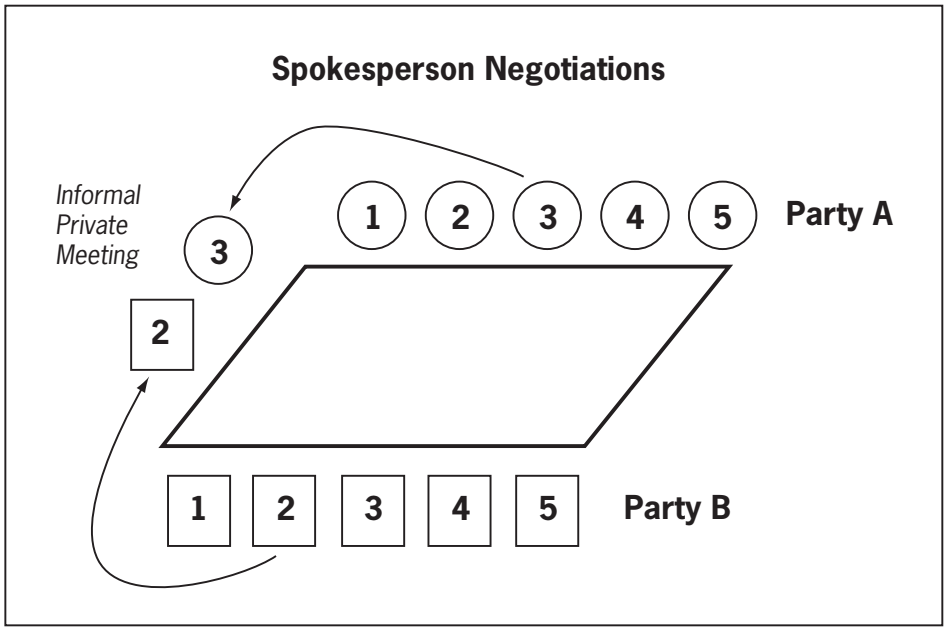
Conciliatory negotiations occur when one or more parties, with the knowledge and approval of team members, hold informal private conferences with a member or members of another team in an effort to narrow the distance between the parties on substantive issues about which they disagree. Conciliatory negotiations usually occur between people who are quasi-mediators since they can understand and interpret the interests of an opposing party to the members of the Party of the conciliatory bargainer. Conciliatory negotiators also often have crosscutting interests or values which allow them to develop some ties with the opposing party. This quality enables the conciliatory negotiator to see conflicting issues as "grey" rather than black and white.

Here #3 of Party A bargains with #2 of Party B in an attempt to better understand each team's interests and help develop potential opportunities.



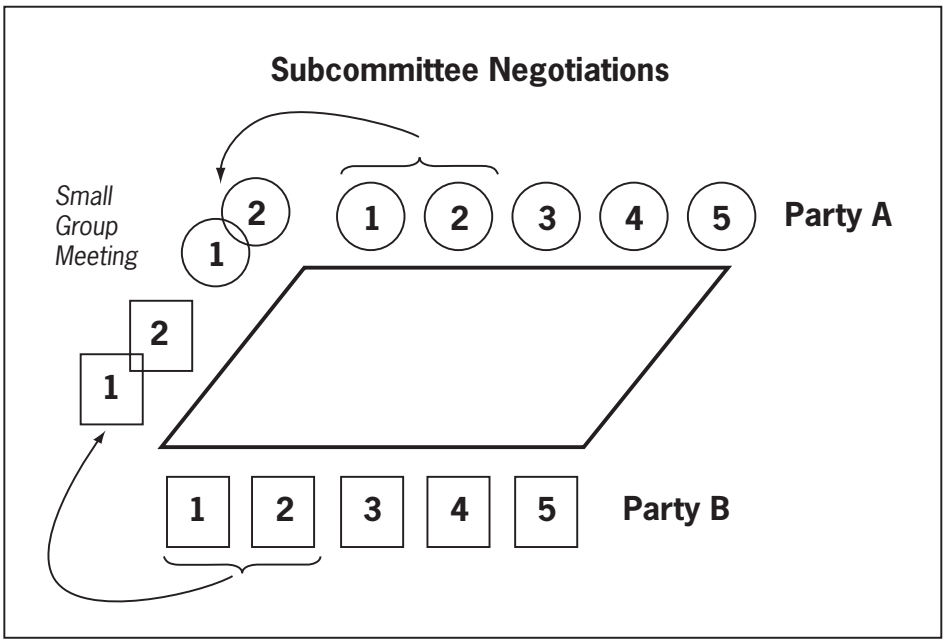
4.3.5 Spokesperson Negotiations

Spokesperson or "sidebar" negotiations occur when the spokespeople for each team meet in private to determine if they can reach an agreement. This approach often promotes settlement because the complications of having multiple people at the negotiation table are minimized and the pressure for posturing by spokespeople, or the need to perform in front of an audience (their team), are lessened.



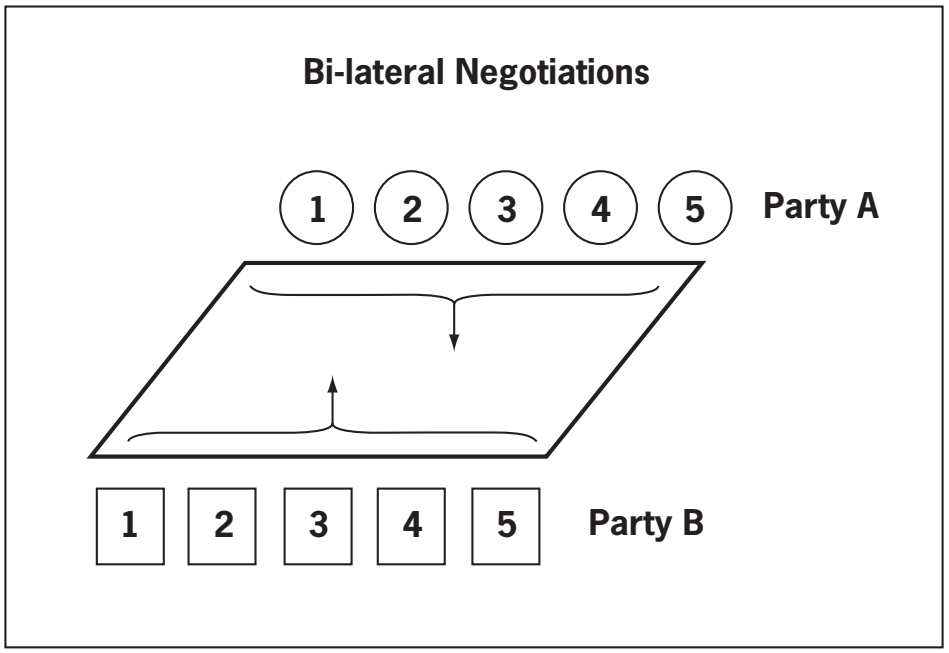
4.3.6 Subcommittee Negotiations

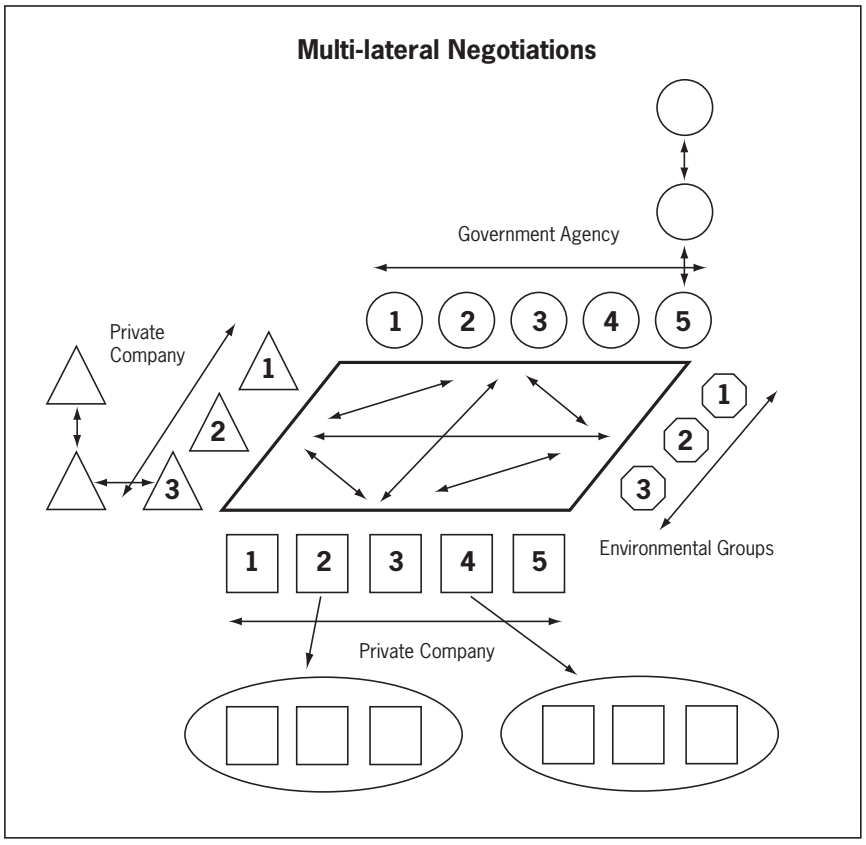
Frequently negotiations between large teams are cumbersome. A large group is not an efficient structure for refining or narrowing ideas, breaking deadlocks or drafting final settlement language. A subcommittee, composed of members of opposing parties, may be authorized by teams to meet privately to develop recommendations that can be brought back to the whole group for discussion and approval.



4.3.7 Bilateral or Multilateral Negotiations

Bilateral or multilateral negotiations are the formal discussions between teams of spokespeople across the table. These negotiations, often called joint sessions, may or may not be where the decisions are made. Bilateral or multilateral negotiations are often more formal sessions where the parties educate each other about the issues, put forth proposals and ratify final decisions.

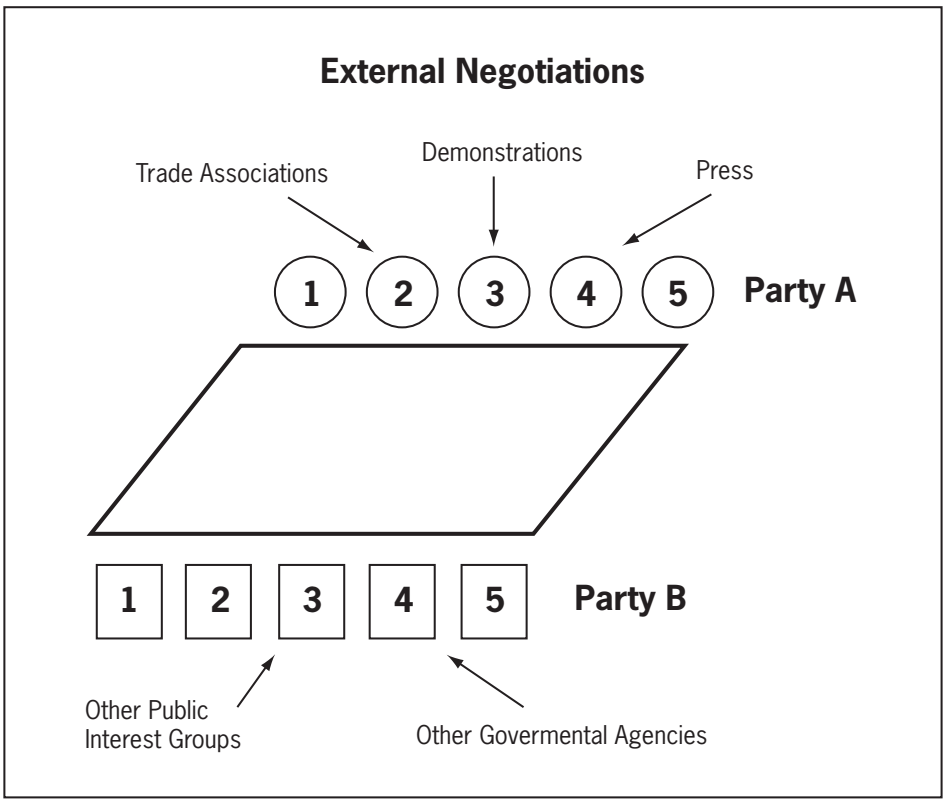




4.3.8 External Negotiations

External negotiations occur between the parties at the table and parties who are not present in the direct bargaining yet are concerned about the outcome of the discussions. The press, trade associations, interested governmental agencies, neighbours and extended families have all engaged in extended negotiations with parties at the table in such issues as the release of information, limits on the duration of the bargaining and limits or expansion of the scope of the issues being discussed at the table.

External pressures and corresponding negotiations are often critical structural variables which influence the success or failure of negotiations.



4.4 Positional Bargaining

4.4.1 What Is Positional Bargaining?

Positional bargaining is a negotiation strategy in which a series of positions, alternative solutions that meet particular interests or needs, are selected by a negotiator, ordered sequentially according to preferred outcomes and presented to another party in an effort to reach agreement. The first, or opening position, represents that maximum gain hoped for or expected in the negotiations. Each subsequent position demands less of an opponent and results in fewer benefits for the person advocating it. Agreement is reached when the negotiators' positions converge and they reach an acceptable settlement range.

4.4.2 When Is Positional Bargaining Often Used?

- When the resource being negotiated is limited (time, money, psychological benefits).
- When a party wants to maximize his/her share in a fixed-sum pay-off.
- When the interests of the parties are not interdependent, are contradictory or are mutually exclusive.
- When current or future relationships have a lower priority than immediate substantive gains.

4.4.3 Attitudes of Positional Bargainers

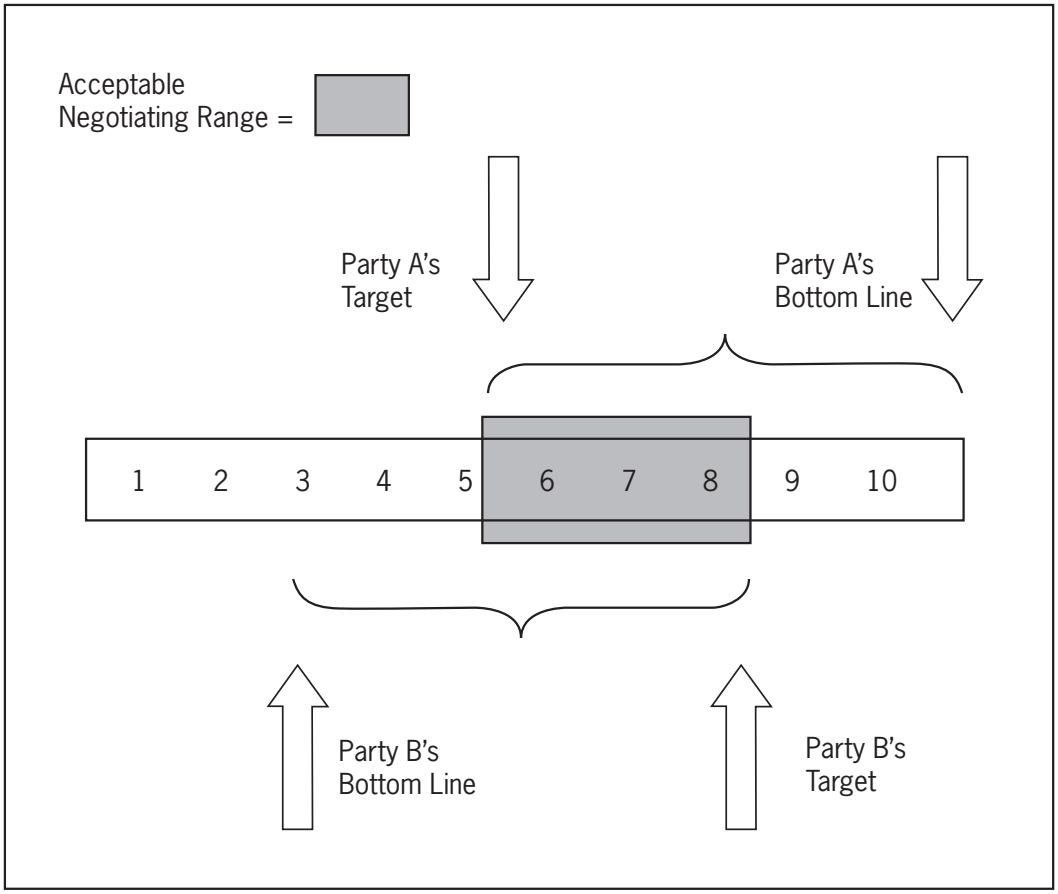
1. Resource is limited.
2. Other negotiator is an opponent— be hard on him/her.
3. Win for me means a loss for you.
4. Goal is to win as much as you can.
5. Concessions are a sign of weakness.
6. There is a right solution— mine.
7. Be on the offensive at all times.

4.4.4 How To Do Positional Bargaining

1. **Set your target point:** the solution that would meet all your interests and results in complete success for you. To set the target point, consider:
   i. Your highest estimate of what is needed. (What are your interests?)
   ii. Your most optimistic assumption of what is possible.
   iii. Your most favourable assessment of your bargaining skill.
2. **Make your target point into your opening position.**

3. **Set your bottom linear resistance point:** the solution that is the least you are willing to accept and still reach agreement. To identify your **bottom line**, consider:
   i. Your lowest estimate of what is needed and still acceptable to you.
   ii. Your least optimistic assumption of what is possible.
   iii. Your least favourable assessment of your bargaining skill relative to other negotiators.
   iv. Your Best Alternative To A Negotiated Agreement (BATNA).
4. **Consider possible targets and bottom lines** of other negotiators.
   i. Why do they set their targets and bottom lines at these points? What interests or needs do these positions satisfy?
   ii. Are your needs or interests and those of the other party mutually exclusive?
   iii. Will gains and losses have to be shared to reach agreement, or can you settle with both receiving significant gains?
   iv. Consider a range of positions between your target point and bottom line.
   v. Each subsequent position after the target point offers more concessions to the other negotiator(s) but is still satisfactory to you.
   vi. Consider having the following positions for each issue in dispute:
      » Opening position.
      » Secondary position.
      » Subsequent position.
      » Fall back position-(yellow light that indicates you are close to bottom line; parties who want to mediate should stop here so that the intermediary has something to work with).
      » Bottom line.
5. **Decide if any of your positions meet the interests or needs of the other negotiators**. How should your position be modified to do so?
6. **Decide when you will move from one position to another.**
7. **Order the issues to be negotiated into a logical (and beneficial) sequence.**
8. **Open with an easy issue.**
9. **Open with a position close to your target point.**
   i. Educate the other negotiators so they understand why you need your solution and why your expectations are high.
   ii. Educate them about the need to raise or lower their expectations.
10. **Allow other side to explain their opening position.**
11. **If appropriate move to other positions that offer other negotiators more benefits.**

12. **Look for a bargaining range:** the spectrum of possible settlement alternatives, any one of which is preferable to impasse and no settlement.



13. Compromise on benefits and losses where appropriate.
14. Look for ways positions can be modified to meet all negotiators' interests. Formalize agreements in writing.

Characteristic Behaviours of Positional Bargainers

1. Initial large demand—high or large opening position used to educate other party about what is desired or identify how far they will have to move to reach an acceptable settlement range.
2. Low level of disclosure—secretive and non-trusting behaviour to hide what settlement range and bottom line are. Goal is to increase benefits at expense of other.
3. Bluffing—strategy used to make negotiator grant concessions based on misinformation about the desires, strengths, or costs of another.
4. Threats—strategy used to increase costs to another if agreement is not reached.
5. Incremental concessions—small benefits awarded to gradually cause convergence between negotiators' positions.
6. Hard on people and problem—often other negotiator is degraded in process of hard bargaining over substance. This is a common behaviour that is not necessarily a quality or desirable behaviour in positional bargaining.

4.4.5 Costs and benefits of positional bargaining

COSTS	BENEFITS
• Often damages relationships.	• May prevent premature concessions.
• Inherently polarizing (my way, your way).	• Is useful in dividing or compromising on the distribution of fixed-sum resources.
• Cuts off option exploration.	• Does not require trust to work.
• Often prevents tailor-made solutions.	• Does not require full disclosure of privileged information.
• Promotes rigid adherence to positions.	
• Obscures a focus on interests by premature commitment to specific solutions.	
• Produces compromise when better solutions may have been available.	

4.5 Interest-based Bargaining

4.5.1 What Is Interest-based Bargaining?

Interest-based bargaining is a negotiation strategy that focuses on satisfying as many interests or needs as possible for all negotiators. It is a problem-solving process used to reach an integrative solution rather than distributing rewards in a win/lose manner. It is not a process of compromise.

4.5.2 When Is Interest-based Bargaining Used?

- When the interests of the negotiators are interdependent.
- When it is not clear whether the issue being negotiated is fixed-sum (even if the outcome is fixed-sum, the process can be used).
- When future relationships are a high priority.
- When negotiators want to establish cooperative problem-solving rather than competitive procedures to resolve their differences.
- When negotiators want to tailor a solution to specific needs or interests.
- When a compromise of principles is unacceptable.

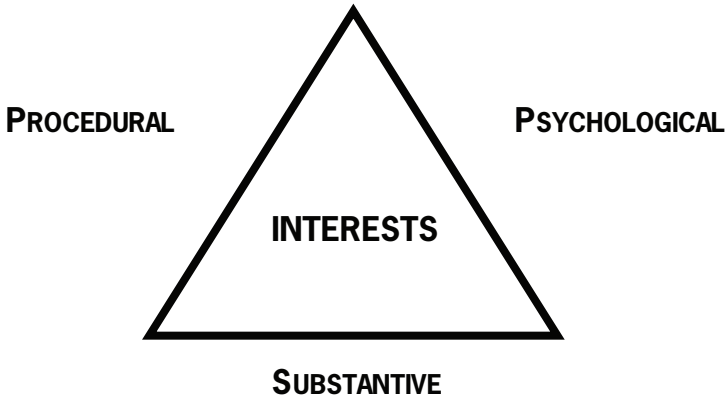
4.5.3 Attitudes of Interest-based Bargainers

- Resource is seen as not limited.
- All negotiators' interests must be addressed for an agreement to be reached.
- Focus on interests not positions.
- Parties look for objective or fair standards that all can agree to.
- Belief that there are probably multiple satisfactory solutions.
- Negotiators are cooperative problem-solvers rather than opponents.
- People and issues are separate. Respect people, bargain hard on interests.
- Search for win/win solutions.

4.5.4 How to do Interest-based Bargaining

1. Interests are needs that a negotiator wants satisfied or met. There are three types of interests:
   i. Substantive interests—content needs (money, time, goods or resources, etc.)
   ii. Procedural interests—needs for specific types of behaviour or the "way that something is done."
   iii. Relationship or psychological interests—needs that refer to how one feels, how one is treated or conditions for ongoing relationship.

TRIANGLE OF SATISFACTION



2. Identify the substantive, procedural and relationship interests/needs that you expect to be satisfied as a result of negotiations. Be clear on:
   i. Why the needs are important to you.
   ii. How important the needs are to you.
3. Speculate on the substantive, procedural and relationship interests that might be important to the other negotiators.
   i. Assess why the needs are important to them.
   ii. Assess how important the needs are to them.
4. Begin negotiations by educating each other about your respective interests.
   i. Be specific about why interests are important.
   ii. If other negotiators present positions, translate them into terms of interest. Do not allow other negotiators to commit to a particular solution or position.
   iii. Make sure all interests are understood.
5. Frame the problem in a way that it is solvable by a win/win solution.
   i. Remove egocentricity by framing the problem in a manner that all can accept.
   ii. Include basic interests of all parties.
   iii. Make the framing congruent with the size of the problem to be addressed.

iv. Identify general criteria that must be present in an acceptable settlement.
v. Look for general agreements in principle.
vi. Identify acceptable objective criteria that will be used to reach more specific agreements.

6. Generate multiple options for settlement.
   i. Present multiple proposals.
   ii. Make frequent proposals.
   iii. Vary the content.
   iv. Make package proposals that link solutions to satisfy interests.
   v. Make sure that more than two options are on the table at any given time.
   vi. Utilize Integrative Option Generating Techniques
      a) Expand-the-pie-ways that more resources or options can be brought to bear on the problem.
      b) Alternating satisfaction—each negotiator gets 100 percent of what he/she wants, but at different time.
      c) Trade-offs—exchanges of concessions on issues of differing importance to the negotiators.
         ◊ Consider two or more agenda items simultaneously.
         ◊ Negotiators trade concessions on issues of higher or lower importance to each.
         ◊ Each negotiator gets his/her way on one issue.
      d) Integrative solutions—look for solutions that involve maximum gains and few or no losses for both parties.
      e) Set your sights high on finding a win/win solution.
7. Separate the option generation process from the evaluation process.
8. Work toward agreement.
   i. Use the Agreement in Principle Process (general level of agreements moving toward more specific agreements).
   ii. Fractionate (break into small pieces) the problem and use a Building Block Process (agreements on smaller issues which when combined form a general agreement).
   iii. Reduce the threat level.
   iv. Educate and be educated about interests of all parties.
      a) Ensure that all interests will be respected and viewed as legitimate.
      b) Show an interest in their needs.
   v. Do not exploit another negotiator's weakness.
   vi. Demonstrate trust.
      a) Put yourself in a one down position to other on issues where you risk a small, but symbolic loss.
      b) Start with a problem-solving rather than competitive approach.
      c) Provide benefits above and beyond the call of duty.

vi. Convey to other negotiators that they have been heard and understood.

a) Listen and restate content to demonstrate understanding.

b) Listen and restate feelings to demonstrate acceptance (not necessarily agreement) and understanding of intensity.

4.5.5 Costs and Benefits of Interest-based Bargaining

COSTS	BENEFITS
• Requires some trust	• Produces solutions that meet specific interests.
• Requires negotiators to disclose information and interests.	• Builds relationships.
• May uncover extremely divergent values or interests.	• Promotes trust.
	• Models cooperative behaviour that may be valuable in future.

4.6 Making the Transition from Positional to Interest-based Bargaining

Interest-based bargaining is a better option for avoiding and mitigating conflict. It places parties in positive and amicable positions rather than negative and confrontational ones. Focussing on interests tends to allow greater possibilities for agreement. Generally, positions do not usually allow for the possibility of alternatives other than the one presented. Interest-based bargaining can help build and maintain relationships, while positional bargaining is often detrimental to relations.

The following steps can aid in the transition from positional to interest-based bargaining:

1. Ignore positions and keep on talking.
2. Do not ask for specific solutions early in the negotiations.
3. Do not respond to positions with counter positions.
4. Ask whether the problem has to be solved in a win/lose manner. State that you want to look for a solution that will be advantageous to all parties.
5. Ask why a position is important to a party. Try to identify underlying issues.
6. Conduct trial-and-error hypothesis testing to indirectly identify interests.
7. Verbalize and make interests explicit.
8. Separate substantive, procedural and psychological interests contained in a stated position.
9. Look for general principles behind positions to which both parties can agree.
10. Reframe problem as a search for means to satisfy interests rather than a way to persuade the other party to agree to a position.
11. Reframe the problem to emphasize commonality of interests or the possibility of joint gain.
12. Separate the problem from the people involved.
13. Ask for principles by which to evaluate positions offered.
14. Respond with several counter positions and suggest that all merit further investigation to see how they meet the parties' interests.
15. Do not negotiate the use of interest-based bargaining procedures using positional bargaining tactics.

4.7 Stages of Negotiation

Stage 1: Evaluate and Select a Strategy to Guide Problem Solving

- Assess various approaches or procedures—negotiation, facilitation, mediation, arbitration, court, etc.—available for problem solving.
- Select an approach.

Stage 2: Make Contact with Other Party or Parties

- Make initial contact(s) in person, by telephone or by mail.
- Explain your desire to negotiate and coordinate approaches.
- Build rapport and expand relationship.
- Build personal or organizational credibility.
- Promote commitment to the procedure.
- Educate and obtain input from the parties about the process that is to be used.

Stage 3: Collect and Analyze Background Information

- Collect and analyze relevant data about the people, dynamics and substance involved in the problem.
- Verify accuracy of data.
- Minimize the impact of inaccurate or unavailable data.
- Identify all parties' substantive, procedural and psychological interests.

Stage 4: Design a Detailed Plan for Negotiation

- Identify strategies and tactics that will enable the parties to move toward agreement.
- Identify tactics to respond to situations peculiar to the specific issues to be negotiated.

Stage 5: Build Trust and Cooperation

- Prepare psychologically to participate in negotiations on substantive issues.
- Develop a strategy to handle strong emotions.
- Check perceptions and minimize effects of stereotypes.
- Build recognition of the legitimacy of the parties and issues.
- Build trust.
- Clarify communications.

Stage 6: Beginning the Negotiation Session

- Introduce all parties.
- Exchange statements which demonstrate willingness to listen, share ideas, show openness to reason and bargain in good faith.
- Establish guidelines for behaviour.
- State mutual expectations for the negotiations.
- Describe history of problem and explain why there is a need for change or agreement.
- Identify interest and/or positions.

Stage 7: Define Issues and Set an Agenda

- Together identify broad topic areas of concern to people.
- Identify specific issues to be discussed.
- Frame issues in a non-judgmental neutral manner.
- Obtain an agreement on issues to be discussed.
- Determine the sequence to discuss issues.
- Start with an issue in which there is high investment on the part of all participants, no serious disagreement and a strong likelihood of agreement.
- Take turns describing how you see the situation. Participants should be encouraged to tell their story in enough detail that all people understand the viewpoint presented.
- Use active listening as well as open-ended and focusing questions to gain additional information.

Stage 8: Uncover Hidden Interests

- Probe each issue, one at a time or together, to identify interests, needs and concerns of the principal participants in the dispute.
- Define and elaborate interests so that participants understand the needs of others as well as their own.

Stage 9: Generate Options for Settlement

- Develop awareness about the need for options from which the final settlement will be created.
- Review needs of parties which relate to the issues.
- Generate criteria or objective standards that can guide settlement discussions.
- Look for agreements in principle.
- Consider breaking issues into smaller, more manageable issues and generating solutions for sub-issues.
- Generate options either individually or through joint discussions.
- Use one or more of the following procedures:
  a) Expand the pie so that benefits are increased for all parties.
  b) Alternate satisfaction so that each party has his/her interests satisfied, but at different times.
  c) Trade items that are valued differently by parties.
  d) Look for integrative or win/win options.
  e) Brainstorm.
  f) Use trial-and-error generation of multiple solutions.
  g) Try silent generation in which each individual develops privately a list of options and then presents his/her ideas to other negotiators.
  h) Use a caucus to develop options.
  i) Conduct position/counter-position option generation.
  j) Separate generation of possible solutions from evaluation.

Stage 10: Assess Options for Settlement

- Review the interests of the parties.
- Assess how interests can be met by available options.
- Assess the costs and benefits of selecting options

Stage 11: Final Bargaining

Final problem solving occurs when:

- One of the alternatives is selected.
- Incremental concessions are made and parties move closer together.
- Alternatives are combined or tailored into a superior solution.
- Package settlements are developed.
- Parties establish a procedural means to reach a substantive agreement.

Stage 12: Achieving Formal Settlement

- Agreement may be a written memorandum of understanding or a legal contract.
- Detail how settlement is to be implemented—who, what, where, when, how-–and write it into the agreement.
- Identify "what ifs" and conduct problem solving to overcome blocks.
- Establish an evaluation and monitoring procedure.
- Formalize the settlement and create enforcement and commitment mechanisms:
  a) Legal contract.
  b) Performance bond.
  c) Judicial review.
  d) Administrative/executive approval.

4.8 Preparing to Negotiate

Satisfactory performance in negotiation, as in many other social interactions, requires preparation. Just as good athletes, musicians, parents, public speakers, military officers, lawyers or planners spend hours practicing, designing strategies and refining their skills, so too must good negotiators.

Since the content and dynamics of negotiations vary considerably from situation to situation, it is not always easy to identify what should be considered in order to adequately prepare. The following topics or tasks have been identified by numerous negotiators as critical variables in preparing to meet others at the bargaining table. Consideration of these items will help you to be more successful in planning and implementing negotiations.

- **What are your needs and interests?** To negotiate successfully, you need to identify your needs and interests. Interests fall into three categories: substantive, procedural, and psychological. Take time to identify your interests and to assess how strongly you are committed to them.
- **Who are the people or parties that you need to negotiate with to satisfy your interests?** Negotiators should identify the people with whom they must make a deal to get their needs met. Negotiators should consider principal parties (either individuals or groups) who must be

motivated at the bargaining table for an agreement to hold, and secondary parties, interested people or groups who will be affected by the decision but are neither principal actors nor have the capacity to change a negotiated settlement.

- **What are the substantive, procedural and psychological interests of the other primary and secondary parties?** To reach an agreement in negotiation, the solution must, at the least, meet the minimal needs of all the principal parties. To formulate proposals, you need to know these interests.
- **Given the needs and interest of the parties, decide if the problem is negotiable. Are the needs totally incompatible?** Are the parties totally independent of each other, so that the satisfaction of needs is not dependent on the cooperation of one another? If the two preceding questions are true, negotiations will have a very low probability of succeeding. If they are not true, continue assessing the possibilities of negotiation.
- **What means of influence do you have to persuade the other party to meet your needs?** Consider the forms of negotiator power: control of the process, communication, data, experts, use of authority, associates, rewards and coercion. Determine the benefits and costs of using each form of influence.
- **Given the interests of all the parties, what will be the issues or statement of the problems that need to be discussed?** For example, if your interests regarding the development of a condominium unit near your single family home are privacy, minimal noise, low level of traffic and protection from bright street lamps, and the developer's interests are to build the project in a cost effective manner, the issues become: (1) how to build the project at a reasonable cost and maintain visual privacy of neighbours, and (2) how to cut down on noise coming from the multifamily dwelling, avoid traffic flow through the neighbourhood and limit the direction and intensity of lighting for the project.
- **Do you and the other primary parties have (or will have) the authority to negotiate a binding settlement?** Will your superiors authorize you to negotiate on their, or the organization's, behalf? What is the ratification process for an agreement reached at the bargaining table? lf you do not have the authority to negotiate, who does? Should someone else be at the table? Ask the same questions for each of the principal parties.
- **Have any of the parties taken positions on the issues?** A position is a particular solution that meets the needs of a party but not necessarily the needs of the other negotiators. People adhere to positions because they meet interests. Determine what interests the position is meant to satisfy. Are there ways to meet the interests other than the stated position?
- **How important are the issues and interests to each of the parties?** Which are they least likely to change? Are there any issues that might be trusted or dropped?
- **What events or dynamics will make it harder for you or for other parties to negotiate?** Consider court dates, past interactions, lack of information, laws, internal organizational policies or the political or economic climate. What can you do to change these dynamics and reverse negative trends?
- **What events or dynamics encourage negotiations and promote settlement?**
- **What settlement options on each issue might go into a "mutually acceptable" proposal?** A mutually acceptable proposal is designed to meet your needs as well as those of other negotiators. It will be presented as a way for all parties to have at least some of their needs met.

- **What should be the physical setting for the negotiations? Should they be face-to-face, over the telephone, conducted on a one-on-one basis or in a large group?** What should be the shape of the room, the table, size of chairs, etc.?
- **How can a conciliatory tone that promotes a positive relationship with other negotiators be established at the beginning of the session?** Consider introductions, conciliatory remarks, room set-up, refreshments, etc.
- **How should you organize your team?** Consider whether the team is a horizontal one (made up of members with equal power or authority) or a vertical team (someone has authority to decide for team members). Decide who the spokesperson will be.
- **What negotiation strategy should you use?** Decide if you want to use positional or interest-based bargaining.
- **How will you open negotiations?**
    - » Who will do the opening statement?
    - » What will be covered: history of the issue, need for change, interests to be met, possible solutions?
    - » How will a positive tone be established?
    - » Which party will talk first? Is there merit in letting another party talk first?
    - » How will the agenda be developed? Do you have a proposed order for items to be discussed?
    - » What issue(s) do you want to talk about first? What issue(s) will be easier to get an agreement on?
    - » Consider negotiating ground rules and procedures early in the first session (or even before the first meeting).
    - » What unforeseen turn of events, other negotiators' strategies or external factors could effect the negotiations? Develop contingent strategies for possible problems that might develop in the negotiations.

The "Conflict Analysis" chart is an abbreviated version of the questions listed above. It can be filled out as a means of preparing for negotiations.

CONFLICT ANALYSIS AND STRATEGY DESIGN

PEOPLE/ PARTIES (Primary and Secondary)	**POSITIONS** (Verbalized Substative Preferences)	**ISSUES** (Problem Statements of Agenda Items)	**INTERESTS** (Substantive Procedural and Psychological)	**IMPORTANCE/ SALIENCE** (Substantive Procedural and Psychological)	**POWER** (Means of Influence)	**DYNAMICS** (Historical Development Promoting Escalation or De-escalation)	**WILL TO SETTLE** (Benefits, Costs and Alternatives to Negotiation)	**SETTLE-MENT OPTIONS** (Options that Meet Mutual Needs)	**STEPS FOR SETTLE-MENT**

4.9 Opening Statements for Negotiators

Opening statements are brief speeches or monologues made by the disputing parties which outline the basic premises of the negotiations. The following outline is designed to help disputants be more effective in their opening.

Purpose:

- To make face-to-face introductions.
- To establish a positive tone.
- To educate the parties about the negotiation process.
- To reach an agreement on standards of behaviour.
- To obtain a commitment to begin the process.

Procedure:

1. **Introduce yourself and other parties.**
2. **Welcome the negotiator(s)** and affirm their willingness to discuss the issues or negotiate a settlement. Make a conciliatory statement that sets a positive tone, but does not make a concession.
3. **Review why people are there** in neutral terms.
4. **Explain how you perceive negotiation process**. Is it:
   i. An attempt by the parties to reach their own agreement through discussions or negotiations?
   ii. An opportunity for all parties to gain benefits?
   iii. Is it voluntary?
5. **Describe the problem-solving process that you propose to use:**
   i. Each person will talk and describe the situation.
   ii. Topics for discussion will be mutually agreed upon.
   iii. An agenda will be developed jointly.
   iv. All needs will be examined.
   v. Agenda items will be discussed one-by-one.
   vi. The parties will look for solutions that are mutually satisfactory.
   vii. The agreement will be written down and formalized according to parties' desires.
6. **Agree on the use of private meetings** (caucus), breaks or time to consult with other parties.
7. **Identify procedural guidelines** that will help them promote efficient negotiation.
8. **Ask and/or answer questions** regarding process.
9. **Obtain a commitment** to begin the process from each party.

4.10 Procedural Openings and Issues in Negotiation

Why Open with a Focus on Procedure?

- On occasion, parties may want to open negotiations by focusing on negotiation procedures rather than beginning with substantive discussions. There is an advantage to this focusing on procedures:
- Enables the parties to establish rules for interaction that may provide more predictability and security.
- Provides a jointly developed order for the negotiations to which all parties are committed.
- Allows the parties to practice decision making as a team.
- Provides information about attitudes, behaviour and trustworthiness of other parties.
- Allows parties to practice joint decision making on issues that are neither substantively critical nor emotionally charged.
- Provides an opportunity to build "habits" of agreement.
- Is a concrete achievement demonstrating that agreement is possible and that the situation is not hopeless.

What Procedural Issues are Addressed?

- How the agenda will be developed.
- The speaking order of the parties.
- The time frame, schedule and duration of the negotiations.
- How information will be exchanged between the parties.
- How proprietary information will be handled.
- How legal rights or administrative mandates will be recognized.
- The limits of confidentiality.
- Acceptable behaviour regarding personal attacks, attribution of motivation, respect for values and emotional displays.
- Determination of who will represent interest groups.
- Decision-making authority of each party.
- Role of substitutes or observers.
- Role of task forces or subcommittees.
- Size of negotiation teams.
- The consensus decision-making process.
- Negotiation procedures to be used.

4.10.1 Negotiator Power and Influence

Negotiators try to change each other's behaviour, attitudes or opinions by exercising a variety of means of influence. Listed below are techniques that are frequently used to change the mind of another negotiator. Each party usually has the potential to use some or all of these techniques. The desirability, however, of exercising them must be weighed against the goals of the negotiations and the potential positive or negative impact of their use on the other party or parties.

A negotiator's power is relative and depends upon the particular people, problem and external situation. A very powerful negotiator in one situation may be extremely weak in another.

"An important aspect of negotiation beyond the scope of this manual is the dynamic of different power positions and the significance of cultural differences when negotiating. The power held by any one party and how it is exercised can significantly affect the way negotiations are handled and their outcomes e.g. Nile River Basin and Jordan River Basin."

Exercise of influence may be either non-directive or directive. The negotiator may create a situation where the other party has lots of positive and acceptable options, or narrow their choices so that another must choose from very limited alternatives.

Generally, the more coercive the power exercised at the table (and the narrower the options available to a party), the more resistance to cooperation there will be from the party toward whom the coercion is directed. Less directive and more cooperative means of influence should be tried before resorting to coercion or actions that could damage the relationship with another negotiator.

Means of Influence

1. **Management of the Negotiation Process.**
   i. Planning a cooperative and informative opening.
   ii. Sequencing of the stages of negotiation.
   iii. Ordering the agenda.
   iv. Placing an easily solved item at the beginning of the session.
   v. Managing the problem-solving steps to be used on each agenda item.
   vi. Assisting the other party to make the transition from positional to interest-based bargaining.
2. **Management of Communication Within and Between the Parties.**
   i. Managing behavioural communication through active listening, reframing and congruent sending.
   ii. Assisting parties to move from extreme positions by softening the specificity, timing and consequences of their demands.
   iii. Managing the structure of communications by determining if the negotiations are to be held directly by the parties, through intermediaries, in joint session or caucus, in the whole group or small working committees, face-to-face, by letter or by telephone.
3. **Management of Body Language and Physical Setting.**
   i. Demonstrating attentive, concerned and open body language.
   ii. Showing dissatisfaction, frustration, intransigence.
   iii. Establishing the shape of the negotiating table and seating arrangements.
   iv. Arranging for a room of appropriate size for desired results.
   v. Providing caucusing space.
   vi. Locating negotiations in a neutral space or one favourable to a particular party's interests.

4. **Management of the Timing.**
   i. Deciding when negotiations will be proposed and started.
   ii. Determining how long the negotiations as a whole and individual sessions win will last.
   iii. Imposing, modifying and removing deadlines.
   iv. Controlling the timing of information exchange.
   v. Managing the time when offers are made (or accepted).
   vi. Designing the timing of implementation.
5. **Management of Information Exchanged Between Parties.**
   i. Identifying what information is needed.
   ii. Requesting information.
   iii. Asking why a proposal is important to another party.
   iv. Making general suggestions.
   v. Making specific suggestions.
   vi. Presenting concrete proposals or offers.
   vii. Referring other parties to sources of information or experts.
6. **Management of Associates.**
   i. Identifying and encouraging associates of other parties to influence them.
   ii. Inhibiting associates' influence on other parties by minimizing contact or value of information.
   iii. Creating doubt about accuracy of associate's opinion or data.
7. **Management of Experts.**
   i. Making experts available to build your case.
   ii. Casting doubt on experts who present information contrary to your case.
   iii. Referring other parties to substantive, procedural or psychological experts.
8. **Management of Authoritative Power.**
   i. Appealing to law, regulation or common practice.
   ii. Asking for support of people in authority.
   iii. Arranging for institutional mandate for your position.
9. **Management of Habit.**
   i. Asking for a continuation of past practice.
   ii. Appealing to transition.
10. **Management of Other Parties' Doubt.**
   i. Questioning validity or applicability of another party's arguments.
   ii. Testing the reasons of another party's proposals or ideas.
   iii. Posing hypothetical problems that might result from a particular solution.
   iv. Exploring another party's best alternative to a negotiated agreement (BATNA).
   v. Exploring another party's worst alternative to a negotiated agreement (WATNA).

vi. Exploring another party's most likely alternative to a negotiated agreement (MLATNA).

11. Management of Rewards and Benefits for Other Parties.

i. Providing indirect rewards for cooperation or agreement (respect, benefits to be received upon final agreement, symbolic or small rewards).

ii. Providing direct rewards (substantive benefits, favourable timing of settlement, of receipt of benefits).

12. Management of Coercive Influence.

i. Imposing physical hardship or discomfort: location of negotiation setting, timing of meetings, duration of meetings (marathons).

ii. Imposing psychological coercion: intimidation, humiliation.

iii. Imposing substantive coercion: court costs, delay costs, other threats.

iv. Imposing procedural coercion: deadlines, threats to withdraw

13. Management of Resources.

i. Marshalling your resources—money, people and skills—to enhance your influence in negotiations.

ii. Weakening other party's resources to lower the amount of influence they have in negotiation.

4.11 Structured Decision Making for Negotiations[22]

Structured Decision making for the focus of development investment has shifted away from narrow economic interests towards multi-purpose projects with the explicit goal of achieving broader social and environmental improvements, regional cooperation, peace and security. It is shifting away from a"least cost planning plus mitigation"planning model towards a sustainability paradigm that more proactively integrates ecological, economic and social objectives upstream in the planning process. And, in response to intense international scrutiny and controversy surrounding decisions to invest in large infrastructure projects on internationally important waterways, it is shifting away from top-down decisions toward more inclusive and transparent ones. All of these shifts are profoundly changing the context for development decision making and therefore require a new mechanism to facilitate decision-making in the development context.

Structured decision making is an organized approach to identifying and evaluating options and making choices in complex decision situations. It is designed to engage stakeholders, technical experts and decision makers in a deliberative decision process, using best practices in decision making. Its goal is to both inform and actively aid decision makers, but specifically not to prescribe a solution. It provides a framework to guide and integrate planning, analysis and consultation activities in support of decisions.

In a very practical way, structured decision making brings insights to decision makers about how well their objectives are achieved by different alternatives, how risky some alternatives are relative to others, what the core trade-offs are, and how the people affected by the trade offs view them. It provides a level of penetration into complex problems and a focus on creative collaborative solutions that is simply not possible with more conventional economic approaches (such as cost-benefit

[22] The advice and encouragement of Kyle Robertson in compiling this section is gratefully acknowledged.

analysis), consensus-based approaches (such as negotiations and dispute resolution), or scientific approaches (such as risk assessment). In contrast to economic and scientific approaches, structured decision making is more targeted at working directly with stakeholders, decision makers and the decision making team to develop creative solutions. In contrast to negotiations, it is rooted in rigorous analysis of consequences and uncertainties, it requires that participants consider these analyses in their deliberations, and it explicitly leaves decision making authority in the hands of decision makers.

As a structured approach is of most value for decisions characterized by complexity, one of the most important benefits of adopting a structured decision making approach for transboundary waters management will be the legitimacy it brings to potentially controversial decisions.

There are six core steps that are applied to any structured decision making process. These steps are reviewed and then refined through an iterative approach as the process moves towards its final solution. The core steps are provided below and presented in a logical diagram in Figure 1:

1. **Clarify the decision context:** defining what question or problem is being addressed and why, identifying who needs to be involved and how, and establishing scope and bounds for the decision.
2. **Set objectives and evaluation criteria:** Objectives should reflect the things that matter or the felt needs of the people affected. The evaluation criteria should be unambiguous, comprehensive but concise, direct, operational, understandable, and additive, and these criteria should be used to determine the expected impact of each alternative on the objectives.
3. **Identify Alternatives:** Rather than allowing the decision process to devolve into an economic valuation exercise or a scientific stand-off about uncertainties, it should focus on comparing and refining alternatives rather than precisely valuing their monetary benefits, and should search for alternatives that are robust to key uncertainties or that reduce those uncertainties over time. A short list of high quality creative alternatives should be developed that are value-focused, technically sound, clearly and consistently defined, comprehensive and mutually exclusive, and able to expose fundamental trade-offs. Involving stakeholders enriches the number and quality of creative options.
4. **Estimate Consequences:** A consequence table should be prepared that links objectives, evaluation criteria and alternatives so that key trade-offs among objectives across the alternatives can be exposed.
5. **Evaluate and Select:** While stakeholder consensus is desired, it is not mandatory. Areas of agreement and disagreement among stakeholders and the reasons for disagreement should be documented and presented to decision makers.
6. **Monitor and Review:** A decision process that is serious about sustainability is one that will create a legacy of learning and adaptation, leading to greater capacity – in terms of technical information, human resources and institutional capacity – to make better decisions in the future. A key challenge will be to both reduce critical uncertainties through monitoring and review and build in institutional flexibility to respond to new information without overextending management and political resources.

FIGURE 1 – CONCEPTUAL FRAMEWORK FOR STRUCTURED DECISION MAKING

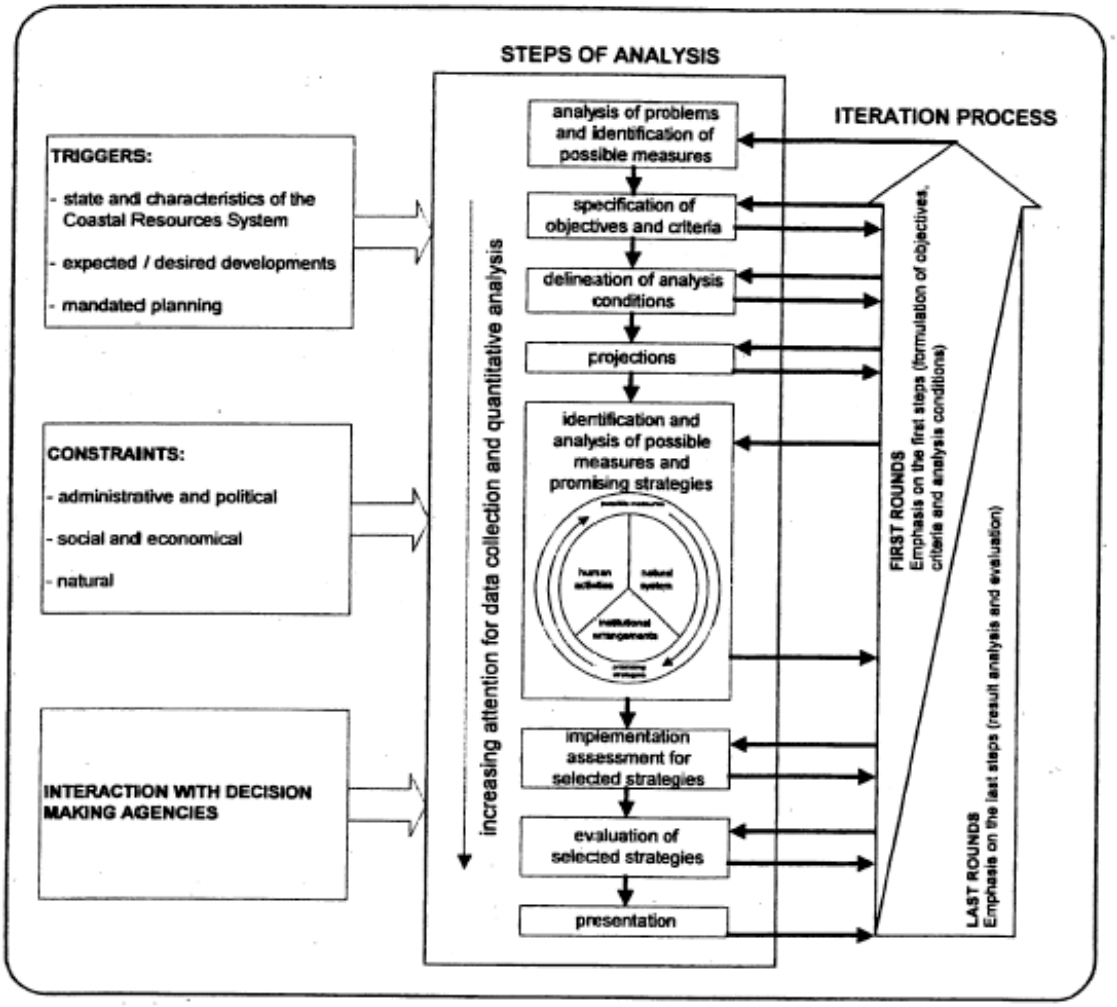


Figure 3.1 - Conceptual Framework for Analysis (1)

Framework for Analysis, Lecture Note J.C.Heun *January 2000*

Source: Heun, J.C., Koudstaal, R.C, 2000. Lecture Notes: Water Resources Planning: A Framework for Analysis, Volume 1: Main Text. UNESCO-IHE Institute for Water Education, Delft, The Netherlands.

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SIMULATION EXERCISES

5.1 Purpose, Value and Scope

Simulations have been employed successfully in international relations courses since the late 1950s, but the end of the Cold War has prompted a renewed interest in simulations as interactive teaching tools that capture the dynamics of change in the international system. They can be an effective tool because they engage students and make them active participants in the learning process. The objective of these simulations is not to train students to be professional negotiators, but rather to provide a solid grounding which will enable them to better understand the process of international negotiation. These simulations are meant to connect the information hitherto discussed in this manual and apply it to practical and realistic situations. In applying the knowledge gained to realistic international scenarios, future negotiators can practice implementing strategies in a comfortable and constructive atmosphere.

[23] This simulation exercise was adapted and modified from an exercise originally developed by Professor L. Guruswamy

5.2 Simulation Exercise # 1 — The Vancouver River Part One[23]

5.2.1 Introduction

The basic fact pattern used in Simulation Exercise # 1 will be used in two related simulation training exercises.

In Simulation Exercise # 1 the fact pattern will be used to reinforce the practical application of the principle of equitable utilization in international water law. The same fact pattern will then be used in Simulation Exercise # 4 to help to illustrate the advantages and disadvantages of litigation versus negotiation as techniques for helping to resolve international water law disputes.

Scenario

Originating in a high mountain range studded with glaciers and flowing southwesterly some 2000 miles to the ocean, the Vancouver River has always been a life sustaining source of water for the state of Upstream and the Republic of Downstream.

However, beginning about twenty years ago global climate change apparently caused the Vancouver River to shrink to half its normal size, leading to forced water rationing in both countries and resulting in crop failures, food shortages and related misfortunes.

Upstream sought to rectify this problem by constructing, with foreign capital, a large dam in Upstream on the Vancouver River. According to Upstream, the dam would make possible the recovery of arable land lost through desertification, the development of irrigated "green belts" and the generation of rural hydroelectric power. However, this action, together with a greater diversion of water for irrigation than originally had been planned, appeared to lead to rapidly increased desertification in Downstream and a consequent major decline in a certain river fish upon which Downstream diets historically have depended. Additionally, it caused a decline in the quality of the river water to Downstream because of increased pesticide use and run-off in Upstream's newly created "green belts".

Downstream now demands that the flow of the Vancouver River be restored to its normal level and that Upstream take steps to remedy the pesticide problem. Upstream has responded that the current river flow is critical to the success of its green belt irrigation program and has dismissed the suggestion that the use of pesticides damages the health of Downstream citizens.

In the face of threats of military action on Downstream's part, representatives from Downstream and Upstream have agreed to meet.

Major Lessons

- Application of the principles of international water law.

Teaching Materials:

For all parties:

- Disclaimer
- Fact Pattern
- Questions Presented
- Parties

- Background Materials
- Discussion Questions

Teaching Package:

- All of the above
- Teaching notes including legal "solution"

Keywords/Themes:

Multi-party negotiation; international water law; transboundary environmental disputes.

5.2.2 Questions Presented

Assume both Upstream and Downstream each have a team of three individuals representing them (as designated by the instructor).

Assume further that there are no fundamental disagreements within each team.

Each team has now been instructed to prepare and present an argumentative legal brief before a mixed arbitral panel of international law experts answering the following question:

Has Upstream violated international law by diminishing the quantity and quality of the flow of the Vancouver River to Downstream?

5.2.3 Background Materials

5.2.3.1 Theory

Perhaps the simplest theory regarding transboundary rivers is that an upper riparian State has total sovereignty over the waters in its territory and that it may divert or pollute them regardless of the consequences to the lower riparian. In 1895, U.S. Attorney General Harmon argued that upper riparians such as the United States had no obligation toward lower riparians such as Mexico in respect of rivers like the Rio Grande.[24]

Harmon cited as authority Justice Marshall's opinion in an early United States Supreme Court case involving quite another matter, namely jurisdiction over a foreign vessel within United States territory. In that case, Justice Marshall said "the jurisdiction of the nation within its own territory is necessarily exclusive and absolute".[25]

However, concerning Harmon's doctrine, Anthony D'Amato has written:

It is an extremely dubious proposition to rely upon the arguments of governments, expressed either through their attorneys or foreign officers, rather than their acts. So far as diversion of rivers is concerned, many bilateral treaties have appeared since 1895 that regulate water uses in international drainage basins, and over a hundred such treaties are operative today.[26]

What has the United States done since Attorney General Harmon's 1895 opinion as regards transboundary rivers involving Canada and Mexico? Some of the history has been written by Griffin.[27]

Rio Grande

Mexico protested to the United States in 1895 the diversion of the Rio Grande River to the detriment

of existing Mexican uses. It claimed that its inhabitants had established a right to use the river's waters hundreds of years prior to the time that settlers in Colorado began to use them. Notwithstanding, Attorney General Harmon issued his opinion that the United States had no obligation to share the water with Mexico or to pay damages for injury in Mexico caused by diversions in the United States. On the other hand, the United States did agree with Mexico to refer the matter to the then existing United States-Mexican International Boundary Commission for a report. That Commission reported in 1896 that Mexico had been wronged, that a treaty should settle the matter and that Mexico should waive all claims for past damages if the treaty divided the use of waters equally between the two countries. Mexico said it would enter into the recommended treaty, but various delays and counterproposals came up on the American side. Finally, after increasing Mexican protests, the United States signed a treaty in 1906 agreeing to deliver to Mexico 60,000 acre feet of water annually without cost to Mexico.[28]

It is clear that the treaty is not based upon the common recognition by the two governments of the Harmon opinion as it preserves the formal legal position of each. The treaty recites that the delivery of water by the United States is not a recognition by it of any Mexican claim to water or future claims arising from diversions in the United States. Moreover, the United States' draft treaty contained a phrase that its action in entering into the treaty "is prompted only by considerations of international comity", but this phrase was omitted from the treaty as signed.

Canada and US

Potential friction between the United States and Canada was averted by a treaty in 1909 that differentiated between "boundary waters" (along which the US-Canadian boundary runs) and other waters such as transboundary rivers.[29] Each country was given equal rights in respect of boundary waters, with future uses of such waters being made subject to the approval of an international joint commission. But in the negotiations leading to the treaty, the United States refused to give jurisdiction to the joint commission over future uses of waters other than the boundary waters, preferring instead to leave it to the treaty to give each country "exclusive jurisdiction and control" over such waters within its territory. However, an exception was made with respect to dams or other obstructions which would raise the level of the water on the other side of the boundary. Here it was agreed that approval of the joint commission would be required. As Griffin notes at this point, "discussion was made of the fact that this limits the freedom of action of each country with respect to waters wholly within its territory".[30]

Griffin also points out that "no internal memoranda of the United States negotiators, nor United States correspondence with Canada, has been found containing any mention of the Harmon opinion".[31] Moreover, in explaining the treaty to the Canadian House of Commons, the Canadian Minister of Public Works said that the Canadian Government did not frame the treaty on the theory expressed by Attorney General Harmon of the United States.

Colorado River

Use of the waters of the Lower Colorado River was the subject of discussions between Mexico and the United States throughout the 1930s. Eventually, a treaty signed in 1944 obliged the United States to deliver 1.5 million acre feet of the Colorado to Mexico annually, i.e., twenty-five times the original acre feet.[32] The treaty dealt also with the lower Rio Grande, allocating the water and providing for joint construction of agreed works. As summarized by Griffin[33], "The cost of diversionary works is

[24] 21 Op. Att'y Gen. 274 (1895).
[25] Schooner Exchange vs. McFaddon, 11 U.S. (7 Cranch) 116, 3 L.Ed. 287 (1812).
[26] A. D'Amato, *The Concept of Custom in International Law* 134 (1971).
[27] Griffin, "The Use of Waters of International Drainage Basins Under Customary International Law", 53 A.J.I.L. 50 (1959).
[28] See Agreement With Mexico, May 21, 1906, 34 Stat. 2953, T.S. No. 455, 9 Bevans 924. Writes Griffin, id. at 51-52

prorated in proportion to the benefits received by each country, and the costs of hydro-electric works are shared equally".

Ganges Agreement

Another example of a transboundary river agreement is the November 5, 1977 Agreement between Bangladesh and India on the Sharing of the Ganges' Waters.[34] The agreement came after a quarter-century of protracted negotiations. India had constructed a barrage on the River Ganges at Farakka (eleven miles upstream from its border with Bangladesh) which diverted waters of the Ganges into feeder canals and rivers within India. Bangladesh contended that, since June 1975, because of the diversion, the lean season in Bangladesh was beginning three months earlier and consequently causing great hardship. India, in response, claimed that the need for the Farakka Barrage was recognized as far back as 1865 and that it was intended to save from extinction the Port of Calcutta and the vast industrial complex it serves. On the basis of equitable sharing, India argued, it should be free to divert the waters and Bangladesh should be prohibited from claiming, as it did, the river's "natural flow." Judging from the 1977 agreement, however, India modified its Harmon-like approach somewhat. While Bangladesh did not succeed at its original claim of 49,000 cusec[35] at all times, it was guaranteed, per a schedule annexed to the treaty, between 35,000 and 58,000 cusec depending on the week and month specified. Additionally the Agreement provided for a Joint Committee to assure its implementation and a Joint Rivers Commission to mediate disputes. Other noteworthy provisions included the following:

Article III

The waters released to Bangladesh at Farakka under Article I shall not be reduced below Farakka except for reasonable uses of waters, not exceeding 200 cusecs, by India between Farakka and the point on the Ganges where both its banks are in Bangladesh.

Article VIII

The two Governments recognize the need to cooperate with each other in finding a solution to the long-term problem of augmenting the flows of the Ganges during the dry season.

Article IX

The Indo Joint Rivers Commission established by the two Governments in 1972 shall carry out investigation and study of schemes relating to the augmentation of the dry season flows of the Ganges, proposed or to be proposed by either Government with a view to finding a solution which is economical and feasible. It shall submit its recommendations to the two Governments within a period of three years.

Article X

The two Governments shall consider and agree upon a scheme or schemes, taking into account the recommendation of the Joint Rivers Commission, and take necessary measures to implement it or them as speedily as possible.

Article XII

The provisions of the Agreement will be implemented by both parties in good faith. During the period for which the Agreement continues to be in force in accordance with Article XV of the Agreement, the quantum of waters agreed to be released to Bangladesh at Farakka in accordance with this Agreement shall not be reduced.

Lake Lanoux Arbitration (France v. Spain).[36]

[29] See Agreement with Canada, Jan. 11, 1909, 36 Stat: 2448, T.S, No. 548, 12 Bevans 319.
[30] Griffin at 53.
[31] Griffin at 53.
[32] See Agreement with Mexico, Nov. 14, 1944, 59 Stat. 1219, T.S. No. 994, 9 Bevans 1166, 3 U.N.T.S. 313.
[33] Griffin at 54.
[34] Reprinted in 17 I.L.M. 103 (1978).

This arbitration arose out of the Treaty of Bayonne of 1866 between France and Spain pursuant to which Spain was assured a right to the natural flow of the river Carol, an outlet of Lake Lanoux situated in French territory on the southern slopes of the Pyrenees and fed by streams that originate in and flow through French territory only. After flowing approximately 25 kilometres from Lake Lanoux through French territory, the Carol crosses the Spanish frontier at Puigcerda and continues to flow through Spain for about 6 kilometres before joining the river Segre, which ultimately flows into the river Ebro. A French proposal to use Lake Lanoux for hydroelectric purposes was objected to by Spain on the ground that, if carried out, it would change the natural flow of the Carol and thereby violate the Treaty of Bayonne. The hydropower scheme was to divert the waters from the Carol River to a holding dam and power generating complex and then return the waters to the river before it entered into Spain.

The Arbitral Tribunal voted in favour of France finding that its development scheme, though substantial, would not breach the Treaty because it would provide the previous quantity of water to Spain. Spain further argued, however, that customary international law required France to negotiate an agreement with Spain before effectuating its hydroelectric plan. According to Spain, customary international law sanctions not only the equality of rights of co-riparians but also the necessity of prior agreement among co-riparians whenever a substantial alteration of a transboundary system of waters is contemplated. The Tribunal, acknowledging that the Treaty of Bayonne should be interpreted taking into account "international common law," concluded as follows:

THE TRIBUNAL (Petrén, President; Bolla, De Luna, Reuter, De Visscher):

> II. …To admit that jurisdiction in a certain field can no longer be exercised except on the condition of, or by way of, an agreement between two States, is to place an essential restriction on the sovereignty of a State, and such restriction could only be admitted if there were clear and convincing evidence. Without doubt, international practice does reveal some special cases in which this hypothesis has become reality; thus, sometimes two States exercise conjointly jurisdiction over certain territories (joint ownership, co-imperium, or condominium); likewise, in certain international arrangements, the representatives of States exercise conjointly a certain jurisdiction in the name of those States or in the name of organizations. But these cases are exceptional, and international judicial decisions are slow to recognize their existence, especially when they impair the territorial sovereignty of a State, as would be the case in the present matter.
>
> In effect, in order to appreciate in its essence the necessity for prior agreement, one must envisage the hypothesis in which the interested States cannot reach agreement. In such case, it must be admitted that the State which is normally competent has lost its right to act alone as a result of the unconditional and arbitrary opposition of another State. This amounts to admitting a "right of assent", a "right of veto", which at the discretion of one State paralyses the exercise of the territorial jurisdiction of another.
>
> That is why international practice prefers to resort to less extreme solutions by confining itself to obliging the States to seek, by preliminary negotiations, terms for an agreement, without subordinating the exercise of their competencies to the conclusion of such an agreement. Thus, one speaks, although often inaccurately, of the "obligation of negotiating an agreement". In reality, the engagements thus undertaken by States take very diverse forms and have a scope which varies according to the manner in which they are defined and according to the procedures intended for their execution; but the reality of the obligations thus undertaken

[35] *cusec* is a measure of flow rate and is one cubic foot per second (28,317 liters per second). It is generally used in measuring flow of water in rivers.

[36] 24 I.L.R. 101, 127-130, 140 (1957), 12 U.N.R.I.A.A. 281, 306-308, 316 (1964)

> is incontestable and sanctions can be applied in the event, for example, of an unjustified breaking off of the discussions, abnormal delays, disregard of the agreed procedures, systematic refusals to take into consideration adverse proposals or interests, and, more generally, in cases of violation of the rules of good faith.
>
> States are today perfectly conscious of the importance of the conflicting interests brought into play by the industrial use of international rivers, and of the necessity to reconcile them by mutual concessions. The only way to arrive at such compromises of interests is to conclude agreements on an increasingly comprehensive basis. International practice reflects the conviction that States ought to strive to conclude such agreements; there would thus appear to be an obligation to accept in good faith all communications and contracts which could, by a broad comparison of interests and by reciprocal good will, provide States with the best conditions for concluding agreements.
>
> But international practice does not so far permit more than the following conclusion: the rule that States may utilize the hydraulic power of international watercourses only on condition of a prior agreement between the interested States cannot be established as a custom, even less as a general principle of law.
>
> As a matter of form, the upstream State has, procedurally, a right of initiative; it is not obliged to associate the downstream State in the elaboration of its schemes. If, in the course of discussions, the down stream State submits schemes to it, the upstream State must examine them, but it has the right to give preference to the solution contained in its own scheme provided that it takes into consideration in a reasonable manner the interests of the downstream State.

The Lake Lanoux Tribunal held that, although the State Parties had failed to reach agreement, France had sufficiently involved Spain in the preparation of its development scheme.

5.2.3.2 Supporting Documentation

1. The 1997 UN Watercourses Convention. SEE APPENDIX A.
2. World Bank Operational Policies (OP 7.50): Projects on International Waterways and Bank Procedures (BP 7.50): Projects on International Waterways. SEE APPENDIX B.
3. The Helsinki Rules (Campioni Consolidation) and the 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. SEE APPENDICES C and D. Coming from the non-governmental International Law Association (ILA), the Helsinki Rules, a predecessor to the 1997 UN Watercourses Convention, are not inter-governmentally authoritative, technically speaking. However, they reflect many years of research by a representative body of international law experts and therefore come within the terms of Article 38(i.)(d) of the Statute of the International Court of Justice.
4. "The Convention on the Protection and Use of Transboundary Watercourses and International Lakes," done at Helsinki, Finland, on 17 March 1992 ("Helsinki Convention"). SEE APPENDIX E.
5. Mechlem, Kerstin, "International Groundwater Law: Towards Closing the Gaps?", *Yearbook of International Environmental Law,* Volume 14 (2004), pp. 47-80.
6. Paisley, Richard Kyle., "Adversaries into Partners: International Water Law and Down Stream

Benefits", 3 (2) *Melbourne Journal of International Law* 280 (2002). SEE APPENDIX F.

7. Caponera, Dante A.,"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). SEE APPENDIX G.
8. Sadoff, Claudia W. and David Grey,"Beyond the river: the benefits of cooperation on international rivers", 4 *Water Policy* 389-403 (2002). SEE APPENDIX H.

5.2.4 Discussion Questions

SEE TEACHER'S MANUAL FOR "MODEL" ANSWER TO STIMULATE DISCUSSION

1. **Is the multifactor test of the 1997 UN Watercourses Convention adequate to the task of resolving disputes relative to the sharing of the waters of international rivers? Why? Or why not?**

   Currently, there may be no duty under international law requiring co-basin States to seek the optimum rational development of common water resources on a basin-wide scale. It has been inferred from the decision in the Lake Lanoux Arbitration for example, that there is no duty to attempt forms of water utilization that would lead to an optimal use of the waters considering all the interests involved. Nevertheless, a principle of optimal use, requiring co-basin state(s) to cooperate in making the most economically efficient use of a transboundary river and its resources, is today emerging due in part to the pressure of increased demand for water by an ever growing world population.

   There is presently growing recognition of a need to develop international watercourse resources on a multi-State basis, and in recognition of their common interest co-basin state(s) more and more enter into joint planning and development agreements governing international drainage basins.

   See, for example, the November 5, 1977 Agreement between Bangladesh and India on the Sharing of the Ganges' Waters.

   See also the July 3, 1978 Draft Treaty for Amazonian Cooperation.

   The Treaty between the United States and Canada Relating to the Cooperative Development of Resources of the Columbia River Basin,[37] which authorized the United States to construct a hydroelectric dam on Canadian territory for energy production and flood control purposes on condition of recompense to Canada in the form of both hydroelectric power and dollars, is an especially noteworthy case in point. It is an excellent example of how one co-basin State (a lower riparian) with the resources to make optimal use of a river's potential was allowed by another co-basin State (an upper riparian) to exploit the latter's river jurisdiction to the benefit of both States to a degree greater than either could have obtained independently.

2. **Should international law impose a duty of optimal use on co-basin state(s)? Why? Why not?**

   When manipulating river systems for flood-control, irrigation, hydroelectric, and other praiseworthy purposes, governmental authorities and private contractors do not always take adequately into account the potential consequences of their environmental intervention. For

[37] Jan. 17, 1961, 15 U.S.T. 1555, T.I.A.S. No. 5638

example, in the simulation case, Upstream's dam resulted in a "major decline in a certain river fish upon which Downstream diets historically have depended". In this context, consider the following remarks of Dr. Jimoh Omo Fadaka:[38]

"What happens when we dam the flow of a great river and create an immense body of water where there was none before"?

Not enough thought was given to this question in the 1950s and 1960s as dozens of big dams went up from Pakistan to Ghana, Egypt to Brazil. Dams were praised for their image of instant progress, and as a catalyst for exponential economic growth. Dams can serve to generate energy, provide water for livestock, irrigate crops, control floods, and create a reliable water supply for further development and settlement.

However, when a dam is put in place, aspects of the river system may be altered: the water's chemistry, populations of indigenous flora and fauna; the lifestyle and culture of surrounding human populations; the fertility and salinity of the soil downstream; and the pressure on the earth's crusts effecting the tendency to seismic activity in the form of earthquakes and landslides.

It has been found that Egypt's Aswan High Dam project may have had several effects in the region such as eliminating nutrients maintaining fish stocks, contributed to the shrinking of lakes, and has concentrated insecticides, herbicides and molluscides. In addition, the fertile Nile Delta which is constantly eroded by the wash of the river and attack from the sea, is no longer protected by the sediment which used to be carried down the river prior to the dam being built. The dam's electricity-generating capacity is enormous, producing 10,000 million kilowatt-hours yearly.

Lake Nasser, which covers the Sudanese town of Wadi Halfa, was designed to store some 35.2 billion gallons and reach capacity by 1970. However it may never reach capacity.

The decision of a State to build a dam, "super" or otherwise, can unmistakably have vast ramifications for itself and its neighbours.

Is there any role for international law to play in the initial decision?

Or is international law, as to the really "big" questions, called upon too late to do much good?

Would it be possible in such situations to require an assessment procedure that includes impact analyses before at least major environmental initiatives are undertaken? For instructive insights, see J. Schneider, "World Public Order of the Environment: Towards an International Ecological Law and Organization" (1979); Appelbaum, "Controlling the Environmental Hazards of International Development", 5 Ecology L.Q. 1 (1972).

Over the years, many developing countries such as Upstream have been concerned that the growing interest of the economically developed nations in international environmental protection will, because of the cost of such protection, impact negatively upon their economic development. Indeed, believing that most of the world's environmental problems are caused by the industrialized countries, many have viewed the imposition of international environmental controls upon them as a form of neocolonialism. Since the 1972 United Nations Conference on the Human Environment in Stockholm, however, as elaborated in Leonard & Morell, "Emergence of Environmental Concern in Developing Countries: A Political Perspective", 17 Stan. J. Int'l. L, 281, 283 (1981), "Third World governments and international development assistance agencies have devoted an increasing amount of attention to pollution problems…and to analyzing the environmental impacts of development projects".

[38] See "The Misuse of Science and Technology", Doc. No. 17, World Future Studies Conference on Science and Technology and the Future, Berlin, May 8—10, 1979.

On the other hand, as the same author goes on to remark, at 284-85:

While there is no question that the level of awareness about environmental problems has increased markedly in developing countries... it is quite another matter to conclude that these countries are actually moving closer to alleviating the problems. Indeed, the contrary may be true. Industrial pollution is worsening in most developing countries in spite of all the new policies, regulations, and governmental agencies. Although this is to be expected in countries which are only now undergoing rapid industrial growth, the air and water quality in Ankara, Mexico City, São Paulo, Seoul, Bangkok, and numerous other places in the developing world, appears to be worse than in comparable urban areas in developed countries.

Of perhaps even greater significance for human welfare and long term economic development, there is little evidence in the developing world that the serious rural environmental problems of soil erosion, decertification, and deforestation are being reversed. Many developing nation governments continue to clear-cut forests and perpetuate policies and incentives that lead to massive losses of fertile agricultural soils, even when they are aware that such policies turn once productive lands into deserts. These forms of environmental degradation are often exacerbated by the poverty of millions of people who must eke out a living by overtaxing already fragile natural resources. In the longer term, natural resources depletion by governments and impoverished individuals is likely to cause even greater human poverty and suffering and to hamper severely economic development in the rural sections of developing countries.

3. **What kind and degree of environmental responsibility should be imposed upon developing and other countries in their pursuit of economic development?**

   Also, what kind of responsibility should be imposed on international, national, and private lending institutions that help to finance development projects? Or upon public and private contractors that carry the projects out?

   Should persons responsible for the planning, financing, and implementation of development projects be held individually responsible for failing to safeguard against environmental harms that could reasonably result from the development projects they plan, finance, and carry out?

   If so, to what extent? If not, why not?

[40] Cp.: Report of the World Commission on Dams.

5.3 Simulation Exercise # 2 — The "Tree" the "Fence" and the "Orange"

5.3.1 Introduction

Scenario:

The exercise which follows provides a"hands on"introduction to the art of interest-based negotiation. This exercise is a simple negotiation between two neighbours over the future of a tree straddling the property line between their adjacent properties. Among other things this exercise is designed to illustrate the advantages while negotiating of focussing on"interests"rather than"positions".

Major Lessons:

- Power of option creation.
- Power of interest based negotiation techniques.

Teaching Materials:

- *Teacher's Package:*
  Confidential Instructions for"Neighbour # 1"and"Neighbour # 2"

Key words/themes:

Multi-party negotiation; interest-based negotiations

SEE TEACHING PACKAGE FOR DETAILED INSTRUCTIONS FOR PARTICIPANTS

5.4 Simulation Exercise #3 – Positions vs Interests

5.4.1 Introduction

The objective of this exercise is to determine the difference between positions and interests. Positions do not allow for many options other than the one expressed. This makes negotiation difficult as there is only one option available. Interests allow for a far greater range of options to meet the interests in order to form acceptable agreements.

For example, the statement "this dam will be run to maximise power production" does not allow for any other possibility but to operate the dam. In contrast, "I want to secure my crop from drought to have a stable income" expresses an interest and indeed answers the fundamental question why it is important. The goal of securing crops may be accomplished in many ways, from irrigation to fertiliser to crop rotation etc. The idea that the fundamental interest is to secure income allows for even more options as it opens up the possibility of micro-financing, cooperative systems, new credit unions, agreements on crop prices and so on. All these can be part of an agreement in terms of meeting the interests of the negotiating parties.

Major Lessons

Focussing on interests tends to allow greater possibilities for agreement. Interests express the concerns and needs of one party without restricting or obligating the other party. The actions which result from the agreement will likely demand certain compromises from all parties; however, the point is that they are not 'imposed'.

Generally, positions either impose actions or restrict opportunities for other parties. They are thus much more restrictive than interests. Positions do not usually allow for the possibility of alternatives other than the one presented.

From Positions to Interests

To get down to interests simply ask, "Why is that important"? Eventually, usually within a couple of answers, interests begin to emerge.

For example:

Position: "We must run this Dam to optimize power."

Question: "Why is that important?"

Answer: "Because we need cheap energy to develop."

Interest: The need for cheap energy allows exploration of other possibilities to obtain cheap energy or to create more energy efficient industries.

5.5 Simulation Exercise # 4 — The "Prisoner's Dilemma" Exercise

5.5.1 Introduction

Scenario:

Participants' sole objective is to do the best they can to develop a high level of benefit from a series of eight transactions. Participants are to play either an X or a Y and, depending on other participants' choices, a payoff is awarded each round. Only before rounds 5 and 8 are players allowed to confer with each other.

This exercise is played in eight quick rounds. Players are grouped. Explanation of the exercise should take no more than five minutes. The eight rounds should take about 15 minutes, while debriefing can take from 30 to 45 minutes.

Major Lessons:

This is a so-called "social trap" exercise, in which long-term maximization requires unenforced mutual trust where significant short-term gains are possible by breaking that trust. Communication must be implicit and is hence highly ambiguous and subject to misinterpretation, usually by the projection of negative and adversarial intentions that don't actually exist.

The exercise highlights the frequency with which we make imprecise and inadequately supported assumptions, suggesting the importance of making and keeping assumptions explicit and testing them periodically.

The difference between reacting to the other side's moves (or one's perception of what those moves mean, or will be), and acting purposefully to influence the other side to (re)act constructively, is easily illustrated by comparing the experience of different teams. The monetary variation tends to be dramatic between cooperative and competitive games, and analysis usually suggests that to establish the former some team has to take a risk.

The danger of self-fulfilling assumptions is also illustrated. Parties can turn cautious competitors into the cutthroat adversaries they fear by proceeding with preemptive ruthlessness.

Teaching Materials:

For all parties:

- General Instructions

Teacher's Package:

- All of the above
- Teaching Note

Keywords/Themes

Assumptions; Commitment; Communication; Competition v. Cooperation; Compliance; Credibility; Decision analysis; Game theory; Group process; Joint gains; Meaning of "success"; Message analysis; Risk aversion; Risk perception; Trust

5.5.2 Prisoner's Dilemma Exercise

General Instructions

The group of people that you are sitting with will undertake a series of transactions with a similar group seated somewhere else in the room. These might be thought of as simulations of the transactions that might go on between governments, organizations, department, family units or individuals.

In this simulation, one of the groups will be called the **RED GROUP**, and the other will be called the **BLUE GROUP.** There may be several RED GROUPS and BLUE GROUPS at work at the same time, but you will be dealing with only one of these other groups.

In a series of eight transactions between the RED GROUP and the BLUE GROUP, the objective will be to do the best that you can to develop a high level of benefit from the transactions. The results of these transactions will be represented by an accumulating numerical sum that will depend upon what each of the two groups decide to do in a transaction.

In each of the eight transactions, each group will decide on a message to send to the other group--a message being one of these three sets of symbols:

XX or XY or YY

In formulating a message, neither of the groups will know what the other has decided to send. Except as specified below, there will be no communication between the groups. A neutral "messenger" who is not a member of either group will carry the messages between the groups. Several minutes will be allowed for each group to decide upon its message in each transaction.

When the messages have been exchanged, the two sets of two symbols will be combined to form a four letter transaction which determines the value of each group's contribution to the transaction, as follows:

IF THE COMBINED TRANSACTION IS.	THEN YOUR GROUP'S RESULT IS :
4 Xs	- 10 for each X in your group's message
3 Xs and 1 Y	+ 10 for each X in your group's message
	- 30 for each Y in your group's message
2 Xs and 2 Ys	+ 20 for each X in your group's message
	- 20 for each Y in your group's message
1 X and 3 Ys	+ 30 for each X in your group's message
	- 10 for each Y in your group's message
	4 Ys + 10 for each Y in your group's message

For example:

If the RED GROUP sent XX as a message, and the BLUE GROUP sent XY as a message, the combined messages would form the transaction XXXY.

The result of XXXY is that each group gets a + 10 for each X in its two letter message, and -30 for each Y in its two letter message.

The RED GROUP, having sent XX as its message, receives a value of +20 in this transaction: (+10) for each X = (+20).

The BLUE GROUP, having sent XY as its message, receives a value of -20 in this transaction: (+ 10) for the X and (-30) for the Y = (-20).

The exception to the "no communication" rule is that, prior to the exchange of messages in the fifth and eighth transactions, an additional time will be allotted for a single representative from each group to meet (if the groups agree to do so) to discuss whatever group members have instructed these representatives to talk about. The meeting of these two representatives will be at some place out of the sight and hearing of the RED GROUP and the BLUE GROUP.

After the meetings of representatives have been held (if they are held), the groups will exchange messages in the usual manner. However, the results of the fifth transactions will be multiplied by five (5), and the results of the eighth transaction will be multiplied by ten (10).

1) Calculate the value of the transaction for your group from the two letters in the message that **you** sent to the other group.

A period of five minutes will be given for you to read these instructions and discuss them with the members of your group. No additional instructions, or interpretations of these instructions, will be given.

Your group, or your group's representative to the discussions in the fifth and eighth transactions, may be watched by an "observer." This person may also watch the work of the other group. The observer is not permitted to discuss his/her observations on the simulation until the general discussion period at the end of the exercise.

Your cooperation in adhering to the time limits in this exercise will be greatly appreciated.

RED GROUP

BLUE GROUP	XX	XY	YY
XX	XXXX	XXXY	XXYY
XY	XYXX	XYXY	XYYY
YY	YYXX	YYXY	YYYY

TRANSACTION	RED GROUP DECISION	BLUE GROUP DECISION	RESULTS	
			THIS TRANSACTION	CUMULATIVE
#1				
#2				
#3				
#4				
#5			X 5	
#6				
#7				
#8			X 10	

5.6 Simulation Exercise # 5 – The Vancouver River Part Two

5.6.1 Introduction

This simulation exercise begins with the identical fact pattern as the simulation exercise done previously in Negotiation Simulation Exercise # 1. Three key differences between this exercise and Negotiation Simulation Exercise # 1 are as follows:

First, the resolution of this exercise should be attempted using "interest based" negotiation techniques rather than using a strictly legal approach. Second, unlike Exercise # 1, this exercise will have teams who will also have "internal" as well as "external" differences of interests and therefore will require a significant internal problem solving negotiation within each team before any subsequent "external" problem solving negotiation can take place. Third, unlike Exercise # 1, this exercise may include an optional "third party neutral" who may attempt to facilitate a resolution of the conflict.

Major Lessons:

- Importance of agenda control.
- Power of option creation.
- Power of interest based negotiations.
- Importance of reaching agreement on terms and scientific facts before negotiating.
- Impact of BATNA on the negotiation.

Teaching Materials:

For all parties:

- Disclaimer
- Fact Pattern
- Questions Presented
- Background Materials
- Logistics

Role-specific—Confidential instructions for:

- Red – Foreign Minister of Upstream
- White – Deputy Minister of Water Resources for Upstream
- Blue – International law advisor to Upstream
- Stripes – Foreign Minister of Downstream
- Dots – Deputy Minister of Environment for Downstream
- Dashes – International law advisor to Downstream
- A – Neutral facilitator /mediator (optional)

Teacher's Package:

- All of the above
- Detailed teaching notes

Keywords/Themes:

Multi-party negotiation; transboundary water disputes; water quality and quantity negotiations; cross-cultural negotiations; facilitation.

5.6.2 The Simulation

Negotiation Simulation Exercise # 5 — Vancouver River Part Two

Disclaimer

This simulation exercise is entirely made up for teaching purposes only. Any resemblance between this simulation and any real situations or real persons, living or dead, is purely coincidental.

Fact Pattern

Originating in a high mountain range studded with glaciers and flowing southwesterly some 2000 miles to the ocean, the Vancouver River has always been a life sustaining source of water for the state of Upstream and the Republic of Downstream.

However, beginning about twenty years ago, global climate change apparently caused the Vancouver River to shrink to half its normal size, leading to forced water rationing in both countries and resulting in crop failures, food shortages and related misfortunes.

Upstream sought to rectify this problem by constructing, with foreign capital, a large dam in Upstream on the Vancouver River. According to Upstream, the dam would make possible the recovery of arable land lost through decertification, the development of irrigated "green belts" and the generation of rural hydroelectric power. However, this action together with a greater diversion of water for irrigation than originally had been planned, appeared to lead to rapidly increased decertification in Downstream and a consequent major decline in a certain river fish upon which Downstream diets historically have depended. Additionally, it caused a decline in the quality of the river water to Downstream because of increased pesticide use and run-off in Upstream's newly created "green belts".

Downstream now demands that the flow of the Vancouver River be restored to its normal level and that Upstream take steps to remedy the pesticide problem. Upstream has responded that the current river flow is critical to the success of its green belt irrigation program and has dismissed the suggestion that the use of pesticides damages the health of Downstream citizens.

In the face of threats of military action on Downstream's part, representatives from Downstream and Upstream have agreed to meet.

Questions Presented

Assume both Upstream and Downstream each have a team of three individuals representing them (as designated by the instructor).

Assume further that there may be honest disagreements within as well as between each team.

Each team has now been instructed to negotiate with the other team with a view towards reaching an agreement that will resolve the disputes between the parties over the Vancouver River.

A neutral facilitator has been retained to assist the parties.

Any agreement reached must have the full support of both the parties.

Simulation Exercises

Parties

There are seven parties to this simulation as follows:

Red – Foreign Minister of Upstream. Red is not a lawyer but it is important for her that Upstream not be seen to be violating international law. Prior to becoming Foreign Minster, Red was a senior commander in the Upstream armed forces.

White – Deputy Minister of Water Resources for Upstream and a career civil servant. White was hired from Canada because of her success in negotiating agreements between Canada and the United States to equitably share downstream benefits on international rivers. White is expected to try to improve the relationship of Upstream with Downstream in order to help Upstream meet its objectives.

Blue – International law advisor to Upstream, an independent consultant and best friends with the Foreign Minister of Upstream. Blue is experienced in overcoming every possible obstacle, by whatever means necessary, to achieve Upstream objectives on time and on budget.

Stripes – Foreign Minister of Downstream. Stripes is angered and saddened by the way Downstream has been treated in the past. However, Stripes is known to be very pragmatic. Stripes envisions the future of Downstream as one of self-sufficiency and growth. She is determined to see Downstream prosper.

Dots – Deputy Minister of Environment for Downstream and a career civil servant. Dots has never forgotten how Upstream treated Downstream in a similar negotiation involving a different River over 20 years ago. More recently, Dots has unsuccessfully tried to contact officials at Upstream many times with problems relating to the Vancouver River. Dots feels that this is the perfect opportunity to right the historic wrongs that have been perpetrated by Upstream. Rumour has it Dots intends to resign from the civil service and run against Stripes in the next national election. Dots is openly suspicious of the idea of a mediator.

Dashes – International law advisor to Downstream and a career civil servant. Stripes has heard great things about Dashes involvement in other negotiations and has personally asked Dashes to help out with these negotiations.

Mr. A. has had significant experience dealing with matters of this kind.

Simulation Exercises

Logistics

10 MINUTES: INTRODUCE

---Review basic Fact Pattern.

---Objective of the Game.

---Scenario and role descriptions.

---Description of role preparation.

50 MINUTES: PREPARE

---Players read instructions by themselves.

---Players complete Issue Chart provided in confidential instructions.

---Players meet in same role groups.

---Trainers available to answer questions.

90 MINUTES: NEGOTIATE INTERNALLY

---Upstream and Downstream prepare for negotiations with each other.

---**Don't share Confidential Instructions!**

---Be Prepared.

90 MINUTES: NEGOTIATE EXTERNALLY

---Upstream and Downstream negotiate.

---**Don't share Confidential Instructions!**

---Reach an Agreement, if you can.

60 MINUTES: DEBRIEF

---Review of Outcomes: Who Got What?

---Discussion and Lessons Learned.

SEE TEACHING PACKAGE FOR CONFIDENTIAL INSTRUCTIONS FOR INDIVIDUAL PARTICIPANTS

5.6.3 Background Materials

- The 1997 UN Watercourses Convention. SEE APPENDIX A.
- World Bank Operational Policies (OP 7.50): Projects on International Waterways and Bank Procedures (BP 7.50): Projects on International Waterways. SEE APPENDIX B.
- The Helsinki Rules (Campioni Consolidation) and the 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. SEE APPENDICES C and D.

  Coming from the non-governmental International Law Association (ILA), the Helsinki Rules, a predecessor to the 1997 UN Watercourses Convention, are not intergovernmentally authoritative, technically speaking. However, they reflect many years of research by a representative body of international law experts, and therefore come within the terms of Article 38(i.)(d) of the Statute of the International Court of Justice.
- Paisley, Richard Kyle.,"Adversaries into Partners: International Water Law and Down Stream Benefits". 3 (2) Melbourne Journal of International Law 280 (2002). SEE APPENDIX F.
- Caponera, Dante A.,"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). SEE APPENDIX G.
- Sadoff, Claudia W. and David Grey,"Beyond the river: the benefits of cooperation on international rivers", 4 Water Policy 389-403 (2002). SEE APPENDIX H.

5.7 Simulation Exercise # 6 — The Elinehtton River Basin

5.7.1 Introduction

Major Lessons:

- Importance of agenda control.
- Power of option creation.
- Importance of reaching agreement on terms and scientific facts before negotiating.
- Impact of BATNA on the negotiation.
- Application of international water law principles including equitable and reasonable utilization and equitable sharing of downstream benefits.

Teaching Materials:

For all parties:

- Teaching Note and Overview for All Parties
- Fact Pattern
- Today's Meeting
- Parties to the Negotiation
- Logistics
- Map

Role-specific—Confidential instructions for:

- Representative of Country A
- Representative of Country B
- Representative of Country C
- Representative of Country D
- Facilitator / Mediator (optional)

Teaching Package:

- All of the above.
- Detailed teaching notes.

Keywords/Themes:

Multi-party negotiation; science-intensive policy disputes; equitable sharing; downstream benefits; transboundary environmental disputes; water quality and quantity negotiations; cross-cultural negotiations; facilitation

5.7.2 The Simulation

Simulation Exercise # 6 — The Elinehtton River Basin

Disclaimer:

This case study simulation is a made up simulation for teaching purposes only. Although based on fact, any resemblance between this simulation and any real international basin and/or any real persons, living or dead, is purely coincidental.

Additional Material

These additional materials should be distributed with the simulation:

- Map of the Elinehtton River basin.
- The 1997 UN Watercourses Convention. SEE APPENDIX A.
- World Bank Operational Policies (OP 7.50): Projects on International Waterways and Bank Procedures (BP 7.50): Projects on International Waterways SEE APPENDIX B.
- The Helsinki Rules and the 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. SEE APPENDICES C and D.

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- Paisley, Richard Kyle.,"Adversaries into Partners: International Water Law and Down Stream Benefits". 3 (2) *Melbourne Journal of International Law* 280 (2002). SEE APPENDIX F.
- Caponera, Dante A.,"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). SEE APPENDIX G.

Teaching Note and Overview

This is a multi-party negotiation between four hypothetical states: A, B, C and D on the Elinehtton River Basin.

The exercise involves the negotiation of a clause for the equitable sharing of benefits between the four hypothetical states.

Fact Pattern

The Elinehtton River is a major international drainage basin with two main tributaries: 1) the Minotaur and 2) the Taurus. See attached Map. The Minotaur exhibits a strong seasonal component with one major runoff period. Base flow is limited, while occasional flooding occurs during the rainy season. The Taurus exhibits a moderate flow regime.

Simulation Exercises

Two dams currently exist in the system. Dam 1 has a large reservoir capacity and guarantees A reasonable water security. However, Dam 1, because of its particular location, loses up to 40 % of its volume each year due to massive evaporation. Dam 2 has as its main objective hydropower production. Storage capacity is small and energy production fluctuates over the year as a function of the runoff regime of the Minotaur.

Plans exist for new dams in C and D. Their construction changes the regime of the river system as well as the overall water demand pattern. The construction of new dams in C and D also lead to new water demands, with the consequence that future demands will exceed the availability of the water resource.

A large part of A is characterized as arid or semi-arid. The same applies for B, although this country receives substantial seasonal rainfall in its upstream areas. Both C and D are endowed with abundant rainfall. However, precipitation in D shows a strong temporal and spatial variability and the country experiences occasional drought years. By contrast, rainfall in C is uniformly spread over the year. Drought years do occur but are rare.

50% of the entire basin's waters originate in D, while 30% come from C, and B and A produce 15% and 5% respectively.

The following tables describe various key country characteristics:

COUNTRY	KEY CHARACTERISTICS
A	Dry; water scarce; high population growth; emerging economy; agriculture has a strong tradition; all agricultural activities require irrigation; potential for export of electricity; potential for tourism; strong agricultural lobby; creating employment for increasing population and increased national income is the main focus of the national development policy.
B	Large irrigation potential; rainfall is not reliable and most agriculture requires irrigation; low water use efficiency; strong agricultural tradition; strong agricultural lobby; potential for developing mineral resources and hydroelectric power; high population growth.
C	High population growth; emerging economy; agriculture has a strong tradition but irrigation is limited; agricultural production will increase significantly if reliable access to water can be assured during the growing season; large potential for supplementary irrigation through valley tanks and water harvesting; significant hydroelectric potential; development policy is focused on food security, national income and providing employment for increasing population.
D	Favourable climatic conditions for wide scope of agricultural activities throughout the year; high population growth; low agricultural productivity; agriculture is a dominant economic sector; hydroelectric development potential.
COUNTRY	**SELECTED DEVELOPMENT OPPORTUNITIES**
A	Export of electricity and tourism.
B	Export of electricity and high quality agricultural produce.
C	Large hydropower potential for domestic self sufficiency and export, production of high-end agricultural produce for domestic market.
D	Hydropower potential for domestic use and export; production of agricultural produce for domestic market; limited potential for production of agricultural produce for international market (in particular bio-fuels if prices of crude oil stay at current level of US$ 60 per barrel, and if international green house gas reduction measures are implemented).

Today's Meeting

The participants to today's meeting have previously met three times and feel that an agreement on the equitable sharing of past, present and future benefits from the River Basin may be possible.

However, because the discussions have been so emotionally charged, it has been suggested that a mediator/facilitator may be called in to help.

A list of potential individuals was reviewed and one acceptable to all the parties has been chosen.

Parties to the Negotiation

Representative of Country A

Representative of Country B

Representative of Country C

Representative of Country D

Facilitator / Mediator (optional)

Logistics

10 MINUTES: INTRODUCE

---Review basic Fact Pattern.

---Objective of the Game.

---Scenario and role descriptions.

---Description of role preparation.

50 MINUTES: PREPARE

---Players read instructions by themselves.

---Players meet in same role groups.

---Trainers available to answer questions.

90 MINUTES: NEGOTIATE EXTERNALLY

---Four party negotiation.

---Don't share Confidential Instructions!

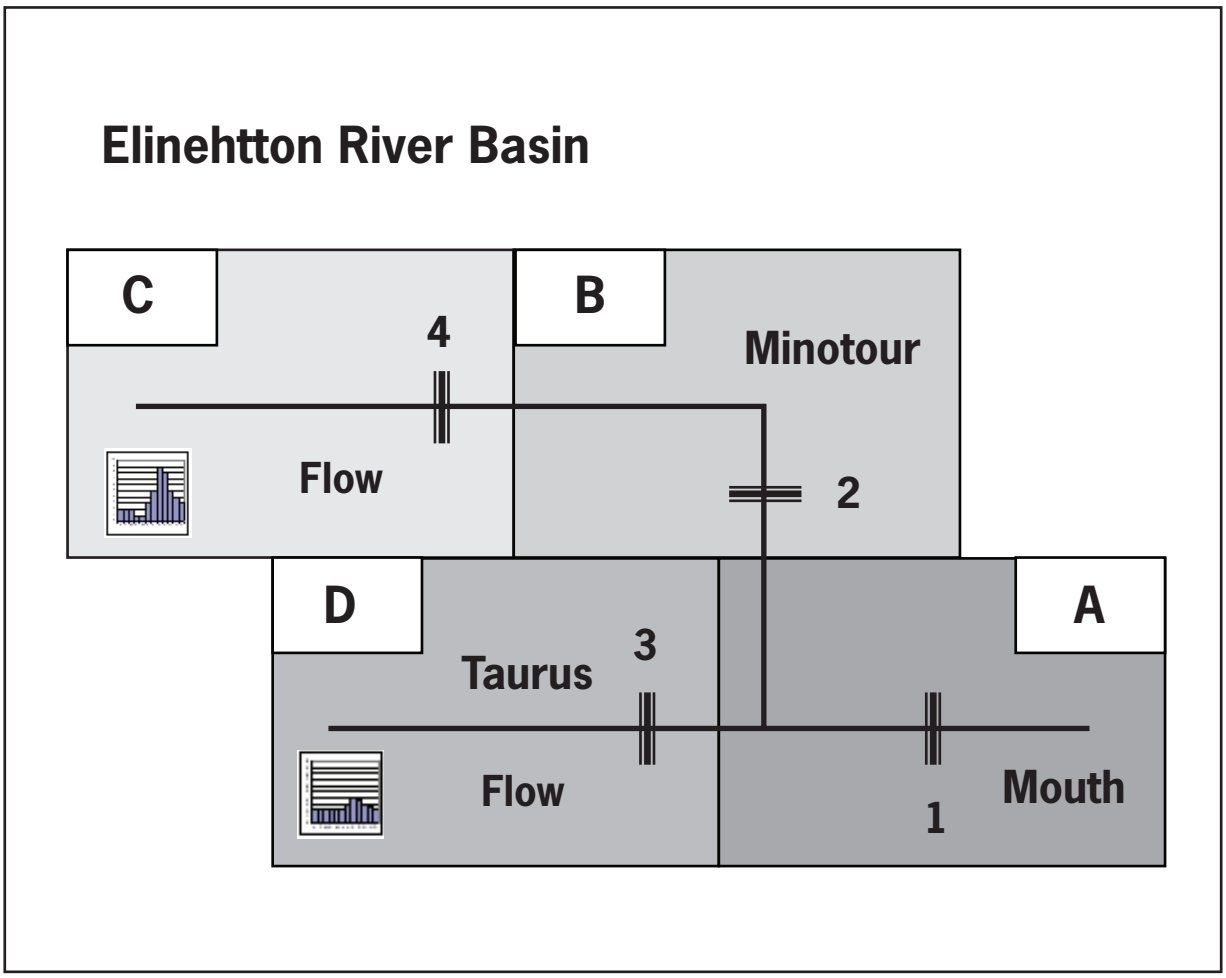
---Reach an Agreement, if you can.

60 MINUTES: DEBRIEF

---Review of Outcomes: Who Got What?

---Discussion and Lessons Learned.

SEE TEACHING PACKAGE FOR CONFIDENTIAL INSTRUCTIONS FOR INDIVIDUAL PARTICIPANTS


Elinehtton River Basin
C
B
4
Minotour
Flow
2
D
A
3
Taurus
Flow
Mouth
1

5.8 Simulation Exercise # 7 — An International Groundwater Negotiation Simulation

5.8.1 Introduction

This exercise is a work in progress and currently being further developed and refined by Gabriel Eckstein and Richard Kyle Paisley.

This exercise focuses on an aquifer shared by a number of developing countries and involves the application of the emerging ILC Rules for the conservation and management of international groundwater resources.

This negotiation exercise is designed to introduce participants to the multitude of issues related to the negotiation of a transboundary ground water agreement. In the scenario presented below, a river and an aquifer traverse the borders of three countries. While there are no existing agreements for managing or regulating either the river or the aquifer, the countries are interested in such a possibility. Of course, each country has its own interests and objectives for the use of these resources as well as its own vision for any potential agreement. Participants in this negotiation simulation will be assigned to represent one of the three countries and then asked to negotiate and draft specific provisions that will serve as the basis for an agreement on the use of the river and aquifer.

Scenario:

Participants will be divided into negotiation teams of five to six members whereby each team represents one of the States in the simulation exercise. Each State has distinct interests and objectives in the use of the river and/or aquifer and in the negotiation exercise.

The negotiation teams will be provided with a basic fact pattern describing the States, including basic information on their national objectives and interests in the use of the river and/or aquifer. Each negotiation also will be provided with "secret" information and instructions describing additional information and national interests concerning the river and/or aquifer. Each team's goal in the negotiation simulation is to negotiate and draft provisions that are most favourable to their country and its interests.

Following distribution of these materials, each negotiation team is expected to meet on its own to prepare for the simulation exercise. Preparation includes studying the fact pattern and secret instructions, developing a negotiations strategy that best achieves the country's objectives, considering the points on which the negotiation team may be willing to compromise, developing fall-back and alternative positions, considering alternative solutions, and drafting language for provisions that the negotiations team might propose.

Each State subgroup is expected to negotiate its position based on the public and "secret" information provided for the exercise. Compromise on an issue is permitted and encouraged but only to the extent that such compromise is in the national interest of the compromising State as presented in the facts and secret instructions.

To the extent time permits, either following the simulation or during the following class session, we will review the exercise and discuss the strategies, obstacles, shortcomings and the like.

Simulation Exercises

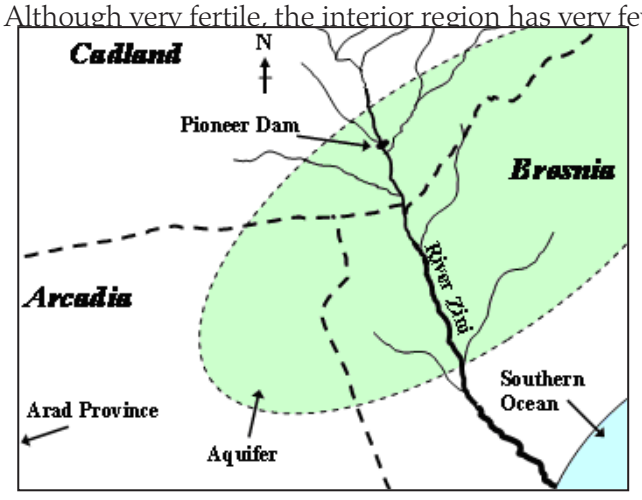
Fact Pattern

The States of Arcadia, Brosnia and Cadland are neighboring countries. Geographically, Cadland lies to the north of Brosnia and Arcadia, and Arcadia lies to the west of Brosnia. River Zini flows across the border from Cadland into Brosnia and empties into the Southern Ocean. The watershed of River Zini does not extent to Aracdia.

In addition, all three countries overlie a large, recently discovered and yet-unnamed aquifer. Preliminary studies suggest that geographically, 60% of the aquifer underlies Brosnia, 20% underlies Arcadia, and 20% underlies Cadland, however, the true boundaries of the aquifer are still uncertain. A chief dispute among the region's water scientists pertains to the source of the aquifer's recharge and whether the aquifer is hydraulically connected to River Zini. Scientists in Cadland argue that such a connection does not exist, or, at the very least, is insignificant, and that the aquifer is likely a non-recharging aquifer. In contrast, Arcadian scientists are quite certain that the aquifer receives considerable amount of recharge from River Zini. The studies of Brosnian scientists are mixed and inconclusive on these issues. None of the countries has the knowledge base to conduct detailed studies of the aquifer's recharge or the hydraulic connection between the river and aquifer. Moreover, none is able to invest the necessary resources in such an endeavor, especially since they must allocate their resources very carefully in light of all of the other national priorities they each face.

The region's climate is relatively predictable with the rains coming primarily in the late winter and early spring followed by a relatively dry summer and fall. The amount of rain that falls on the region, however, varies from year to year and is often unpredictable. Although Brosnia does contribute some water to the river, the great majority of the water in River Zini originates in Cadland. The actual contribution of the two states to the flow of the Zini River has never been formally studied but is estimated at 75% from Cadland and 25% from Brosnia. It is unclear whether and how much rainfall in the region recharges the aquifer.

Arcadia has a primarily agrarian population of forty-five million, one-third of which reside in Arad province, the country's arid interior located approximately 400 miles west of its border with Brosnia. Although very fertile, the interior region has very few freshwater resources. Non-governmental agencies suggest that as much as half of the population in this region does not have access to adequate fresh water to meet basic daily needs. Accordingly, Arcadia's chief priority is to provide for its citizens by developing new water resources to meet basic needs. It is especially interested in enhancing the region's agricultural capacity. A number of Arcadian politicians and academics have raised the possibility of pumping water from the newly discovered aquifer and diverting it to Arad.



Brosnia is a small country in comparison with its neighbors. Its land area is approximately one-quarter the size of Cadland and one-third the size of Arcadia. Moreover, Brosnia has a population of only five million. The scenery in this moderate to sub-tropical country is spectacular, in part, because much of the country remains in its natural, pristine condition. The majority of the population lives along the Southern Ocean and River Zini. In recent years, Brosnia has become closely allied with a number of environment and tourism organizations.

As part of that association, the country developed a growing tourism industry that prides itself on pursuing a balance between development and environmental goals. For example, expeditions on River Zini have become especially popular, in part, because of the Brosnian Fish that inhabits the river. Brosnian Fish, which have been known to top 150 pounds and grow to lengths of 1.5 meters, are found in the middle reaches of the Zini River (primarily in Brosnia). They are highly dependent on the river's seasonal floods for breeding and development, as well as
the deep rapids of the middle reaches, which allow these large fish ample space to swim in highly aerated waters. Expeditions are organized both to view the fish in its natural habitat as well as for sport fishing.

Cadland is a mountainous country with a temperate climate and a population of twenty-two million. Of the three countries, Cadland's population is experiencing fast growth due to religious restrictions on contraception. Cadland believes that its greatest developmental obstacle is the lack of food security. It is especially interested in developing the irrigation potential of River Zini through the construction of dams and diversion canals in its territory. In fact, it has already begun construction on the largest of the planned dams – Pioneer Dam – at a point seventy miles north of its border with Brosnia. While Cadland claims that any downstream consequences would be insignificant, those consequences have not been studied or identified.

While all three countries are considered developing nations, Brosnia is a bit more economically developed than the other two and is classified in the upper-middle income level according to The World Bank classification system ($3,466 - $10,725 gross national income per capita). Arcadia and Cadland are classified as falling in the lower-middle income category ($876 - $3,465 gross national income per capita).

The Task

Arcadia, Brosnia and Cadland have agreed to meet to begin negotiating an agreement containing both general principles and more specific provisions for the use and allocation of the Zini River and the aquifer. During preparatory discussions, the three countries specifically agreed that the main purpose of the meeting is to formulate provisions that, to the greatest extent possible, will:

1) identify each states' rights in the Zini River and/or the aquifer;

2) identify each states' responsibilities in the Zini River and/or the aquifer; and

Accordingly, each negotiation team is expected to bring to the negotiating table proposals for provisions, including proposed language that would achieve these two objectives as well as the respective national interests of the two countries. At the very least, both countries are expected to offer provisions concerning the allocation and management of the Zini River. However, the countries are also expected to bring to the table additional provisions that relate to the national interests of the two countries.

Major Lessons:

- Importance of agenda control.
- Power of option creation.

- Repercussions of voting procedures on the content and sustainability of the outcome.
- Importance of reaching agreement on terms and scientific facts before negotiating.
- Impact of BATNA on the negotiation.

Teaching Material:

See Teacher's Manual

Keywords/Themes:

Multi-party negotiation; science-intensive policy disputes; transboundary environmental disputes; water quality and quantity negotiations; cross-cultural negotiations; facilitation

CONCLUSION

There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order, this lukewarmness arising partly from fear of their adversaries … and partly from the incredulity of mankind, who do not truly believe in anything new until they have had actual experience of it.

- Niccolo Machiavelli

Transboundary water resources include "boundary" water resources where the boundary between two or more sovereign states is formed by an international lake, river and "successive" water resources where an international river (or underground aquifer) flows from one sovereign state to another.

There are at least two key reasons why transboundary water resources are critically important.

First, transboundary water resources are important because international agreements governing their utilization serve not only to protect and promote sustainability but also affect security throughout an entire basin. Importantly international agreements governing the utilization of transboundary water resources tend to stabilize and enhance security at the regional level and the security return generated is independent of the concrete ecological and economic benefits produced by such agreements.

Second, transboundary water resources are important because nearly half of the world's population is located within one or more of the over 260 international drainage basins shared by two or more states.[41] Even more striking than the absolute number of international drainage basins, is a breakdown of each nation's land surface which fall within these watersheds.[42] At least 145 nations include territory within international basins. At least 21 nations lie in their entirety within international basins including 33 countries which have greater than 95% of their territory within these basins. All told 19 international drainage basins are shared by 5 or more riparians countries. The Danube has 17 riparian nations. The Congo, Niger, Nile, Rhine and Zambezi are shared by between 9 and 11 countries. The remaining 13 basins have between 5 and 8 riparian countries.

Severe deforestation, soil erosion, salinization, toxic contamination, drought and flooding, and air and water pollution are just some of the environmental calamities that can increase international tension and lead to war. Conversely, the very process of reaching accommodation while developing bilateral resources and environmental mechanisms for cooperation in a transboundary water context creates a stabilizing and more transparent atmosphere. The mere fact of negotiation usually widens political participation, builds political stability and spreads confidence between basin states. Even in cases in which riparians merely agree to share information and exchange data, while agreeing to disagree on substantive issues, increased confidence usually emerges.

[41] International Bureau of the Permanent Court of Arbitration (ed.), The Resolution of International Water Disputes: Papers emanating form the Sixth PCA International Law Seminar 08 November 2002, Kluwer Law International, The Hague/London/ NewYork, at xix.

[42] Wolf, Aaron T. Development and Transboundary Waters: Obstacles and Opportunities: Report submitted to the World Commission on Dams, July, 2000, at 30.

Conclusion

According to James Kraska:[43]

"The role of transboundary river agreements in promoting sustainable development extends beyond simple economic and environmental factors. In South Asia, agreements have helped to strengthen political ties. The agreements have value as vehicles to ameliorate tension and reduce the likelihood of war. Although freshwater rivers, especially transnational ones, are frequently understood to contribute to international conflict, in South Asia the process and results of concluding transboundary river agreements have had positive ripple effect on the regional security environment."

Cooperation on transboundary water issues is also an important catalyst for regional cooperation.[44] Competition for access to increasingly scarce water resources is one of the most significant and frequent structural causes for crises. Only regional cooperation can solve many of these serious water problems. Unresolved transboundary water issues can also block cooperation as a whole between states. Water issues thus overshadow many political themes in connection with which a regional cooperation would benefit all stakeholders. Solving international water conflicts means making regional cooperation possible again. Joint cooperation around transboundary watercourses essentially paves the way for regional cooperation in other domains of politics, economics, environment and culture.

The real issue is not whether it may be desirable to support the negotiation and implementation of transboundary water agreements but rather how best to strengthen development aid to better facilitate the negotiation and implementation of transboundary water agreements that clearly contribute to regional peace and security.

[43] Kraska at 492.

[44] See documents by the German Federal Ministry for Economic Cooperation and Development (BMZ) e.g."Water – Resolving Conflicts, Shaping the Future", BMZ spezial Nr. 009/Jan. 2000.

GLOSSARY

Accommodation: a negotiation strategy in which one negotiator chooses to sacrifice some of his or her interests and allows the other party to make desirable gains. Accommodation is often used to preserve a relationship or to create the conditions for future exchanges that will compensate the accommodator for his or her concession.

Active listening: a communication procedure in which a listener determines the emotional content and intensity of a spoken message and feeds it back to the speaker for verification. Active listening builds empathy, confirms understanding and enables the speaker to "work through" strong emotions.

Agenda: a list of discussion items or problem statements that are ordered in a sequence and framed in a manner which facilitates efficient problem solving.

Agreement-in-principle: general levels of agreement that shape the broad parameters of a negotiated settlement.

Arbitration: the intervention into a dispute of an independent, private and impartial third party who is given the authority by the parties to make a decision on how the conflict will be settled. Arbitration may be binding or non-binding.

Assessment: an evaluation of a conflict situation involving a review of the parties, interests, issues, power, settlement options, etc.

Authority: responsibility for decision making that has been legally or legitimately delegated to an individual or organization.

Avoidance: a negotiation strategy in which a negotiator pursues a strategy of no engagement in conflict or competition in order to achieve a desirable end or to avoid reaching an unfavourable or untimely settlement.

Bargaining: the process of making substantive, procedural or psychological trade-offs to reach an acceptable settlement. Bargaining occurs in the context of broader negotiations.

Bargaining formula: a combination of agreements in principle that define the general parameters of a negotiated settlement.

Bargaining range: a spectrum of possible settlement options, any one of which is preferable to a stalemate or breakdown of negotiations.

BATNA: an acronym for best alternative to negotiated agreement. Negotiators usually compare alternative settlement options and/or available dispute resolution procedures as a means of determining whether a negotiated settlement is the preferred solution and/or process.

Bluff: a negotiation tactic in which one party misleads another as to his or her desired outcome, power or willingness to take an action in an effort to gain an advantage that would not be possible should his/her genuine concerns or power be known.

Bottom line (position): a settlement option that represents the minimal substantive, procedural or psychological benefit that a party is willing to accept and still reach an agreement.

Building block procedure: a process for reaching a negotiated settlement in which a problem is broken into sub-issues and an agreement is reached on each of these smaller "parts." The final settlement is completed by assembling the "parts" into a comprehensive agreement.

Glossary

Business relationship: a pattern of interaction between two or more people which is characterized by formality, limited levels of emotional disclosure, defined boundaries of the relationship and written agreements.

Caucus: a private meeting held by members of a negotiating team or between a mediator and negotiator(s) to determine strategies that will make joint session negotiations more productive. The caucus can focus on substantive, procedural or psychological barriers to effective negotiations.

Coercion: negotiation tactics that limit the range of options available to parties by threatening or inflicting a cost on another party for non-compliance.

Common interests: substantive, procedural or psychological needs that are held jointly by parties to a negotiation.

Competition: a negotiation strategy in which one negotiator pursues the satisfaction of his or her interests at the expense of the other party/parties. Competition often occurs when a party perceives that resources are limited and that a positive outcome for these can only be achieved if the other party receives less of the contested benefits.

Compromise: a negotiation strategy in which the parties agree to share jointly gains and losses.

Concern: a topic of importance to a party to a conflict.

Concession: a substantive, procedural, or psychological offer, made by one party to another, which decreases the benefits requested by the offerer and rewards the other party.

Conciliation: the psychological preparation of parties by a negotiator or mediator to discuss substantive issues. Conciliation involves improving communications, building positive perceptions and promoting trust.

Conflict: an expressed competition between at least two inter-dependent parties who have perceived or have actual incompatible goals or interests.

Conflict anticipation: a conflict management approach which identifies disputes at their early stages of development, targets potential interest groups, educates them about issues and attempts to develop cooperative responses to the future problem and thus avoid or lower the destructive effects of conflict.

Consensus: an agreement that is reached by identifying the interests of all concerned parties and then building an integrative solution that maximizes satisfaction of as many of the interests as possible. The process does not involve voting, but a synthesis and blending of solutions. Consensus does not mean unanimity since it does not satisfy participants' interests equally, nor does each participant support the agreement to the same degree. Consensus is considered to be the best decision for all participants because it addresses, to some extent, all interests.

Contract: a formal legal document that outlines commitments, promises or exchanges that have resulted from negotiations.

Deadline: time limit, either internally or externally imposed, on the duration of negotiations.

Deadlock: inability of parties to a negotiation to move forward to a settlement. A deadlock may be caused by substantive, procedural or psychological barriers to agreement (synonyms: impasse, stalemate).

Decision: an outcome.

Glossary

Dispute: a conflict in which the parties are unable or unwilling to resolve their problems or disagreements in the context of their private relationship, and have moved the problem into the public domain. Disputes often involve the presence of third parties, either observers, procedural facilitators or independent decision-makers.

Doubt: uncertainty as to the outcome of an interaction, the validity of facts or the strength of a particular party to a conflict.

Evaluation: an assessment of an option.

Exchange: items of value traded by parties in dispute.

Exclusive interests: a party's needs that are totally incompatible with the needs of another party.

External influences: pressures from outside the negotiation "table" (people, structure, time, geography, etc.) that affect the dynamics of negotiators' interaction.

Facilitation: the use of a third party, who is impartial toward issues being discussed, to provide procedural assistance to group participants to enhance information exchange or promote effective decision making. The facilitator may or may not be a member of the group involved in the discussions.

Fact-finding: a dispute resolution process in which an impartial third party collects information about a dispute and makes either a report about relevant data or recommendations about how the dispute might be resolved. Fact-finding is used to minimize data conflicts and to provide an impartial assessment of the dispute to the parties or the public.

Fallback (position): a series of options for settlement that are between the secondary position and bottom line position. Fallbacks are "yellow lights" for negotiators which indicate that it soon will be time to stop making concessions.

Feedback meeting: meeting in which information is disseminated to participants.

Feedforward meeting: meeting in which information is elicited from participants.

Framing: the manner in which a conflict situation, issue or interest is conceptualized or defined.

Impasse: inability of parties to a negotiation to move forward toward a settlement (synonyms: deadlock, stalemate).

Incremental concessions: sequential offers made by a negotiator that grant gradually increasing benefits or rewards to another negotiator in return for agreement.

Incremental convergence: gradual narrowing of differences between parties.

Information exchange: a dispute resolution process in which parties in conflict meet to exchange and clarify information. The goal of the meeting is to educate each other, answer questions, minimize data conflicts and check out perceptions.

Initial high demand: a tactic for opening negotiations in which a party begins by asking for a high concession from another negotiator in return for agreement. This tactic is used to educate another party about the importance of an interest or issue, to allow room for later concessions, to try to gain as many advantages as possible or to demonstrate toughness or strength of will.

Integrative decision/bargaining: a negotiation outcome or process that attempts to satisfy as many interests or needs as possible for all negotiators (synonym: interest-based bargaining decision).

Glossary

Interest: a substantive, procedural or psychological need of a party to a conflict.

Interest-based bargaining: a negotiation process that attempts to satisfy as many interests or needs as possible for all negotiators (synonym: integrative bargaining).

Intimate relationship: a pattern of interaction between two or more people which is characterized by informality, high levels of emotional disclosure, broad spheres of interaction and verbal agreements. Intimacy can be based on positive or negative emotional involvement.

Issue: topic or statement of a problem that results from perceived or actual incompatible interests.

Joint problem-solving session: cooperative and face-to-face interaction by parties to a dispute to develop a mutually acceptable solution.

Mediation: the intervention into a dispute or negotiation of an acceptable, impartial and neutral third party who has no decision-making authority, but who will assist contending parties to negotiate an acceptable settlement of issues in dispute voluntarily.

Med-arb: the intervention into a dispute or negotiation of an acceptable, impartial and neutral third party to assist contending parties to negotiate an acceptable settlement of issues in dispute voluntarily. If, however, the parties cannot reach an agreement, the third party has been granted the authority by the parties to make a binding decision.

Memorandum of Understanding (MOU): informal written document that outlines areas of agreement.

Mini-Trial: a voluntary, expedited and non judicial procedure whereby top management for each party meet to resolve disputes. The meeting is chaired by a private judge, and there are limits to discovering and case presentation time. Legal standards are used as guidelines for procedure and settlement. Parties meet after case presentation to attempt a negotiation settlement. If an impasse is reached, the third party may make a non-binding recommendation.

Mixed interests: needs held by the parties that are not mutually exclusive, but are also not held in common. Mixed interests imply the potential for shared gains or losses.

MLATNA: acronym for most likely alternative to negotiated agreement.

'Mutually acceptable' proposal: a proposal developed by a negotiator which is designed in such a manner that it is easy for an opponent to agree to its terms. The proposal addresses the other's interests and concerns, is presented in a way that enables the other to save face and is easy to implement.

Negative bargaining range: a spectrum of proposed settlement options that are mutually exclusive because no one option will satisfy adequately all parties' interests.

Negative intimacy: the destructive emotional attachment of antagonists to each other or the conflict itself. The negative attachment of the parties to each other perpetuates the damaging relationship and dispute.

Negotiation: a bargaining relationship between two or more parties who have a perceived or actual conflict of interest. The participants join voluntarily in a temporary relationship to educate each other about their needs and interests, exchange specific resources or resolve one or more intangible issues such as the form their relationship will take in the future.

Glossary

Non-self-executing agreement: an agreement or exchange which cannot be completed immediately and requires continued performance over time. For example, payments made over time.

Offer: a proposal for settlement that addresses the interests or concerns of the offerer and/or the party to whom it is directed.

Opening position: a solution that represents the maximal demand of a party which is usually presented early in negotiations.

Opening statement: a presentation made by a negotiator early in the dispute that presents how he/she sees the conflict. An opening statement may present the history of the problem, why there is a need for change (or maintaining status quo), issues to be addressed, interests to be satisfied and, possibly, positions or proposed solutions.

Option: a substantive, procedural or psychological solution that may satisfy the interests of a party to a dispute.

Package proposal: an offer for agreement that combines into one total proposal possible settlement options to multiple issues in dispute. Although it may contain unacceptable components, the proposal is offered as a "take it or leave it" totality.

Ploy: a tactic intended to frustrate, embarrass, mislead or weaken an opponent.

Position: specific solutions that a party adopts or proposes that meet his or her interests or needs.

Positional bargaining: a negotiation process in which a series of positions are presented as the solution to the issue in question. Positions are generally presented sequentially so that the first position is a large demand and subsequent positions request less of an opponent.

Positive bargaining range: a spectrum of settlement options, any one of which is more acceptable or preferable to all parties than a stalemate or impasse.

Preempt: a tactic to forestall potential negative activity of another negotiator. A party anticipates and takes action prior to the expected negative activity in such a manner that the negative behaviour becomes irrelevant or impossible to perform.

Procedure: action steps, taken in a sequence, to achieve a desirable end.

Process: aggregate of procedural steps to achieve a desirable end. Process refers to the way something is done, as opposed to what was done.

Proposal: a suggestion, either substantive or procedural, on how to proceed or what should be done.

Purity of conflict: the degree to which the interests of the parties to a dispute are mutually exclusive. The more exclusive the interests, the "purer" the conflict.

Reframing: the process of changing how a person or a party to a conflict conceptualizes his, her or another's attitudes, behaviours, issues, interests or how a situation is defined.

Reward: benefit to be given or received by a party in return for cooperation or reciprocal exchange of another benefit.

Risk: a measure of the consequences of failure or success of a negotiation process.

Secondary position: concession made by a negotiator after the opening position that demands less or offers more to an opposing negotiator.

Glossary

Self-executing agreement: an agreement or exchange that is carried out in its entirety at the time it is accepted, or is formulated in such a way that the extent of the parties' adherence to its terms will be self evident.

Settlement: an agreement.

Settlement conference: a meeting between disputing parties which is generally chaired by a judge or lawyer. Parties attempt, with third party assistance, to negotiate a settlement. Third party often provides substantive input regarding possible settlements. Third party is not authorized to make a binding decision but may, if requested, make a non-binding recommendation.

Sidebar: private meetings between two principal spokespeople and a mediator.

Simultaneous exchanges: a tactic in which parties make offers at the same time so as to avoid loss of position or face.

Spokesperson: individual authorized to speak for a team or interest group.

Stake-holder: a person or interest group which has an investment in the way that a dispute is terminated, and in the possible distribution of gains and/or losses that may result from the resolution process.

Stalemate: inability of parties to negotiation to move forward to a settlement (synonym: impasse, deadlock).

Strategy: a conceptual plan that outlines the general approach or steps to be taken to attain a desirable outcome.

Symbolic concession: an offer, in the form of a minor concession, that demonstrates a negotiator's intent to bargain in good faith and/or attempt to meet some of the needs of another party.

Symbolic issue: an issue that is a substitute for, or representative of, a much broader or general issue or interest. Symbolic issues tend to have greater psychological than substantive meaning.

Tactic: a behaviour initiated by a negotiator designed to implement or operationalize a strategy.

Threat: a statement of intent to do damage or harm to a party.

Timing: the orchestration of critical events or moves so that they occur at an optimal moment in the negotiation, such as when negotiations begin and when offers are made.

Tit-for-tat: a pattern of negotiation moves that reward or coerce an opponent in reciprocal fashion. The negotiator offers back the same behaviour that was initially given.

WATNA: acronym for worst alternative to negotiated agreement.

APPENDICES

Appendix A

United Nations Convention on the Law of the Non-navigational Uses of International Watercourses

Adopted by the UN General Assembly in resolution 51/229 of 21 May 1997.

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

(See Status of the Convention, URL: http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf)

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:

Appendices

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 ground waters 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 articles 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 willful or negligent acts or the forces of nature.

PARTV. 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 decertification.

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 fulfill 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. 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 therefore 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).

PARTVII. 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 NewYork.

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 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 _____ day of 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.

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CONVENTION ON THE LAW OF THE NON-NAVIGATIONAL USES OF INTERNATIONAL WATERCOURSES

Report of the Sixth Committee convening as the Working Group of the Whole

Chairman: Mr. Chusei YAMADA (Japan)

I. INTRODUCTION

1. Pursuant to paragraph 2 of General Assembly resolution 51/206 of 17 December 1996, the Working Group of the Whole of the Sixth Committee, which was convened under General Assembly resolution 49/52 of 9 December 1994, held its second session from 24 March to 4 April 1997 to elaborate a framework convention on the law of the non-navigational uses of international watercourses.[1]

2. The Working Group was chaired, as was the case in the first session, by Mr. Chusei Yamada (Japan) and the Drafting Committee was chaired, also as during the first session, by Mr. Hans Lammers (Netherlands) (A/C.6/51/L.3, para. 2). Mr. Robert Rosenstock, former Special Rapporteur of the International Law Commission on the topic, acted as Expert Consultant to the Working Group.

3. The Working Group held 12 meetings from 24 March to 4 April 1997. The views of the representatives who spoke during those meetings are reflected in the relevant summary records (A/C.6/51/SR.51 to 62).

4. The Drafting Committee held six meetings, from 24 to 27 March 1997. The Chairman of the Drafting Committee introduced the report of the Drafting Committee (A/C.6/51/NUW/L.1/Rev.1 and Add.1). The statements by the Chairman of the Drafting Committee introducing its report are reflected in the relevant summary records (A/C.6/51/SR.24 and 53).

5. In the course of the discussion of the text of the draft convention, the following were appointed coordinators of informal consultations:

Mr. Jean François Pulvenis (Venezuela), on the preamble; Mr. Robert Harris (United States of America) on article 3, paragraphs 2 and 4; Mr. Attila Tanzi (Italy) on article 3, paragraph 3; Ms. Socorro Flores (Mexico) on articles 5 and 6; Mr. Tobias Nussbaum (Canada) on article 7; Mr. Rolf Welberts (Germany) on article 8; Mr. M. P. Vorster (South Africa) on article 10 (2); and Mr. A. K. H. Morshed (Bangladesh) on articles 20 and 22, as regards the term "ecosystems".

II. CONSIDERATION OF PROPOSALS

6. The Working Group and the Drafting Committee had before them the draft articles adopted by the International Law Commission on the topic[2] and the text of their previous reports, including the oral report of the Chairman of the Drafting Committee (A/C.6/51/L.3; A/C.6/51/NUW/WG/L.1/Rev.1 and A/C.6/51/SR.24), as well as a preliminary draft preamble and final clauses prepared by the Secretariat (A/C.6/51/NUW/DC/CRP.2).

7. The Working Group and the Drafting Committee also had before them the following proposals submitted by States. In the Drafting Committee: proposal submitted by Finland, India and Romania for the preamble to the Convention (A/C.6/51/NUW/DC/CRP.3); proposals submitted by Ireland to amend provisions on final clauses (A/C.6/51/NUW/DC/CRP.4); proposal submitted by Finland for the preamble to the Convention (A/C.6/51/NUW/DC/CRP.7); proposal submitted by Jordan for article 7 (A/C.6/51/NUW/DC/CRP.8); proposal by Ethiopia with respect to article 2 (A/C.6/51/NUW/DC/CRP.9); proposal for article 33 by the Syrian Arab Republic and Switzerland (A/C.6/51/NUW/DC/CRP.10); and amendments proposed by Guatemala to the proposal for article 33 contained in document A/C.6/51/NUW/DC/CRP.10 (A/C.6/51/NUW/DC/CRP.11). In the Working Group: proposals by the United States of America concerning articles 1, 2, 3 and 29 (A/C.6/51/NUW/WG/CRP.1); proposal by Canada concerning article 1 (A/C.6/51/NUW/WG/CRP.2); proposal by Romania on the preamble (A/C.6/51/NUW/WG/CRP.3); proposal by Turkey for article 1 (A/C.6/51/NUW/WG/CRP.4); proposed amendments by the Swiss delegation (A/C.6/51/NUW/WG/CRP.5); proposal submitted by Romania for article 3 (A/C.6/51/NUW/WG/CRP.6); proposal submitted by India for article 3 (A/C.6/51/NUW/WG/CRP.7); proposals submitted by Israel for article 3 (A/C.6/51/NUW/WG/CRP.8); proposals submitted by Ethiopia (A/C.6/51/NUW/WG/CRP.9); proposal submitted by Italy for article 3 (A/C.6/51/NUW/WG/CRP.10); proposals submitted by the Netherlands for articles 5, 8 and 10 (A/C.6/51/NUW/WG/CRP.11); proposal submitted by Turkey for article 3 (A/C.6/51/NUW/WG/CRP.12); proposal submitted by Iraq for article 5 (A/C.6/51/NUW/WG/CRP.13); proposal submitted by South Africa for article 4 (A/C.6/51/NUW/WG/CRP.14); proposal submitted by France for articles 1 and 3 (A/C.6/51/NUW/WG/CRP.15); proposal submitted by the Netherlands for article 3 (A/C.6/51/NUW/WG/CRP.16); proposals submitted by the Czech Republic for article 6 (A/C.6/51/NUW/WG/CRP.17); proposals submitted by Finland for articles 6 and 7 (A/C.6/51/NUW/WG/CRP.18); proposal submitted by Israel for article 10 (A/C.6/51/NUW/WG/CRP.19); proposal submitted by Egypt for article 7 (A/C.6/51/NUW/WG/CRP.20); proposal submitted by China for article 3 (A/C.6/51/NUW/WG/CRP.21); proposals submitted by Iraq for articles 3, 4, 7 and 12 (A/C.6/51/NUW/WG/CRP.22); proposal submitted by Romania for article 7

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(A/C.6/51/NUW/WG/CRP.23); proposal submitted by Turkey for article 7 (A/C.6/51/NUW/WG/CRP.24); proposals submitted by Finland for articles 1 and 9 (A/C.6/51/NUW/WG/CRP.25); proposal submitted by Canada for article 7 (A/C.6/51/NUW/WG/CRP.26); proposal submitted by Hungary and Romania for article 8 (A/C.6/51/NUW/WG/CRP.27); proposals submitted by India for articles 5 and 6 (A/C.6/51/NUW/WG/CRP.28); proposal submitted by Egypt for article 3 (A/C.6/51/NUW/WG/CRP.29); proposal submitted by the Sudan for article 10 (A/C.6/51/NUW/WG/CRP.30); proposal submitted by Mexico for articles 7 and 9 (A/C.6/51/NUW/WG/CRP.31); proposals submitted by Israel for articles 2 and 3 (A/C.6/51/NUW/WG/CRP.32); proposals submitted by India for the name of the Convention and for article 9 (A/C.6/51/NUW/WG/CRP.33); proposals submitted by the Russian Federation for articles 8, 8 bis and 10 (A/C.6/51/NUW/WG/CRP.34); proposals submitted by Canada, Germany, Italy, Romania and the United States of America for articles 5 and 6 (A/C.6/51/NUW/WG/CRP.35); proposals submitted by the Russian Federation for articles 24 and 25 (A/C.6/51/NUW/WG/CRP.36); proposal by Turkey concerning part III of the draft articles (articles 11-19) (A/C.6/51/NUW/WG/CRP.37); proposals submitted by the Netherlands for articles 12 and 14 (A/C.6/51/NUW/WG/CRP.38); proposal submitted by Iraq for article 3 (A/C.6/51/NUW/WG/CRP.39); proposal submitted by South Africa for articles 6, 8 and 10 (A/C.6/51/NUW/WG/CRP.40); proposal submitted by the Syrian Arab Republic for article 5 (A/C.6/51/NUW/WG/CRP.41); proposals submitted by Canada for article 7 (based on informal attempts at coordination submitted by Canada to the Chairman of the Working Group) (A/C.6/51/NUW/WG/CRP.42); proposals submitted by the Syrian Arab Republic for articles 7 and 8 (A/C.6/51/NUW/WG/CRP.43); proposals submitted by Romania for article 14 (A/C.6/51/NUW/WG/CRP.44); proposals submitted by Finland for article 33 (A/C.6/51/NUW/WG/CRP.45); proposals submitted by Iraq for cluster III (articles 11-19) and article 33 (A/C.6/51/NUW/WG/CRP.46); proposal submitted by the Sudan for article 33 (A/C.6/51/NUW/WG/CRP.47); proposal submitted by Finland for article 21 (A/C.6/51/NUW/WG/CRP.48); proposal submitted by the Syrian Arab Republic for article 33 (A/C.6/51/NUW/WG/CRP.49); proposals submitted by the Netherlands for articles 18, 20, 21, 25 and 26 (A/C.6/51/NUW/WG/CRP.50); proposals submitted by Ethiopia for articles 6 and 7 (A/C.6/51/NUW/WG/CRP.51); proposals submitted by China for articles 20, 22 and 33 (A/C.6/51/NUW/WG/CRP.52); proposal submitted by Egypt for article 6 (A/C.6/51/NUW/WG/CRP.53); proposal submitted by the United Kingdom of Great Britain and Northern Ireland for article 6 (A/C.6/51/NUW/WG/CRP.54); proposals submitted by France concerning article 33 (A/C.6/51/NUW/WG/CRP.55); proposals submitted by Romania for articles 24 and 25 (A/C.6/51/NUW/WG/CRP.56); proposal submitted by Egypt for article 2, paragraph (b) (A/C.6/51/NUW/WG/CRP.57); proposal submitted by Romania for article 33 (A/C.6/51/NUW/WG/CRP.58); proposals submitted by South Africa for articles 11, 12 and 18 (A/C.6/51/NUW/WG/CRP.59); proposal submitted by Turkey concerning article 2 (A/C.6/51/NUW/WG/CRP.60); proposal submitted by the Russian Federation for article 32 (A/C.6/51/NUW/WG/CRP.61); proposals submitted by Guatemala for articles 32 and 33 (A/C.6/51/NUW/WG/CRP.62/Rev.1); proposal submitted by the Russian Federation concerning final clauses (A/C.6/51/NUW/WG/CRP.63/Rev.1); proposal submitted by the Syrian Arab Republic for article (2 or 5) (A/C.6/51/NUW/WG/CRP.64); proposal submitted by the Netherlands for article 17 (A/C.6/51/NUW/WG/CRP.65); proposal submitted by Jordan for article 18 (A/C.6/51/NUW/WG/CRP.66); proposals submitted by Ethiopia for articles 13 and 14 (A/C.6/51/NUW/WG/CRP.67); proposal submitted by Ambassador F. M. Hayes (Ireland) for article 7 (A/C.6/51/NUW/WG/CRP.68);

proposal submitted by Guatemala for article 32 (A/C.6/51/NUW/WG/CRP.69); proposals submitted by Portugal, Venezuela, the United States of America and the Netherlands for article 21, paragraph 3 (A/C.6/51/NUW/WG/CRP.70); proposal submitted by Finland, Greece and Italy for article 33 (A/C.6/51/NUW/WG/CRP.71); revised text of article 7 proposed by Austria, Canada, Portugal, Switzerland and Venezuela (A/C.6/51/NUW/WG/CRP.72); proposed interpretation of article 18 of the draft Convention submitted by Poland (A/C.6/51/NUW/WG/CRP.73); proposal submitted by the United Kingdom of Great Britain and Northern Ireland for article 29 (A/C.6/51/NUW/WG/CRP.74); proposal submitted by Italy for article 3 (A/C.6/51/NUW/WG/CRP.75); proposals submitted by the United States of America concerning articles 2 and 3 (A/C.6/51/NUW/WG/CRP.76); proposal submitted by the Syrian Arab Republic for article 6 (A/C.6/51/NUW/WG/CRP.77); proposal submitted by Canada and Venezuela concerning the preamble (A/C.6/51/NUW/WG/CRP.78); proposal submitted by Romania (A/C.6/51/NUW/WG/CRP.79); proposals by the Russian Federation concerning articles 4 and 5 (A/C.6/51/NUW/WG/CRP.80); proposal submitted by the Netherlands on behalf of the European Community and the United States of America concerning article 2 (A/C.6/51/NUW/WG/CRP.81); proposal submitted by China for article 33 (A/C.6/51/NUW/WG/CRP.82); proposal from the Chairman of the Drafting Committee for article 33 (A/C.6/51/NUW/WG/CRP.83); proposal submitted by Argentina, Austria, Egypt, Germany, Greece, Hungary, the Islamic Republic of Iran, Italy, Jordan, Malaysia, Mali, Portugal, Romania, the Syrian Arab Republic, Tunisia, the United Kingdom of Great Britain and Northern Ireland, the United States of America, Venezuela and Viet Nam concerning article 8 (A/C.6/51/NUW/WG/CRP.84/Rev.1); proposal submitted by Italy for article 7 (A/C.6/51/NUW/WG/CRP.85); proposal submitted by the Russian Federation concerning article 25 (A/C.6/51/NUW/WG/CRP.86); proposal by the Chairman of the Drafting Committee (A/C.6/51/NUW/WG/CRP.87); restructured version submitted by Guatemala of the proposal from the Chairman of the Drafting Committee concerning article 33 as contained in document A/C.6/51/NUW/WG/CRP.83 (A/C.6/51/NUW/WG/CRP.88); report of the Coordinator of article 3 (A/C.6/51/NUW/WG/CRP.89); proposal submitted by the Russian Federation for article 2 on a new paragraph (d) (A/C.6/51/NUW/WG/CRP.90); amendment by China to the revised text of article 7 proposed by Austria, Canada, Portugal, Switzerland and Venezuela (A/C.6/51/NUW/WG/CRP.91); proposal submitted by the United States of America for article 2 (A/C.6/51/NUW/WG/CRP.92); proposal submitted by Egypt concerning the relationship between articles 5 and 7 (A/C.6/51/NUW/WG/CRP.93); Chairman's proposal for articles 5, 6 and 7 (A/C.6/51/NUW/WG/CRP.94); and report of the Coordinator for article 10 (2) (A/C.6/51/NUW/WG/CRP.95).

8. During the elaboration of the draft Convention on the Law of the Non-navigational Uses of International Watercourses, the Chairman of the Working Group of the Whole took note of the following statements of understanding pertaining to the texts of the draft Convention:

As regards article 1:

(a) The concept of "preservation" referred to in this article and the Convention includes also the concept of "conservation";

(b) The present Convention does not apply to the use of living resources that occur in international watercourses, except to the extent provided for in part IV and except insofar as other uses affect such resources.

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As regards article 2 (c):

The term "watercourse State" is used in this Convention as a term of art. Although this provision provides that States and regional economic integration organizations can both fall within this definition, it was recognized that nothing in this paragraph could be taken to imply that regional economic integration organizations have the status of States in international law.

As regards article 3:

(a) The present Convention will serve as a guideline for future watercourse agreements and, once such agreements are concluded, it will not alter the rights and obligations provided therein, unless such agreements provide otherwise;

(b) The term "significant" is not used in this article or elsewhere in the present Convention in the sense of "substantial". What is to be avoided are localized agreements, or agreements concerning a particular project, programme or use, which have a significant adverse effect upon third watercourse States. While such an effect must be capable of being established by objective evidence and not be trivial in nature, it need not rise to the level of being substantial.

As regards article 6 (1) (e):

In order to determine whether a particular use is equitable and reasonable, the benefits as well as the negative consequences of a particular use should be taken into account.

As regards article 7 (2):

In the event such steps as are required by article 7 (2) do not eliminate the harm, such steps as are required by article 7 (2) shall then be taken to mitigate the harm.

As regards article 10:

In 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 production of food in order to prevent starvation.

As regards articles 21, 22 and 23:

As reflected in the commentary of the International Law Commission, these articles impose a due diligence standard on watercourse States.

As regards article 28:

The specific reference to "international organizations" is by no means intended to undermine the importance of cooperation, where appropriate, with competent international organizations on matters dealt with in other articles and, in particular, dealt with in the articles in part IV.

As regards article 29:

This article serves as a reminder that the principles and rules of international law applicable in international and non-international armed conflict contain important provisions concerning international watercourses and related works. The principles and rules of international law that are applicable in a particular case are those that are binding on the States concerned. Just as article 29 does not alter or amend existing law, it also does not purport to extend the applicability of any instrument to States not parties to that instrument.

* * *

Throughout the elaboration of the draft Convention, reference had been made to the commentaries to the draft articles prepared by the International Law Commission to clarify the contents of the articles.

9. At its 62nd meeting, on 4 April 1997, the Working Group adopted by vote the draft Convention reproduced in paragraph 10 below.

III. RECOMMENDATION OF THE WORKING GROUP OF THE WHOLE

10. The Working Group of the Whole recommends to the General Assembly the adoption of the following draft Convention:

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

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.

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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.

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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 articles 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:

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(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 ... until ... 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 _____ day of _____ 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.

Notes

[1] For the report of the Sixth Committee on the work of the Working Group at its first session, held from 7 to 25 October 1996, see document A/51/624.

[2] Official Records of the General Assembly, Forty-ninth Session, Supplement No. 10 (A/49/10), chap. III.D.

Status of the Watercourse Convention as of 4 October 2005

Article 36(1) of the Convention provides that "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."

The Convention was open for signature from 21 May 1997 until 21 May 2000. States, however, may continue to ratify, accept, approve or accede to the Convention indefinitely.

PARTICIPANT	SIGNATURE	RATIFICATION	ACCEPTANCE	ACCESSION	APPROVAL
	(S)	(R)	(A)	(a)	(AA)
Côte d'Ivoire	25 Sep 1998				
Finland	31 Oct 1997		23 Jan 1998		
Germany	13 Aug 1998				
Hungary	20 Jul 1999				26 Jan 2000
Iraq				9 July 2001	
Jordan	17 Apr 199	22 Jun 1999			
Lebanon				25 May 1999	
Libyan Arab Jamahiriya				14 June 2005	
Luxembourg	14 Oct 1997				
Namibia	19 May 2000	29 Aug 2001			
Netherlands	9 Mar 2000		9 Jan 2001		
Norway	30 Sep 1998	30 Sep 1998			
Paraguay	25 Aug 1998				
Portugal	11 Nov 1997				
Qatar				28 Feb 2002	
South Africa	13 Aug 1997	26 Oct 1998			
Sweden				15 Jun 2000	
Syrian Arab Republic	11 Aug 1997	2 Apr 1998			
Tunisia	19 May 2000				
Venezuela (Bolivarian Republic of)	22 Sep 1997				
Yemen	17 May 2000				

DECLARATIONS AND RESERVATIONS (Unless otherwise indicated, the declarations and reservations were made upon ratification, acceptance, approval or accession.)

Hungary - Declaration:

"The Government of the Republic of Hungary declares itself bound by either of the two means for the settlement of disputes (International Court of Justice, arbitration), reserving its right to agree on the competent body of jurisdiction, as the case may be."

Syrian Arab Republic - Reservation:

The acceptance by the Syrian Arab Republic of this Convention and its ratification by the Government shall not under any circumstances be taken to imply recognition of Israel and shall not lead to its entering into relations therewith that are governed by its provisions.

OBJECTIONS (Unless otherwise indicated, the objections were made upon ratification, acceptance approval or accession.)

Israel - 15 July 1998

In regard to the reservation made by the Syrian Arab Republic upon ratification:

"In view of the Government of the State of Israel such reservation, which is explicitly of a political nature, is incompatible with the purposes and objectives of this Convention and cannot in any way affect whatever obligations are binding upon the Syrian Arab Republic under general international treaty law or under particular conventions. The Government of the State of Israel will, in so far as concerns the substance of the matter, adopt towards the Syrian Arab Republic an attitude of complete reciprocity."

Appendix B

World Bank Operational Manual, Projects on International Waterways

Projects on International Waterways

Applicability of Policy

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 Bank1 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

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 pro-posed project and its Project Details (see BP 7.50, para. 3, URL: http://wbln0018.worldbank.org/Institutional/Manuals/OpManual.nsf/BProw/47D35C1186367F338525672C007D07AE?OpenDocument). 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, URL: http://wbln0018.worldbank.org/Institutional/Manuals/OpManual.nsf/BProw/47D35C1186367F338525672C007D07AE?OpenDocument). 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.

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1. "Bank" includes IDA; "loans" include credits; and "project" includes all projects financed under Bank loans or IDA credits, but does not include adjustment programs supported under Bank loans and 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.

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.

Appendices

Appendix C

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 interna¬tional 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.
2. 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 conclu¬sion 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 omis¬sions 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 in¬ternational 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 interna¬tional 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 in¬volved;

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 naviga¬tion 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 date;

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 sub¬mit 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.

Appendix D

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.lnt'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 LEd. 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.

Appendices

Appendix E

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 undertake 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 sècretariat of the subject-matter of arbritration 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.

Appendices

Appendix F

ADVERSARIES INTO PARTNERS: INTERNATIONAL WATER LAW AND THE EQUITABLE SHARING OF DOWNSTREAM BENEFITS

RICHARD PAISLEY*

[This paper first reviews the role of international law in the governance of international watercourses, including the role of the principle of equitable utilisation. Discussion then turns to a suggested logical corollary to the principle of equitable utilisation: a principle of equitable sharing of downstream benefits. The situation with regard to the equitable sharing of downstream benefits on the Columbia River is discussed together with other examples. Consideration follows of the possible application of the principle of equitable sharing of downstream benefits to help resolve conflict in other international watercourses including the Karnali and the Mekong. The paper concludes that there is a role for an emerging principle of equitable sharing of downstream benefits in helping to turn historical adversaries into partners.]

CONTENTS

I INTRODUCTION

There are currently at least 250 international watercourses in the world shared between two or more sovereign nations.[1] In many of these sovereign nations

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[1] The two best known international legal instruments dealing with shared watercourses are the *United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses*, opened for signature 21 May 1997, 36 ILM 700 (1997) (not yet in force) ('*UN Watercourses Convention*') and the Committee on the Uses of the Waters of International Rivers, International Law Association, *Helsinki Rules on the Uses of the Waters of International Rivers and Comments* (1966) ('*Helsinki Rules*'). They use slightly different terminology. The *UN Watercourses Convention*, in art 2, defines a 'watercourse' as

water resource development is considered a critically important vehicle both to help alleviate poverty and to stimulate economic growth.[2] Many of these nations also wish to obtain economic benefits, including those from flood control, irrigation and hydropower development activities.[3] This paper has three objectives. The first is to review briefly the development of the fundamental international water law principle of 'equitable utilisation'. The second objective is to identify and review a suggested logical corollary to the principle of equitable utilisation, namely an emerging principle of equitable sharing of downstream benefits, by considering experiences in relation to the Columbia River and elsewhere. The third objective is to apply the principle of equitable sharing of downstream benefits to the Karnali (Nepal/India) and Mekong (China/Myanmar/Cambodia/Laos/Thailand/Vietnam) international watercourses, to assess the potential usefulness of the principle in assisting to resolve longstanding conflicts between upstream and downstream states, and in helping to turn historical adversaries into partners.

II INTERNATIONAL WATER LAW

International water law belongs to the field of public international law that deals primarily with the non-navigational uses of international watercourses.[4] International law in general is composed of decisions about events that have effects on more than one state or entity, and provides expectations about how states are expected to behave in particular circumstances.[5]

The 'principle of equitable utilisation' is generally considered to be the fundamental principle of the law of the non-navigational uses of international

'a system of surface waters and ground waters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus' and an 'international watercourse' as 'a watercourse, parts of which are situated in different States'. Contrast with the *Helsinki Rules* which, in art 2, define an 'international drainage basin' as 'a geographical area extending over two or more States determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus.'

2 B Verghese et al (eds), *Converting Water into Wealth: Regional Cooperation in Harnessing the Eastern Himalayan Rivers* (1994) 13–14, 86–109.

3 Ibid 101.

4 The literature dealing with the non-navigational uses of international watercourses is voluminous. See, eg, Stephen McCaffrey, *The Law of International Watercourses: Non-Navigational Uses* (2001); Richard Paisley and Timothy McDaniels, 'International Water Law, Acceptable Pollution Risk and the Tatshenshini River' (1995) 35 *Natural Resources Journal* 111.

5 Article 38 of the *Statute of the International Court of Justice* is 'generally regarded as a complete statement of the sources of international law': Ian Brownlie, *Principles of Public International Law* (5th ed, 1998) 3. These sources include treaties, custom, general principles recognised by civilised nations, domestic judicial decisions and learned teachings. Article 38 also empowers the Court to exercise *ex aequo et bono* jurisdiction where the parties consent. For further discussion of the sources of international law, see Paisley and McDaniels, above n 4, 118; William Burke, *International Law of the Sea: Documents and Notes* (1997) xxiii.

watercourses.[6] This principle is enshrined in both the *Helsinki Rules* and the *UN Watercourses Convention*.[7]

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[6] Charles Bourne, 'Fresh Water as a Scarce Resource' (Paper presented at a Panel Discussion at the Canadian Council on International Law Conference, October 1989), cited in Paisley and McDaniels, above n 4, 118–19, notes that prior to the emergence of the principle of equitable utilisation in the 1960s as the dominant undisputed principle of international water law there were three competing theories:

> the first was territorial sovereignty; under it a state can do as it pleases with the water in its territory, ignoring the effect of its actions on neighboring states. Upstream states favored this view of the law. The second theory was riparian rights; the waters must be allowed to flow downstream substantially unchanged in quality and undiminished in quantity. Under it a downstream state in effect has a veto over any major utilization of the waters by upstream sites. Downstream states adhered to this view. The classic case was Pakistan's invocation of this principle in its dispute with India over the Indus River in the 1940s and 1950s. The third theory was prior appropriation; the first utilization has priority in law. In other words, existing uses must not be affected by subsequent developments. This principle seems reasonable until its implications are fully realized. Developments of an international river usually take place first near its mouth and gradually proceed upstream. Consequently when the upstream state later wishes to develop its part of the river, it is faced with substantial prior appropriations downstream. In substance this theory was used against Canada in the dispute with the United States about the development of the Columbia River.

According to Bourne, it was the imperfections of these theories which led eventually to the principle of equitable utilisation becoming the governing principle in international water law: at 3. For further discussion regarding equitable utilisation and its relationship to the 'no harm' principle, see Stephen McCaffrey, 'The UN Convention on the Law of Non-Navigational Uses of International Watercourses: Prospects and Pitfalls' in Salman Salman and Laurence Boisson de Chazournes (eds), *International Watercourses: Enhancing Cooperation and Managing Conflict — Proceedings of a World Bank Seminar* (1998).

[7] The statement of the principle of equitable utilisation in arts IV to VII of the *Helsinki Rules*, above n 1, is as follows:

> Article IV
>
> 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 V
>
> I What is a reasonable and equitable share within the meaning of Article IV is to be determined in the light of all the relevant factors in each particular case.
>
> II Relevant factors which are to be considered include, but are not limited to:
>
> 1 The geography of the basin, including in particular the extent of the drainage area in the territory of each basin State;
> 2 The hydrology of the basin, including in particular the contribution of water by each basin State;
> 3 The climate affecting the basin;
> 4 The past utilization of the waters of the basin, including in particular existing utilization;
> 5 The economic and social needs of each basin State;
> 6 The population dependent on the waters of the basin in each basin State;
> 7 The comparative costs of alternative means of satisfying the economic and social needs of each basin State;
> 8 The availability of other resources;
> 9 The avoidance of unnecessary waste in the utilization of waters of the basin;
> 10 The practicability of compensation to one or more of the co-basin States as a means of adjusting conflicts among uses; and
> 11 The degree to which the needs of a basin State may be satisfied, without causing substantial injury to a co-basin State.
>
> …

III THE PRINCIPLE OF EQUITABLE UTILISATION

The principle of equitable utilisation requires states to act reasonably and equitably when dealing with transboundary water resources in their territory. It requires that the reasonableness of any utilisation is to be determined by weighing all relevant factors and by comparing the benefit that would follow from the utilisation with the injury it might inflict on the interests of another basin state.[8]

The genius of the principle of equitable utilisation lies in its flexibility because it prescribes a 'reasonableness' test for determining what is lawful or unlawful conduct in connection with international water resources.

The judgment of the International Court of Justice ('ICJ') in the *Gabčíkovo-Nagymaros Project*[9] also supports the proposition that equitable utilisation is the basic governing principle of customary international water law.[10] The facts of the dispute are relatively straightforward. In 1997 Hungary and Slovakia appeared before the ICJ in a dispute over the Danube River. Despite several attempts at peaceful settlement, the parties could not find a solution to issues involving the construction of a dam at Gabčíkovo-Nagymaros. Hungary refused to proceed with the project agreed to in an earlier bilateral agreement[11] on the grounds that the work would cause damage not foreseen at the time of the conclusion of the agreement. Slovakia reacted by diverting the Danube and implementing a 'provisional solution' aimed at providing for itself the benefits anticipated under the Nagymaros works. In their arguments before the ICJ, each side took opposing views on the principles of international law applicable to the development of the Danube. Hungary alleged that Slovakia had violated the rules of equitable utilisation and 'no-harm' by diverting the Danube and implementing

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Article VI

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

Article VII

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

8 Ibid.

9 *Gabčíkovo-Nagymaros Project (Hungary v Slovakia) (Merits)* [1997] ICJ Rep 7.

10 According to McCaffrey, 'The UN Convention on the Law of Non-Navigational Uses of International Watercourses', above n 6, 20–2, the lack of mention of the 'no harm' principle in the decision suggests that the court viewed equitable utilisation as a more important rule than the no harm principle. See also, McCaffrey, *The Law of International Watercourses*, above n 4, 186–97.The literature on the Gabčíkovo-Nagymaros dispute is voluminous. See, eg, Aaron Schwabach, 'Diverting the Danube: The Gabcikovo-Nagymaros Dispute and International Freshwater Law' (1996) 14 *Berkeley Journal of International Law* 290; Ida Bostian, 'Flushing the Danube: The World Court's Decision Concerning the Gabcikovo Dam' (1998) 9 *Colorado Journal of International Environmental Law and Policy* 401; Aaron Schwabach, 'The United Nations Convention on the Law of Non-Navigational Uses of International Watercourses, Customary International Law, and the Interests of Developing Upper Riparians' (1998) 33 *Texas International Law Journal* 257.

11 *Treaty between the Hungarian People's Republic and the Czechoslovak Socialist Republic Concerning the Construction and Operation of the Gabčíkovo-Nagymaros System of Locks*, opened for signature 16 September 1977, 1109 UNTS 235 (entered into force 30 June 1978).

a 'provisional solution'.[12] The ICJ rejected the no harm principle and ruled in favour of Slovakia. In the process, the ICJ reinforced the proposition that the principle of equitable utilisation continues to be the dominant principle of international water law.

IV THE COLUMBIA RIVER AND THE EQUITABLE SHARING OF DOWNSTREAM BENEFITS[13]

A good example of the principle of equitable utilisation in practice is the development of mutually beneficial treaties between Canada and the United States. These two countries share a 6400 kilometre boundary between the main portions of their provinces and states, and an additional 2400 kilometres between the Yukon Territory and Alaska.[14] The Columbia River is just one of many international watercourses shared by Canada and the US where Canada is generally the upstream watercourse state and the US is generally the downstream watercourse state. Stretching 1952 kilometres, the Columbia River is the fourth largest river in North America and the Columbia River basin covers 640 000 square kilometres of territory in Canada and the US.[15] In recognition of the importance of cooperating with regard to their many shared water resources, Canada and the US concluded an agreement in 1909, known as the *Boundary Waters Treaty*,[16] which, among other things, established an entity called the

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12 Patricia Wouters, 'Editor's Foreword' in Patricia Wouters (ed), *International Water Law: Selected Writings of Professor Charles B Bourne* (1997) xvii–xviii.

13 The advice and assistance of Chris Sanderson QC of Lawson Lundell, Vancouver, Canada is gratefully acknowledged in regard to the matters discussed in this section. See also Chris Sanderson, *International Energy Exchange: The Columbia River Treaty* (1993); Charles Bourne, 'The Columbia River Controversy' (1959) 37 *Canadian Bar Review* 444.

14 See, eg, Aaron Wolf, 'Transboundary Waters: Sharing Benefits, Lessons Learned' (Draft Thematic Background Paper, International Conference on Freshwater, 2001) <http://www.water-2001.de/co_doc/transboundary_waters.pdf> at 23 September 2002.

15 Paul Pitzer, 'Annex 11: Negotiating the Columbia Basin Treaty, Draft Grand Coulee Dam and Columbia Basin Project Case Study' (Working Paper, World Commission on Dams, 1999) [A11–2] <http://www.dams.org/docs/studies/us/usfinaldraft_anx11.pdf> at 23 September 2002.

16 *Treaty between the United States and Great Britain Relating to Boundary Waters and Questions Arising between the United States and Canada*, opened for signature 11 January 1909, 23 UKTS 1910 (entered into force 5 May 1910). For a history of the *Boundary Waters Treaty*, see McCaffrey, *The Law of International Watercourses*, above n 4, 293–6. According to the official IJC website the IJC is composed of four commissioners. The President of the US, on the advice of the US Senate, appoints the American delegation, while the Governor-in-Council of Canada appoints the Canadian delegation. The commissioners must follow the Treaty. However, the commissioners are supposed to act impartially rather than simply represent their respective governments. This independence is confirmed by art XII of the Treaty, which requires commissioners to make a solemn declaration in writing that they will faithfully, and impartially, perform their duties under the Treaty. This independence is further established through immunity from judicial process for both the Commission and the commissioners in both countries. In addition, the Commission's decisions are not subject to appeal to the courts of either country. They can, in practice, be reversed only by an agreement between the two countries. The IJC has three main functions. First, the IJC can make binding decisions and appoint boards of control to oversee its decisions and recommendations with respect to 'new uses, obstructions or diversions of boundary waters in either country that affect the natural level or flow of waters in the other country, [as well as] the construction of any works, dams or other obstructions in rivers that flow from boundary waters, or rivers that flow across the border, if these projects will raise the natural level on the other side of the boundary in the upstream country.'

International Joint Commission ('IJC') to govern their relations. Prior to the inception of the IJC various ad hoc commissions, established to resolve water-related issues, were proving to be incapable of handling the growing water related disputes between the two countries.[17] Even the International Waterways Commission, established in 1905, only dealt with issues on a case-by-case basis. As the two countries entered into negotiations to establish a permanent body to replace the International Waterways Commission, the tone of the discussions was informed by the concerns of each state. The issue of most concern to the US was sovereignty. The US, while realising the necessity of an agreement to manage transboundary waters, wanted to ensure that its political independence was not compromise in the process.[18] This was expressed in the US position that absolute territorial sovereignty must be retained over the waters within each state's territory.[19] It was the view of the US that tributaries should not be included in the new commission's authority. In contrast, Canada was interested in establishing an egalitarian relationship with the US.[20] Canada was hampered in its pursuit not only by the relative size and level of development of the two states at the time, but also because Canadian foreign policy was still the purview of the United Kingdom. Consequently, negotiations had to be carried out between Ottawa, Washington and London. Generally, however, Canada wanted a comprehensive agreement, which would include tributaries, and a commission with greater authority than former bodies.

The resulting *Boundary Waters Treaty* is thought to reflect to some extent the interests of each negotiating state.[21] For example, for the purposes of the *Boundary Waters Treaty*, 'boundary waters' were defined as

> the waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portions thereof, along which the international boundary between the US and the Dominion of Canada passes, including all bays, arms, and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers, and waterways, or waters flowing from such

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Second, the IJC can investigate and advise the governments on transboundary issues referred to it. The conclusions and recommendations brought forth from these fact-finding cases are not legally binding. Third, the IJC can act as an arbiter for disagreements jointly submitted to it. The US must have approval from the Senate to submit such a case. The IJC is guided by a number of principles such as: trying to maintain strict impartiality in the performance of its duties; seeking to achieve consensus wherever possible, both in its own deliberations and those of its boards or similar bodies; employing joint fact-finding as a foundation for building consensus and determining appropriate action; affording all parties interested in any matter before it a convenient opportunity to be heard and promote the engagement of state, provincial and municipal governments and other authorities in the resolution of these matters; in environmental matters, affirming the concept of sustainable development, the ecosystem approach, and the virtual elimination and zero discharge of persistent toxic substances, while emphasising the importance of a sound scientific basis for its conclusions and recommendations. The Commission also recognises that it may sometimes be necessary to adopt a precautionary approach and to act even in the absence of a scientific consensus where prudence is essential to protect the public welfare. See IJC Website (2002) <http://www.ijc.org> at 23 September 2002.

17 Wolf, above n 14, 32.

18 Ibid.

19 Ibid.

20 Ibid.

21 Ibid.

> lakes, rivers, and waterways, or the waters of rivers flowing across the boundary.[22]

Pursuant to the *Boundary Waters Treaty*, each country reserved the right to control the use of waters within its jurisdiction while maintaining that boundary waters were subject to equal and similar rights.[23]

The regulation and management of the Columbia River first began to receive serious consideration by the IJC in 1944.[24] According to Pitzer, it then took

> [t]wenty years, from the mid 1940s through the mid 1960s, for the US and Canada to identify the best dam sites, calculate the benefits of storage, and negotiate allocation of the benefits from dams in British Columbia that would regulate the flow of the Columbia. Understanding the process that led to upstream storage in Canada requires a detailed look at complicated politics in both the US and Canada. The Boundary Waters Treaty of 1909 had created an International Joint Commission [IJC] and gave that body some jurisdiction over the streams that flowed between the two countries. IJC decisions were not binding, however, and had to be supported by treaties negotiated between the two countries. On 9 March 1944, the US government referred the matter of increased storage on the Columbia River to the IJC. The IJC, in turn, created the International Columbia River Engineering Board composed of two members from each country. The board set up an Engineering Committee and charged it with the task of obtaining data and analyzing the situation. Planners realized that increased reservoir storage in Canada would produce massive benefits in the US. Charles Stewart, Chairman of the US section of the IJC, stated in 1944, that no water would be backed up on either side of the border until everyone interested had been heard and that such action would not be for the sole benefit of 'Grand Coulee Dam and other downstream power sites.' With that in mind, the IJC and its boards and committees began determining the exact value of those benefits and the fairest way of crediting to Canada a reasonable share of the resulting wealth.[25]

The extensive technical studies of the IJC continued until December 1959, when, at the request of Canada and the US, the IJC promulgated a set of principles intended to govern any sharing of benefits between Canada and the US which might arise as result of joint development of the Columbia River.[26]

In making its various recommendations, the IJC was guided by the basic precept that its principles should result in both the equitable sharing of the

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22 *Boundary Waters Treaty*, above n 16, preliminary art.

23 A Dan Tarlock, 'International Water Allocation, Law of Water Rights and Resources' in A Dan Tarlock, *Law of Water Rights and Resources* (2001) §11–14. Should one country cause the other to suffer damage as a result of a water diversion etc, that country is entitled to the same rights as a resident of the offending country.

24 For a more complete description of the *Columbia River Treaty*, below n 31, and its aftermath, see McCaffrey, *The Law of International Watercourses*, above n 4, 293–6. See also Ralph Johnson, 'Effect of Existing Uses on the Equitable Apportionment of International Rivers I: An American View' (1959) 1 *University of British Columbia Law Review* 389; Ralph Johnson, 'The Columbia Basin' in Albert Garretson (ed), *The Law of International Drainage Basins* (1967) 167; Bourne, 'The Columbia River Controversy', above n 13, 444.

25 Pitzer, above n 15, [A11–2].

26 IJC, *Report of the International Joint Commission on Principles for Determining and Apportioning Benefits from Cooperative Use of Storage Waters and Electrical Interconnection within the Columbia River System* (1959).

downstream benefits attributable to any cooperative undertakings that might take place, and an advantage to each country as compared to any alternatives that might be available to them. The IJC further stipulated that power benefits in the US from upstream storage in Canada should be shared on a substantially equal basis, provided that an equal split of benefits would result in an advantage to each country as compared to available alternatives. When an equal split would not result in an advantage to each country, the countries would then have to negotiate such other division of benefits as would be equitable to both countries and make cooperative development feasible.[27]

The critical acknowledgment underlying the IJC stipulation was that an international project ought not to proceed unless both countries would benefit.[28] However, to the extent that a benefit occurred in one nation and costs were imposed in another, the solution was not to dispute whether the project should proceed, but rather to redistribute the benefits so that both countries obtained an interest in them.[29]

Another important aspect of the IJC's recommended principles was that the focus was on gross benefits, which eliminated the difficulties of calculating net benefits.[30] Different countries necessarily assign different values to that which they view as important, and determining the net benefits and costs of a particular initiative will often be impossible. However, when both countries have at least the assurance that they are better off with rather than without an initiative, they are then in a better position to support that initiative.

Based on these principles, the parties were eventually able to negotiate the *Treaty Relating to Cooperative Development of the Water Resources of the Columbia River Basin* ('*Columbia River Treaty*').[31] The *Columbia River Treaty* explicitly recognised that the construction and operation of three treaty projects in Canada would increase both the useable energy and dependable capacity of power plants in the US, as well as provide irrigation and flood control benefits in the US, all of which would not be possible at the same cost without the three treaty projects.[32]

In return for building the three *Columbia River Treaty* projects in Canada, the Treaty specifically entitled Canada to a lump sum payment for various downstream (flood control) benefits, as well as one half of the additional power

27 Ibid 49–50; see also Sanderson, above n 13, 10.

28 Sanderson, above n 13, 28.

29 Ibid.

30 According to Pitzer, above n 15, [A11–10], the IJC spent considerable time and money unsuccessfully trying to factor respective costs into the sharing agreement for downstream benefits. This 'netting' approach proved to be exceedingly complex and difficult. However, enormous staff time was taken up before this was realised and the approach finally abandoned.

31 Opened for signature 17 January 1961, United States–Canada, 542 UNTS 244 (entered into force 16 September 1964); *Protocol to the Columbia River Treaty*, in Secretary Martin to Secretary Rusk, 'Annex to an Exchange of Notes Dated January 22, 1964 between the Governments of Canada and the United States Regarding the Columbia River Treaty' [1964] *Department of State Bulletin* 202. See also Pitzer, above 15, [A11–7]; Sanderson, above n 13, 18.

32 Sanderson, above n 13, 25.

generated by power plants in the US that resulted from storage across the border in Canada.[33]

V DOWNSTREAM BENEFITS[34]

The widely acknowledged situation with respect to the equitable sharing of downstream benefits of the Columbia River aptly illustrates both the existence of a principle of equitable sharing of downstream benefits and its practical application. However, the Columbia River example is not the only illustration of a suggested principle of equitable sharing of downstream benefits. There are a growing number of international agreements which provide for the return, either in kind or in monetary form, of a share of the benefits received in a state or states as a result of acts done in another state or states. Some examples include: the *Treaty of Peace with Germany (Treaty of Versailles)*;[35] the *Convention and Statute on the Regime of Navigable Waterways of International Concern*;[36] the *Agreement 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;*[37] the *Cunene River Basin Agreement (South Africa and Portugal)*;[38] the *Convention on the Protection of*

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33 Ibid 15.

34 The advice and assistance of Professors Charles Bourne and Steve McCaffrey and the late Professor Albert Utton in helping to identify these examples of state practice of the equitable sharing of downstream benefits is gratefully acknowledged.

35 Opened for signature 28 June 1919, 2 USTS 43 (entered into force 10 January 1920). This Treaty gave France the exclusive right to use the waters of the Rhine for power production, subject to France's paying Germany one-half the value of the energy produced.

36 Opened for signature 20 April 1921, 7 LNTS 35 (entered into force 31 October 1922). Article X suggests the sharing of downstream benefits 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.

37 Opened for signature 1 July 1926, South Africa–Portugal, 70 LNTS 316 (entered into force 1 July 1926). This Agreement gave South Africa the right to build a dam upstream in Angola and to undertake certain diversion works. Article 12 further provided as follows:

> No charge shall be made for the water diverted from the Kunene River for the purpose of provided 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 the purposes of gain … South Africa shall give to … Portugal three months' written notice of such intention and shall pay, for such portion of the water so utilised, to that Government such compensation as may be mutually agreed upon.

38 UN Department of Technical Cooperation for Development, *Treaties Concerning the Utilization of International Water Courses for Other Purposes Than Navigation: Africa* (1984). This 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 per cent of the resulting regulated flow of the river, and to operate the dam so as to provide a regulated flow: arts 4.1.3, 4.1.11–4.1.12. 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 and animal requirements in south west Africa and for irrigation. South Africa agreed to pay for the construction of the works, and for their operation which would be done by the

the Rhine against Pollution from Chlorides;[39] the *Treaty on the Lesotho Highlands Water Project between the Government of the Kingdom of Lesotho and the Government of the Republic of South Africa*;[40] the *Treaty between the Hungarian People's Republic and the Czechoslovak Socialist Republic Concerning the Construction and Operation of the Gabčíkovo-Nagymaros System of Locks*[41] and the *Decree of the Government of Kyrgyzstan*.[42]

These examples confirm that state practice can be invoked in support of an emerging principle of customary international law regarding the equitable sharing of downstream benefits where the act that confers the benefit on one state appears to have been done, or not done, at the request of another state.[43]

Portuguese authorities. South Africa was also to pay a fixed amount for the ground occupied and for the flooding caused by these works: art 4.

39 Opened for signature 3 December 1976, France–Netherlands, 16 ILM 265 (1977) (entered into force 5 July 1985). It 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). While not an upstream 'development' case, this is a particularly striking example since it could be argued that France had a duty to avoid significant pollution harm to the Netherlands irrespective of Treaty obligations.

40 Opened for signature 24 October 1986 (entered into force 24 October 1986) <http://www.fao.org/docrep/W7414B/w7414b0w.htm> at 23 September 2002. Pursuant to this treaty, 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 it.

41 Opened for signature 16 September 1977, 1109 UNTS 235 (entered into force 30 June 1978). This Agreement, which gave rise to *Gabčíkovo-Nagymaros Project (Hungary v Slovakia) (Merits)* [1997] ICJ Rep 7, provided for the development of a dam and hydroelectricity plant that was to produce the bulk of the electricity under the Treaty located on a bypass canal wholly within Slovakia. The majority of Danube water is diverted into that canal then rejoins the bed of the Danube, which forms the boundary between the two states. Under the Treaty, Hungary was to receive power from that plant, as well as flood control benefits — both arguably downstream benefits. For a more complete description and analysis of the case, see McCaffrey, *The Law of International Watercourses* (2001) 186–97.

42 A recent decree of the Government of Kyrgyzstan reflecting a principle of equitable sharing of downstream benefits stated that:

> in the Field of Use of Water Resources of Rivers Having Their Source in the Territory of Kyrgysztan and Flowing into the Territory of Neighbouring Republics and in pledging to collaborate with neighbouring states in the rational use of river water resources, Kyrgysztan favours the principle of payments by its downstream neighbours for the use of water resources flowing from it. Whereas this does not imply that the country will automatically claim compensation for the river water flowing past its borders, it nonetheless signals that such payments are regarded by the country's leadership as a legitimate matter for negotiations. In this connection, it will be recalled that Kyrgysztan has succeeded to a series of agreements dating to Soviet Union times providing for the sharing of the waters of rivers among the republics of Kazakhstan, Kyrgysztan, Tajikistan, Turkmenistan, and Uzbekistan. These agreements were reaffirmed in the Alma Ata Agreement of 18 February 1992.

See Stefano Burchi, 'International Rivers and Lakes/Groundwater' (1997) 8 *Yearbook of International Environmental Law* 187, 187–8.

43 See McCaffrey, *The Law of International Watercourses* (2001) 264, where the author, while acknowledging that 'it is not uncommon for some form of compensation (eg sharing electric power) to be part of an overall package of equitable apportionment of the uses and benefits of an international water-course', goes on to add the important caveat that

This raises a number of questions: first, is there support for a wider proposition that a state is obliged to share benefits that it receives from the acts or omissions of another state that it has not asked for or to which it has not agreed? Second, does the obligation to share benefits exist under customary international law, even when these benefits have not been solicited or agreed to?[44] Third, if benefits are to be shared equitably, why should it matter whether the beneficiary sought them or is simply receiving them without asking? Fourth, would a failure to share windfall benefits constitute a case of 'unjust enrichment'? Fifth, is there anything to distinguish a case in which a state has asked for a benefit from one in which it has not asked? Sixth, would equity in the latter case dictate that the paying state not pay as much as it would have to if the other state had specifically requested the benefit? Finally, might it be possible to apply the principle of equitable sharing of downstream benefits to help turn historical adversaries into partners? It is this latter and perhaps most important question to which this paper now turns by examining two case studies: the Karnali River (Nepal/India) and the Mekong River (China/Myanmar/Thailand/Cambodia/Laos/Vietnam).

VI THE KARNALI RIVER (NEPAL/INDIA)[45]

Nepal is a land-locked developing country considered to have enormous water resource development potential.[46] The Karnali is just one of a number of major international rivers that Nepal shares with India to the south and China to the north. Nepal and India have been long time adversaries over the sharing of downstream benefits that might result from the development of water resource projects on rivers in Nepal that flow into India.[47] Does the principle of equitable

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on the other hand, modern international law does not accept the notion that seems to underlie such a claim for compensation, namely, that a state 'owns' the waters of an international watercourse that are, for the moment, situated in its territory, and is free to do with them as it pleases, regardless of the consequences for other riparian states. On the contrary, upper riparians are under an obligation not to prevent such waters from flowing to a lower riparian country. The only interference with such flow that would be permissible are those that would be equitable and reasonable in the context of the states' fluvial relations.

44 See generally Paisley and McDaniels, above n 4, 111.

45 The advice and assistance of Dr Kul Bhurtel, Scott Ferguson and Dr Vic Galay of Northwest Hydraulic Consultants in Vancouver, Canada, in helping to prepare this section is gratefully acknowledged.

46 For an introduction to Nepal and water resource development, see Dipak Gyawali, *Water in Nepal: An Interdisciplinary Look at Resource Uncertainties, Evolving Problems and Future Prospects* (1989); Surya Subedi, 'Hydro-Diplomacy in South Asia: The Conclusion of the Mahakali and Ganges River Treaties' (1999) 93 *American Journal of International Law* 953; Jagadish Pokharel, *Environmental Resources: Negotiation between Unequal Powers* (1996); S Pun, 'Sharing of the Ganges Waters — The Writing's on the Wall' (1999) 10 *WECS Bulletin* 32; Hans Schreier et al, *Sedimentation of the Kulekhani Reservoir: A Case Study of the Importance of Sediment Dynamics in the Nepalese Himilayas* (1999) (CD ROM) (copy on file with author); Prem Thapa, 'Water-Led Development in Nepal: Myths, Limitations and Rational Concerns' (1997) 5 *Water Nepal* 35; Dipak Gyawali and Ajaya Dixit, 'Mahakali Impasse and Indo-Nepal Water Conflict' (1998) 34(9) *Economic and Political Weekly* 1.

47 Subedi, above n 46, 954; Verghese, above n 2, 31–5.

sharing of downstream benefits have a possible role to play in turning these historical adversaries into partners?

This analysis begins with an introduction to Nepal and an examination of factors that have historically challenged water resource development in Nepal. Nepal has a total area of 147 181 square kilometres of which about 83 per cent are mountains and 17 per cent are lowlands. The mountainous region is divisible into three distinct ecological zones: the Terai Plain (an extension of the Gangetic Plain of India); the Hills (the foothills of the Himalayas), ranging in height from 500 metres to 4000 metres; and the Himalayan mountains, ranging in height to above 8000 metres.[48] Eight of the 10 highest mountains in the world are located in Nepal.

By most standard economic measurements, Nepal is classified as one of the least developed countries in the world, with a per capita income of less than US$250 per annum.[49] According to World Bank data, overall economic growth has decelerated steadily in the past few years to an estimated 1.9 per cent of gross domestic product in the fiscal year 1998.[50] This deceleration reflects, among other factors, weather related setbacks to agriculture as well as a slowdown in non-agricultural growth.[51] Private investment and activity levels have also declined, in part due to lack of business confidence associated with the political environment, problems faced by traditional export industries (such as carpets), weak domestic demand, and uncertainties regarding global economic prospects, particularly general developments in India and East Asia.[52]

The interaction of the monsoon weather with the Himalayan Mountains dominates the hydrology of Nepal. Heavy rains from June until September characterise the monsoon pattern, coupled with dry weather from October to May. The average run-off from all of Nepal's rivers is estimated to total 224 000 million cubic metres.[53] The four largest rivers in Nepal, the Mahakali, the Karnali, the Gandak and the Kosi, together account for more than two thirds of the total annual water discharge.[54] The hydroelectricity development potential in Nepal is thought to be about 83 000 megawatts.[55] However, Nepal currently has only about 261.8 megawatts installed capacity of hydropower and an additional 57.1 megawatts of installed capacity for thermal power.[56] Presently, hydropower accounts for just one per cent of total energy consumption in Nepal and only about nine per cent of the population has access to electricity.[57]

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48 Schreier et al, above n 46.

49 The World Bank, *Nepal Development Forum: Economic Update 2002* (2002) <http://lnweb18.worldbank.org/SAR/sa.nsf/Attachments/rpt/$File/econnp.doc> at 23 September 2002.

50 Ibid.

51 Ibid.

52 Ibid.

53 Gyawali, above n 46, 93–101.

54 Ibid.

55 Subedi, above n 46, 954. See also James Clad, 'GDP Set to Slump in Wake of Transit Dispute: Gasping for Breath', *Far Eastern Economic Review* (Hong Kong), 8 March 1990, 26.

56 Clad, above n 55, 26.

57 Verghese, above n 2, 37–8.

In addition to hydropower generation, the potential benefits to Nepal from water resource development include water supply for irrigation and domestic use, flood control, sedimentation control, navigation, fisheries and recreational benefits.[58] However, there is also a wide range of potentially negative social and environmental repercussions that may be associated with water resource developments in Nepal. These include the potentially negative impact of water resource development on the aquatic environment, local populations, inundation of forests and the movement of alluvium.[59] Similar potential costs and benefits could also accrue in India.[60] In addition, social, environmental and political conditions could prove challenging to water resource development in Nepal.[61]

As if possible cooperation between Nepal and India regarding water resource development were not already sufficiently challenging, the two countries have also entered into several controversial agreements regarding a number of the international rivers that they share.[62] The three international watercourses shared between Nepal and India which are currently governed by agreements are the Kosi, the Gandak and the Mahakali. The Kosi and the Gandak are international rivers. The Mahakali River is a boundary river, which forms part of the border between India and Nepal on Nepal's western flank.

The *Agreement between the Government of India and the Government of Nepal on the Kosi Project* ('*Kosi Agreement*')[63] was signed in 1954 and revised in 1966, and is valid for 199 years. The primary purpose of the *Kosi Agreement* is to enable India to build control structures in Nepal that provide flood control to Bihar State in India. The Kosi Development Project that grew out of the *Kosi Agreement* was planned, designed and constructed by India. The *Kosi Agreement* has had a mixed reception in Nepal.[64] On the one hand, it confirms Nepal's right to substantial future developments in the Kosi River basin, even though Nepal is yet to exercise those rights.[65] On the other hand, it has been suggested that Nepal may have so far derived relatively little benefit from the agreement. More

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58 Schreier et al, above n 46.

59 Ibid.

60 Ibid; Thapa, above n 46, 44–8.

61 From an environmental perspective the following factors challenge water resource development in Nepal:

- The stream system is relatively poorly studied;
- Nepal's rivers carve through the highest relief in the world;
- The rainfall distribution is highly seasonal;
- The bedrock geology is highly fractured and uplifting at a relatively rapid rate;
- The current climatic, hydromatic and sedimentation monitoring network is relatively inadequate for modeling and prediction;
- The surface configuration is changing rapidly due to rapid population growth, increased agriculture intensification, expansion into marginal lands and degradation of forests and grasslands;
- The interactions between rainfall events, topography, geology, terrain stability, land use and stream response are generally poorly documented.

See Schreier et al, above n 46.

62 Subedi, above n 46, 954.

63 Opened for signature 25 April 1954, United Nations Legislative Series, *Legislative Texts and Treaty Provisions Concerning the Utilization of International Rivers for Other Purposes than Navigation* (1963) 290, UN Doc ST/LEG/SER.B/12 (entered into force 25 April 1954).

64 Verghese, above n 2, 31–5.

65 Ibid.

specifically, it has been suggested that the expected benefits to Nepal from the Chatra canal have not materialised, and the westward shifting of the Kosi has damaged land and agricultural crops in the Saptari district of Nepal.[66] Also, the promised powerhouse of 20 megawatt capacity using the canal head could not be made operational.[67]

The *Agreement between His Majesty's Government of Nepal and the Government of India on the Gandak Irrigation and Power Project* ('*Gandak Agreement*') was signed by Nepal and India in 1959 and revised in 1964.[68] The primary purpose of the *Gandak Agreement* was the construction of structures in India and in Nepal to facilitate irrigation, primarily in India.[69] The 1964 amendments deleted a schedule of water requirements that was a part of the original 1959 agreement, and confirmed that Nepal has the right to withdraw water from the Gandak water basin for irrigation or any other purpose, except for inter-basin transfers in the lean months of February to April. Unlike the *Kosi Agreement*, the *Gandak Agreement* appears to have no expiry date. However, it too has had a mixed reception.[70] India believes that Nepal was given numerous benefits at no cost, yet planned benefits of irrigation and power generation in Nepal have not been fully realised because of poor maintenance of the canal, which is located mainly in India. Also, the Narayani Irrigation Project in Nepal is in a precarious situation on account of Nepal's water supply from the Don Branch Canal in India being irregular and less than the agreed volume.[71]

The *Agreement between the Government of the Republic of India and His Majesty's Government of Nepal Concerning the Integrated Development of the Mahakali River Including Sarada Barrage, Tanakpur Barrage and Pancheshwar Project* ('*Mahakali Treaty*')[72] was signed in 1996 and is the most recent agreement between Nepal and India. It has a term of 75 years and establishes a long-term discharge rate focusing on the utilisation of waters and the integrated development of the Mahakali River, including the Sarada Barrage, Tanakpur Barrage and Pancheshwar Multipurpose Dam Project.[73] The primary purpose of the Sarada and the Tanakpur Barrages, both located in India, is to facilitate irrigation in both India and Nepal. Tanakpur also has a 120 megawatt capacity hydropower generating station installed, 70 megawatt hours of which, according to the agreement, are supposed to be given to Nepal free of charge. India is also supposed to provide the necessary power transmission line to Nepal. The size of the generating component of the Pancheshwar Multipurpose Dam Project is projected to be 6480 megawatts, consisting of two power sources of equal capacity on both sides of the river.[74] Article 3 of the *Mahakali Treaty* states that

66 Ibid.

67 Pokharel, above n 46, 35–48.

68 Opened for signature 4 December 1959, India Bilateral Treaties and Agreements (1958–60) vol 3, 264 (entered into force 4 December 1959).

69 Pokharel, above n 46, 43–4.

70 Ibid 37–48.

71 Ibid.

72 Opened for signature 12 February 1996, 36 ILM 531 (1997) (entered into force 12 February 1996).

73 Philippe Sands, 'Introductory Note' in *Treaty on Sharing of the Ganges Waters at Farakka,* opened for signature 12 December 1996, 36 ILM 519 (1997).

74 Pun, above n 46, 33.

'[a]ll benefits accruing to both parties with the development of the (Pancheshwar) Project in the forms of power, irrigation, flood control etc, shall be assessed' and that '[t]he costs of the project shall be borne by the Parties in proportion to benefits accruing to them.' Article 3(a) of the Exchange of Letters between the Prime Ministers of Nepal and India states that '[i]rrigation benefit shall be assessed on the basis of incremental and additional benefits due to augmentation of river flows and flood control benefit shall be assessed on the basis of the value of works saved and damages avoided.'[75]

The *Mahakali Treaty* has also had a mixed reception in Nepal.[76] It has been praised as breaking the ice in the hitherto uncomfortable relations between India and Nepal on water related matters, and has the potential to inspire collaboration on water projects if implemented to the satisfaction of both parties.[77] However, controversy continues regarding the interpretation of the *Mahakali Treaty*, particularly the interpretation of article 3.[78] This has mainly focused on the interpretation of the term 'existing consumptive use', and the possible exclusion of the amount of water already available and used by the parties from the definition of their equal entitlement to the waters of the Mahakali.[79]

Despite sporadic attempts by both India and Nepal to negotiate, the fourth major international watercourse, the Karnali, has not yet been the subject of an agreement between the parties. This situation is unlikely to be resolved anytime soon, in part because India and Nepal have been unable to agree as to how they might share downstream benefits.

VII THE MEKONG RIVER (CHINA/MYANMAR/THAILAND/CAMBODIA/LAOS/VIETNAM)[80]

The Mekong River originates high on the Tibetan Plateau, and makes its way through six countries: China, Myanmar, Laos, Thailand, Cambodia and Vietnam, before reaching the South China Sea.[81] At 4800 kilometres, the Mekong River generally ranks twelfth in the world in terms of length, and eighth in terms of

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75 Letter from His Excellency Mr Sher Bahadur Deuba, Prime Minister of Nepal, to His Excellency Mr P V Narasimha Rao, Prime Minister of India, 12 February 1996; Letter from His Excellency Mr P V Narasimha Rao, Prime Minister of India, to His Excellency Mr Sher Bahadur Deuba, Prime Minister of Nepal, 12 February 1996.

76 Subedi, above n 46, 956–7.

77 Ibid 962.

78 Ibid 956.

79 Ibid 956–7.

80 The advice and assistance of Sokhem Pech, Chaiyuth Sukhsri and Dr George Radosevich in helping to prepare this section is gratefully acknowledged.

81 Regarding the Mekong, see generally, Greg Browder and Leonard Ortolano, 'The Evolution of an International Water Resources Management Regime in the Mekong River Basin' (2000) 40 *Natural Resources Journal* 499; Philip Hirsch, 'Beyond the Nation State: Natural Resource Conflict and "National Interest" in Mekong Hydropower Development' (1999) 29 *Golden Gate University Law Review* 399; Nancy Nelson, 'Water Allocation' [1996] *Colorado Journal of International Environmental Law and Policy* 120; Brian Shanahan, 'Recent Development in International Environmental Law: Agreement for the Sustainable Development of the Mekong River Basin Cambodia, Laos, Thailand, Vietnam — Signed, April 5, 1995; Entered into Force upon Signing' (1996) 8 *Georgetown International Environmental Law Review* 496; Patricia Wouters, 'An Assessment of Recent Developments in International Watercourse Law through the Prism of the Substantive Rules Governing Use Allocation' (1996) 36 *Natural Resources Journal* 417.

average annual run-off.[82] The flow in the Mekong varies with the tropical monsoon climate. The flows begin to increase at the onset of the wet season in May, peaking in August or September, and decreasing rapidly until December. The flows recede slowly during the annual dry period from December to their lowest levels in April. An enormous volume of water flows through the Mekong Basin in the wet season, resulting in extensive flooding. The floodwaters support a productive and diverse freshwater ecosystem, but also result in loss of human life and damage to crops and structures. During the dry season, a dramatic reduction of flow leads to water shortages for domestic and agricultural use, and limits navigation. The coastal plain of the basin constantly suffers from an intrusion of seawater.

The Mekong Basin's water resources have the ability to support economic growth through irrigation, hydropower, navigation, water supply and tourism.[83] Equitable sharing of the water resources and sustainable development of the natural resources in the basin becomes most critical for each country during the dry season.[84] Laos relies heavily on river transport, and the reduction of dry season flows could adversely affect navigation. Cambodia has long-term potential for increasing its irrigated agriculture. Over the decades, Vietnam and Thailand have developed extensive irrigation systems that currently face dry season water constraints. Vietnam makes use of dry season flows for seawater repulsion and for irrigation. Thailand has recently been studying options for diverting water from the Mekong, and for inter-basin diversion from Thai tributaries to the Mekong.

With respect to hydropower, the World Bank sees benefit in such projects because of their ability to store wet season flows in order to generate power during the dry season.[85] Hydropower development in the Mekong Basin has been gaining momentum and the question of how to share the consequential additional dry season flow is of key interest to the Mekong's downstream countries. Currently, there are only 500 megawatts of installed capacity in the Lower Mekong and 1500 megawatts along the Chinese portion of the river; however China is constructing several more hydropower projects. Laos also has plans to construct a number of medium sized hydropower projects on Lao tributaries to the Mekong and both China and Laos would like to export power to Thailand. Options for creating a regional power grid are also being studied. However, recent analysis by Aviva Imhof of the International Rivers Network, a

82 Guangwei Huang and Nobuyuki Tamai, 'Application of MIKE 11 to the Lower Mekong River' (Paper presented at the 3rd DHI Software Conference and DHI Software Courses, Helsingør, 7 June 1999) [1] <http://www.dhi.dk/softcon/papers/013/DHI.html> at 23 September 2002.

83 Shanahan, above n 81, 497; Hirsch, above n 81, 400.

84 Browder and Ortolano, above n 81, 529–31.

85 Huang and Tamai, above n 82, [1].

California based conservation group, suggests the market for hydropower has slowed due to the Asian economic crisis.[86]

Attempts to cooperate on the Mekong have a long history.[87] The Committee for Coordination of Investigations of the Lower Mekong Basin ('Mekong Committee') was established in 1957 with four members (Cambodia, Laos, Thailand and Vietnam) under the umbrella of the Economic Commission for Asia and the Far East, the predecessor of the Economic and Social Commission for Asia and the Pacific.[88] From 1978 to April 1995 the Committee was known as the Interim Mekong Committee ('IMC') due to the absence of Cambodia from the Committee. In 1991 Cambodia submitted a request to rejoin the Committee. Subsequently, the recent and rapid economic and environmental changes in all four countries indicated the need for a new organisation with an expanded mandate to cope with the countries' requirements. In response to this new context, the Mekong Working Group ('MWG'), consisting of representatives from the four countries, was formed to prepare for the establishment of a new Mekong cooperation framework. The MWG, under the direction of the UN Development Programme, initiated the *Draft Agreement on Cooperation for the Sustainable Development of the Mekong River Basin* ('*Mekong Agreement*')[89] at its final meeting in November 1994. The *Mekong Agreement* immediately established the Mekong River Commission ('MRC'), replacing the Mekong Committee and the subsequent IMC.[90]

As an intergovernmental organisation, the MRC has three permanent bodies: the Council (ministerial and cabinet level), which makes policies and decisions; the Joint Committee (department head level), which implements policies and decisions; and the Secretariat, which renders technical and administrative services.[91] The MRC's mandate is:

> To promote and co-ordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well-being

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86 Aviva Imhof, International Rivers Network (Address delivered to National Laotian-American Symposium on US-Laos, 23 May 2002) [8] <http://www.laotianlink.com/trade/imhof.htm> at 23 September 2002. See also Environment News Service, *Four Mekong River Basin Governments Funded to Cooperate* (2000) <http://ens.lycos.com/ens/feb2000/2000L-02-14-05.html> at 23 September 2002, where Imhof is reported as saying that 'the Electricity Generating Authority of Thailand [('EGAT')] will defer purchases of electricity from several multi-billion dollar projects in Laos, citing the slowdown in Thailand's power demand. Last June, EGAT announced that the commissioning dates of four privately funded hydropower projects Nam Theun 2, Xe Pian-Xe Namnoy, Nam Ngum 2 and Nam Ngum 3 will be postponed by two years, to 2006.'

87 See, eg, Oxfam Community Aid Abroad, 'Hydrodevelopment on the Mekong' (Briefing paper No 22, December 1998) [1] <http://www.caa.org.au/publications/briefing/mekong_hydro/index.html> at 23 September 2002.

88 *Statute of the Committee for Co-Ordination of Investigations of the Lower Mekong Basin Established by the Governments of Cambodia, Laos, Thailand and the Republic of Viet-Nam in Response to the Decision Taken by the United Nations Economic Commission for Asia and the Far East*, opened for signature 31 October 1957, United Nations Legislative Series, *Legislative Texts and Treaty Provisions Concerning the Utilization of International Rivers for other Purposes than Navigation* (1963) 267, UN Doc ST/LEG/SER.B/12.

89 Opened for signature 5 April 1995, 34 ILM 864 (1995) (entered into force 5 April 1995).

90 Ibid.

91 International Monetary Fund, *Mekong River Commission: Establishment and Functions* (2002) <http://www.imf.org/external/np/sec/decdo/mrc.htm> at 23 September 2002.

> by implementing strategic programmes and activities and providing scientific information and policy advice.[92]

The four members agree to cooperate in all fields of sustainable development, utilisation, management and conservation of the water and related resources of the Mekong Basin, including, but not limited to, irrigation, hydropower, navigation, flood control, fisheries, timber floating, recreation and tourism. These activities should be undertaken in such a manner as to optimise the multiple-use and mutual benefits of all riparians and minimise the harmful effects that might result from natural occurrences and synthetic activities.[93]

The key to reaching agreement was the need to find acceptable language that provided both a sense of good faith and cooperation, and the assurance that no party would be disadvantaged under its provisions in light of the doctrine of sovereign equality.[94]

Recently, efforts to promote sustainable water management in the Mekong Basin and protection of its environment, aquatic life and ecological balance received a major boost in the form of a US$11 million influx of funding from the Global Environment Facility.[95] The project aims to bring the four downstream nations together for improved and sustainable basin management. The Water Utilization Project, funded by the grant, aims to support the MRC in developing an integrated and comprehensive basin hydrologic modelling package, a functional and integrated knowledge base on water and related resources, and to use these tools to establish 'rules' — one of MRC's five major goals. The rules, or obligations, of the member states will establish guidelines for water utilisation and ecological protection for sensitive ecological systems including wetlands and flooded forests. The grant will support MRC and the member states in ensuring that development of the water resources is carried out in a sustainable manner that preserves the environment.[96]

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92 Ibid.

93 Ibid.

94 Letter from George Radosevich, Former Senior Legal Advisor, Mekong Working Group UNDP to Richard Paisley, 14 January 2001 (copy on file with author).

95 Environment News Service, above n 86.

96 A significant step forward occurred on 1 November 2001 in Bangkok: Cabinet ministers from the member countries of the Council of the MRC, committed their countries to exchanging data and information crucial for sustainable development of the Mekong Basin. The agreement was the first of a series of joint decisions that the member countries (Cambodia, Laos, Thailand and Vietnam) will adopt over the next five years regarding water utilisation. The data to be shared includes 'topography, water and other natural resources, agriculture, navigation, transport, flood management and mitigation, urbanization/industrialization, infrastructure, environment/ecology, administrative boundaries, socio-economic status and tourism'. The agreement authorises the MRC Secretariat (based in Phnom Penh) to 'establish technical standards and guidelines to ensure that data can be compared across countries and from year to year but also to ensure progress of the Basin Development Plan.' In the coming years the MRC Council will

> consider preliminary terms for notifying and consulting each other on the use of the Mekong's waters and developments that could impact the river [in 2002] … decide on the final form for notification and consultation procedures, and also on the form for the monitoring of existing water use [in 2003] … decide on rules for maintenance of water flows [in 2004] and … [decide] on rules for maintaining water quality [in 2005.]

Constructing a system for coordinating water resource development activities and allocating dry season water, while protecting the environment and maintaining friendly relations among member states, is likely to be a continuing challenge for the MRC. This raises the issue of what role, if any, there might be for an equitable sharing of downstream benefits in order to promote trust and cooperation in the region.[97]

VIII TURNING ADVERSARIES INTO PARTNERS

Can the experiences of the equitable sharing of downstream benefits on the Columbia River and elsewhere help turn historical adversaries into potential partners in situations like the Karnali (Nepal/India) and the Mekong (China/Myanmar/Laos/Thailand/Cambodia/Vietnam) rivers? Is it realistic to expect that relations between upstream and downstream states will ever be completely harmonious? In the case of India and Nepal, the reasons for this disharmony may be found in the vast differences between them in terms of geography, population size and level of economic development. Compared to Nepal, India is large, powerful and relatively developed. India has particularly pressing demands for water supply for irrigation and industrial purposes. India also has a compelling need for flood control and serious demand for electrical energy. Nepal is a comparatively small and weak state. However, Nepal also has a need for economic betterment coupled with an enormous potential for hydropower development, flood control and irrigation that could be of benefit to both Nepal and India.

In the case of the Mekong, there are also vast differences between the four lower Mekong countries in terms of geography, population size and level of economic development. Thailand and Vietnam, compared to Laos and Cambodia, are more powerful and relatively more developed. Thailand is upstream of the other three lower riparians, and has interests in hydropower and reservoirs, the development on water and sediment, irrigation development, water availability, water quality, land use changes and forestry, and impacts on hydrological response. Laos has interests in hydropower potential, irrigation and land use, and forestry changes. Cambodia has interests in hydropower development, possible development of fish migration and potential for increased irrigation. Vietnam's interests include flood control. China and Myanmar also have a wide range of interests with regard to the Mekong.

What are the challenges and opportunities brought forth by these two case studies, and what role, if any, might international law in general, and the equitable sharing of downstream benefits in particular, play in helping to turn adversaries into partners?

First, both upstream and downstream states generally have the potential to derive benefit from the rational and equitable utilisation of shared international watercourses through the rules of international law. These rules require international watercourse states to cooperate with each other, and provide a

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Ann Lund, Mekong River Commission, *Lower Mekong Countries Agree to Share Crucial Data* (Press Release, No 12/01, 1 November 2001) [1] <http://www.mrcmekong.org/media/press2001/press012.htm> at 23 September 2002.

97 Browder and Ortolano, above n 81, 531.

framework that promotes the peaceful settlement of disputes.[98] Clearly, developing countries need to be shrewd negotiators, as simply having international law on their side is unlikely to get them very far in negotiations with significantly more powerful states. For example, in the Mekong, both upstream and downstream states have the potential to derive benefit from the rational and equitable utilisation of shared international watercourses if they comply with international law. A similar situation exists with regard to the Karnali River between Nepal and India. For the system to work in practice, it will be necessary for downstream states to persuade upstream states of the tangible benefits of cooperation. The equitable sharing of downstream benefits is one way of accomplishing this.

Second, a proper understanding of the legal issues involved in the development of international watercourses, as well as the social, political, economic and environmental implications of proposed actions, is essential for the protection of legitimate interests. In particular, an appreciation of the importance of the legal dimension to the benefits that accrue downstream from developments in an upstream state is crucial. The identification of these benefits can be difficult, and precise calculations complex. However, for upstream states, these benefits can be substantial and the effort to grasp the substance of the principle of equitable sharing of downstream benefits exceedingly worthwhile.[99] The situation between Nepal and India regarding the Karnali River is illustrative of this point. There are major potential downstream benefits to India from a project on the Karnali River involving the construction of works upstream in Nepal. These benefits include increased river flow during the dry season through regulated release to match the demand pattern for irrigation water, flood moderation, the availability of a non-polluting renewable energy source and the potential for inland water transport.[100] To ensure that they are adequately and properly compensated for the downstream benefits they confer on their basin neighbours, and to achieve their overall objective of poverty alleviation through sustainable development, developing countries like Nepal must strongly and articulately advance their entitlement to such benefits. Similarly, the implementation of the *Mekong Agreement* will take strong political commitment from all member states and the participation and support of stakeholders in the basin and external parties.

Third, before striving for political agreement, there is a compelling case for states to begin by building trust and cooperation through technical cooperation on matters such as the calculation of downstream benefits. The Karnali and the Mekong situations are again demonstrative. Historically, a key stumbling block to an upstream project on the Karnali River in Nepal seems to have been that the Indian scientists and the Nepalese consultants who have studied the Karnali River basin have been unable to agree on a number of matters, including assumptions about water flows and the proposed height of any dam or other

98 *UN Watercourses Convention*, above n 1.

99 The scope for trade-offs or side deals regarding these downstream benefits is also wide and varied and could include transit facilities, trade preferences, assistance to develop energy intensive industries with assured market access, irrigation facilities, extension of rail heads or road heads, and navigation routes to the sea: see Verghese, above n 2, 125–6.

100 Verghese, above n 2, 46.

structures.[101] This in turn has led to different estimates of capacity to generate power and a different unit cost of power, as well as an overall inability to agree on the scope and magnitude of downstream benefits.[102] Such differences among competing groups of scientists will likely never be resolved simply by gathering more data. Rather, understandings will have to be reached regarding the assumptions both groups of scientists are relying upon before downstream benefits can be calculated with any certainty and further progress made. Similarly in the case of the Mekong, it will likely be necessary to reach an understanding regarding the assumptions of competing groups of scientists and engineers before dry season flows can be agreed upon and downstream benefits can be calculated with any certainty. Perhaps not surprisingly, a similar situation initially occurred regarding the Columbia River. The subsequent agreement between the US and Canada appears to have only been made possible after the parties were first able to build trust and understanding at the technical level, leading to eventual agreement regarding the equitable sharing of downstream benefits.[103]

For all of these reasons, sovereign nations sharing international watercourses should take heed of the emerging principle of equitable sharing of downstream benefits as one possible means of helping to turn historical adversaries into partners.

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101 Ibid 52.

102 Ibid 52–3.

103 See also Eyal Benvenisti, 'Collective Action in the Utilization of Shared Freshwater: The Challenges of International Water Resources Law' (1996) 90 *American Journal of International Law* 384, 402 Benvenisti states that '[w]ith the shared language of technical expertise, political constraints may be sidestepped and well-founded decisions more easily reached'. Benvenisti cites as authority the *Agreement between the Government of the Republic of Namibia and the Government of the Republic of South Africa on the Establishment of a Permanent Water Commission*, opened for signature 14 September 1992, 32 ILM 1147 (1993) (entered into force 14 September 1992) which established a joint commission to serve as a technical adviser to the States Parties by, inter alia, gathering data and recommending criteria to be adopted in the allocation and utilisation of common water resources.

Appendices

Appendix G

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).

Role of Custom in International Water Resource Law

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 it 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 riot 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.

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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 overreaching 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".

Appendix H

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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.

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

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1. Introduction

Rivers[1] 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

[3] See 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
Type 1: increasing benefits *to the river*	Degraded water quality, watersheds, wetlands, and biodiversity	Improved water quality, river flow characteristics, soil conservation, biodiversity and overall sustainability
Type 2: increasing benefits *from the river*	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
Type 3: reducing costs *because of the river*	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
Type 4: increasing benefits *beyond the river*	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 unbundled.

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

Cooperation across borders in the sustainable management of a river ecosystem, according *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 benefits[4] 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.

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

[5] In 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.

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

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

Appendix I

Stephen C. McCaffrey and Mpazi Sinjela,"Current Development: The 1997 United Nations Convention on International Water courses,"92 A.J.I.L. 97, 105-07 (1998)

Current Development: The 1997 United Nations Convention on International Watercourses

When the resolution containing the [1997 U.N Convention on the Law of the Non-navigational Uses of International Watercourses came before the General Assembly for adoption on May 21, 1997, Turkey requested a recorded vote. The vote was 103 in favor and 3 against (Burundi, China and Turkey), with 27 abstentions. In the context of a convention on international watercourses, 103 affirmative votes seem to constitute a strong endorsement: quite a few countries would not be interested in the subject matter of r the reasons already indicated. While General Assembly votes are notoriously opaque, this one appears to hold out hope that the [NUIW] Convention[1] may actually enter into force. The significant number of abstentions does not bode particularly well, but the fact that only three states could bring themselves to vote against the resolution suggests a sense among the overwhelming majority of delegations that the rules embodied in the Convention are generally acceptable and, on the whole, reflect a reasonable balance between the interests of upstream and downstream states. The negative votes of China and Turkey are probably attributable to their positions as upstream states in ongoing controversies rather than to dispassionate assessment of the law. The vote of Burundi came as something of a surprise since it did not participate at the working-group level and since the hydro-geography of the states in the upper Nile basin, including Burundi, will prevent their activities from affecting Egypt or Sudan. Burundi's position may owe more to political considerations that to hydro-geographic reality.

Outlook

Even if the Convention never enters into force, it is likely to prove of significant value for several reasons, some of which have already been alluded to. First, it was based on, and hews closely to, a draft prepared by the International Law Commission, the United Nations body responsible for the "progressive development of international law and its codification."As is its practice, the ILC did not indicate which of the provisions codify, and which progressively develop, the law. But it seems clear that the most important elements of the Convention—equitable utilization,"no harm", prior notification—are, in large measure, codifications of existing norms. That the working group did not fundamentally alter the ILC's approach betokens general satisfaction with the Commission's efforts at codification and progressive developments in this field. The report of the working group to the General Assembly notes:"Throughout the elaboration of the draft Convention, reference had been made to the commentaries to the draft articles prepared by the International Law Commission to clarify the contents of the articles."[2] Even the provisions of the Convention that do not reflect current law are likely to give rise to expectations of behaviour on the part of riparian states that may, over time, ripen into international obligations.

Second, the Convention will have value even if it does not enter into forces because it was negotiate din a forum that permitted virtually any interested state to participate. It is the only convention of a universal character on international watercourses. It was adopted by a weighty majority of countries with only three negative votes, indicating board agreement in the international

1 The Convention is often cited as the "NUIW Convention."

2 Report on the Sixth Committee, … 36 I.L.M. at 720 (1997).

community on the general principles governing the non-navigational uses of international watercourses. These considerations also mean that if it does enter into force, the Convention will have significant bearing on controversies between states, one or more of which is not a party to it. In addition, the Convention may be helpful in interpreting other general or specific watercourse agreements that are binding on the parties to a controversy, whether or not the convention is itself binding on those parties.

Third, even before the Convention's adoption, the ILC's draft articles on which it was based had influenced the drafting of specific agreements. These include the 1995 Protocol on Shared Watercourse Systems in the Southern African Development Community Region,[3] the 1991 Protocol on Common Water Resources concluded between Argentina and Chile,[4] and the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin.[5] It is likely that, with the adoption of the Convention, states negotiating future agreements will resort to its provisions as a starting point.

Thus, in the words of Ambassador Tello of Mexico, introducing the draft resolution containing the Convention,"[t]his instrument undoubtedly marks an important step in the progressive development and codification of international law…."[6] IT does not go as far as it might have gone in some areas,[7] and goes farther than some states would have liked in others.[8] The sponsors of the resolution containing the Convention declared that they were"convinced"that it"will contribute to the equitable and reasonable sue of transboundary water resources and their ecosystems, as well as to their preservation, to the benefit of current and future generations,"and that it"will contribute to enhancing cooperation and communication among riparian States of international watercourses."[9] In its resolution first calling for negotiation of a convention, the General Assembly had declared its conviction"that successful codification and progressive development of the rules of international law governing the 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 [UN] Convention."[10] Now that the work has been completed, it seems fair to conclude that the Convention will indeed assist in promoting and implementing those purposes and principles.

3 Signed at Maseru, Lesotho, 16 May 1995 (copy on file with the authors).

4 Integracion LatinoAmericana, REvista Mensuel del Intal 116 (Sep-Oct 1997).

5 5 Apr 1995, 34 I.L.M. 864 (1995)

6 Verbatim record, 99th plenary meeting, UN Doc. A/51/PV.99, at 2 (1997).

7 For example, a significant group of delegations believed its provisions concerning pollution and the ecosystems of international watercourses could have been strengthened….

8 For example, the provisions of part III ["Planned Measurers"] drew fire from some delegations…. However, they were strongly supported by others. That they survived the negotiation process bespeaks their overall balance.

9 Verbatim record, *supra* note 7, at 2.

10 GA Res. 49/52 3, UN GAOR, 49th Sess., Supp. No. 49, Vol. 1, at 2, UN Doc.A/49/49 (1994)

Appendix J

Yearbook of International Environmental Law

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International Groundwater Law: Towards Closing the Gaps?

Kerstin Mechlem

I. INTRODUCTION

There is a clear contrast between the social, economic, environmental, and political importance of groundwater[1] and the attention international law has paid to this resource. Groundwater represents about 97 per cent of the fresh water resources available, excluding the resources locked in polar ice.[2] More than one-half of the world's population is dependent on it for its basic needs. Accelerated population growth in the latter half of the twentieth century has coincided with improvements in pumping technology and has led to a greater and greater use of, and reliance upon, this resource, especially in the arid and semi-arid regions of the world. In consequence, over the last fifty years, groundwater resources and the social, economic, and environmental systems dependent on them have come under threat from over-abstraction and pollution.[3]

International law has only rarely taken account of groundwater. While surface water has been dealt with in numerous international agreements and other instruments, groundwater is either nominally included in the scope of these instruments, primarily if it is ''related'' to surface waters or part of a ''system of surface and groundwater'' (see the United Nations Convention

[1] Groundwater can be defined as ''subsurface water occupying the saturated zone'', (United Nations Educational, Scientific, and Cultural Organization [hereinafter UNESCO]/World Meteorological Organization [hereinafter WMO], International Glossary of Hydrology, 133 (1992)) or as ''all water which is below the surface in the ground in the saturation zone and in direct contact with the ground or subsoil'' (Article 2(2) of EC Directive 2000/60 of 23 October 2000 Establishing a Framework for Community Action in the Field of Water Policy, OJ L. 327, 22 December 2000, at 1 [hereinafter Water Framework Directive] and Article 2(3) of the [UN Economic Commission of Europe] Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, London, 17 June 1999, UN ECOSOC Doc. MP.WAT/AC.1/1999/1 of 24 March 1999 [hereinafter UN ECE Protocol on Water and Health]. Water in the unsaturated zone, such as soil moisture, is not groundwater. The saturated zone is part of the water-bearing material in which all voids, large and small, are filled with water (UNESCO/WMO, 257).

[2] Stephen Foster, *Essential Concepts for Groundwater Regulators, in* Salman Salman, ed., Groundwater: Legal and Policy Perspectives, Proceedings of a World Bank Seminar, World Bank Technical Paper 456, at 29 (1999).

[3] Jacob J. Burke and Marcus Moench, Groundwater and Society: Resources, Tensions and Opportunities, United Nations Publications Sales No. E.99.II.A 1, 7 (2000).

on the Non-Navigational Uses of International Watercourses (Watercourses Convention)[4] or the 2000 Revised Protocol on Shared Watercourses in the Southern African Development Community (SADC Protocol)),[5] or intentionally or unintentionally left out. Few treaties and other legal instruments exclusively address groundwater or contain groundwater-specific provisions. Hence, two gaps can be ascertained: an overall lack of addressing groundwater in international law (a formal gap) and a lack of groundwater-adequate rules in cases where groundwater has been addressed (a material gap). These need to be closed.

An analysis of recent binding and non-binding legal instruments reveals some indications of emerging rules of groundwater management. In addition, the International Law Commission (ILC) is currently considering the topic Shared Natural Resources, comprising oil, gas, and transboundary groundwaters. Its special rapporteur for the topic, Chusei Yamada, presented a first set of draft articles on transboundary groundwaters in May 2004,[6] which might contribute to closing the gaps by leading to a new legal instrument.

The objective of this article is to analyze the limitations of the existing legal regime and to discuss and assess some emerging principles of groundwater management. The first part will contain a concise introduction to the specific characteristics of groundwater and the most common reversible and irreversible problems faced in its management. Second, against this backdrop of facts, an overview of the current legal regime and its shortcomings will be presented. Groundwater as the subject matter of the Watercourses Convention, of bilateral and multilateral treaty law as well as of non-binding instruments will be examined. Third, some emerging legal tendencies will be discussed, which might indicate the way for more groundwater-adequate legal regulation. Finally, the already-mentioned activities of the ILC will be outlined.

II. FACTS ABOUT GROUNDWATER

1. Groundwater Characteristics

All groundwater and surface water molecules are elements of the same hydrological cycle. What today is one will, tomorrow, be the other.[7] Despite

[4] United Nations Convention on the Non-Navigational Uses of International Watercourses, annexed to UNGA Res. 229 of 21 May 1997, Official Records of the UNGA, 51st session, UN Doc. A/Res/51/229; also reprinted in 36 I.L.M. 700 (1997) [hereinafter Watercourses Convention]. It was adopted by a vote of 103 for and three against (Burundi, China, and Turkey) with twenty-seven abstentions. It has not yet entered into force.

[5] Revised Protocol on Shared Watercourses in the Southern African Development Community (SADC), Windhoek, 7 August 2000, 40 I.L.M. 321 (2001) [hereinafter SADC Protocol].

[6] Chusei Yamada Special Rapporteur, *Second Report on Shared Natural Resources: Transboundary Groundwaters*, UN Doc. A/CN.4/539 of 9 March 2004.

[7] See Joseph W. Dellapenna, *The Evolving International Law of Transnational Aquifers, in* Eran Feitelson and Marwan Haddad, eds., Management of Shared Groundwater Resources: The Israeli–Palestinian Case with an International Perspective, 209, 241 (2001).

this systemic character of the hydrological cycle, surface and groundwater resources differ significantly. Surface water bodies have, in general, linear features that cover only small amounts of territory. Single aquifers or multi-layered aquifer[8] systems in which groundwater is contained are widespread and can underlie vast areas of land. Surface water flows rapidly from upstream to downstream. Groundwater flow patterns are multidimensional and complex. Hydraulic heads and flow directions can change at different depths of the system and at different times, as the aquifer(s) respond to recharge and geotectonic change.

Upstream surface water utilization, such as the diversion of water or pollution, quickly impacts downstream. The utilization of an aquifer can cause effects over the whole of the aquifer, and no clear ''upstream''/''downstream'' distinction can be made. A groundwater pollutant can travel in all directions depending on the complex hydraulic linkages between surface and groundwater and abstraction activities. The impact of abstraction or pollution sometimes becomes visible only after extended periods of time, because the time-scales of groundwater flow are very long, with most groundwater remaining in the subsurface for tens or hundreds of years before reappearing at the surface. A particular feature of aquifers and the groundwater that they contain is that some deterioration is irreversible. Unlike the pollution of surface waters, the pollution of groundwater tends to be of a one-way nature—pollutants entering the micro-pores of an aquifer or combining with the aquifer matrix are not easily removed. Once polluted, aquifer clean up can be technically impossible or simply uneconomic.[9] Such deterioration of the aquifer can occur through saline water intrusion, the ingress of polluted water, land subsidence,[10] or wellhead contamination.[11]

Aquifer recharge rates range from irregular to regular and from almost zero to full. Aquifers are primarily replenished by rain percolating through the ground but also from rivers (influent rivers). Groundwater can discharge into surface water bodies (effluent rivers), another aquifer, the sea, or it can evaporate. Aquifer systems, sometimes in the form of several overlaying aquifers, can be hydraulically linked with one or more surface water basins, yet they may not conform in extent, hydraulic gradient, and system dynamics

[8] An aquifer can be defined as a ''permeable water-bearing formation capable of yielding exploitable quantities of water'' (UNESCO/WMO, *supra* note 1 at 15) or as ''a subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater'' (Water Framework Directive, *supra* note 1, Article 2(11)).

[9] Jacob J. Burke et al., *Groundwater and Society: Problems in Variability and Points of Engagement, in* Salman Salman, ed., *supra* note 2 at 31, 40.

[10] Stephen Foster, *Essential Concepts for Groundwater Regulators, in* Salman, ed., *supra* note 2 at 15, 24.

[11] Wellhead contamination can be caused by inadequate well design and construction, allowing direct ingress of polluted surface water or shallow groundwater. Foster, *supra* note 10 at 19.

to the surface flow system to which they are connected. Where such systems are substantially differentiated in a hydraulic sense, a case could be made for separate management as long as this interdependence is taken into account.

2. Special Case of Non-Recharging Aquifers

Some aquifers, which have been treated separately in international law and therefore need to be singled out at this point, receive no, or only negligible, quantities of recharge. They are *de facto* decoupled from active surface water systems and, therefore, under present climatic conditions, contain non-renewable stock resources and are sometimes called "fossil aquifers."[12] The water in these aquifers can be hundreds or thousands of years old. An example is the Nubian Sandstone Aquifer System underneath Chad, Egypt, Libya, and Sudan. It stores a total amount of 150,000 cubic kilometres of groundwater—corresponding to 1,800 years of Nile discharge[13]—of up to 35,000 years of age, not all of which is, however, recoverable due to great depths. Other examples are the North-Western Sahara Aquifer System, which is better known by its French acronym SASS[14] and is shared by Algeria, Libya, and Tunisia as well as the Qa-Disi Aquifer in southern Jordan and northern Saudi Arabia. The water in these aquifers is often of remarkably good quality and constitutes a strategic resource of vital importance for sustaining life, health, and the integrity of ecosystems in some of the most arid parts of the world. Due to a lack of recharge, it can be exploited only in the form of a "mined" resource.

The ILC and some legal literature have sometimes referred to these aquifers as "confined" aquifers,[15] which is, in fact, technically incorrect. In hydrogeological terms, a confined aquifer is an aquifer overlain and underlain by an impervious or almost impervious formation, in which water is stored under pressure.[16] Confinement is thus a matter of hydraulic state and not a question of being connected or related to bodies of surface water.

[12] Issues of artificial recharge are beyond the scope of this article.

[13] Ulf Thorweihe and Manfred Heinl, *Groundwater Resources of the Nubian Aquifer System NE-Africa 2002*, available at <http://www.geo.tuberlin.de/_downloads/nas_syn.pdf> (last accessed 29 January 2004) at 9.

[14] Système Aquifère du Sahara Septentrional.

[15] See the Resolution on Confined Transboundary Groundwater adopted in 1994 by the International Law Commission [hereinafter ILC] on these resources, which can be found in the *Report of the Commission to the General Assembly on the Work of Its Forty-Sixth Session*, II(2) Y.B. I.L.C., 135 (1994), and the title of the current topic on the agenda of the ILC, which had originally been "confined groundwaters." See Chusei Yamada, Special Rapporteur, *Shared Natural Resources: First Report on Outlines*, UN Doc. A/CN.4/533 of 30 April 2003. In his second report, the special rapporteur proposes the term "transboundary groundwaters" instead, see Chusei Yamada, Special Rapporteur, *Second Report on Shared Natural Resources: Transboundary Groundwaters*, *supra* note 6.

[16] UNESCO/WMO, *supra* note 1 at 56.

3. Uses of Groundwater and Challenges Faced in Its Management

Globally, groundwater provides about 50 per cent of the current potable water supplies; in some European countries, it can be more than 90 per cent.[17] It provides 40 per cent of the demand of industry through self-supply and between 20–30 per cent of water used in irrigated agriculture.[18] Compared to surface water, the economic benefits of groundwater per unit of volume are greater because of ready local availability, drought reliability, and generally good water quality requiring minimal treatment.[19] Groundwater also ensures the baseflow of rivers and lakes, keeps springs flowing, and wetlands wet. It is a major source of water for most surface vegetation. Sufficiently recharged aquifers prevent compaction and land subsidence. Aquifer systems constitute the predominant reservoir and strategic reserve of freshwater storage[20] that can be drawn upon in cases of drought. They also provide a range of more exotic services, including waste disposal and geothermal heat storage.

The rapid expansion in groundwater use due to increasing demand and better pumping technologies has led not only to major socio-economic benefits but also to significant problems that might lead eventually to interstate problems due to competing uses. Over-abstraction and pollution are the two main problems. Disturbingly, much of the major aquifer depletion and degradation has occurred in a very short space of time (over the past fifty years), is irreversible,[21] and is showing few signs of abatement. Falling groundwater tables cause shallow aquifers that have often been drawn upon for long periods of time to dry up, reduce the dry weather baseflow in some watercourses, lead to localized land subsidence due to aquitard compaction, and damage groundwater-dependent ecosystems.[22] Groundwater quality declines occur due to salinization, the migration of low-quality water, and pollution.[23] There is a wide range of activities that affect groundwater quality. Atmospheric deposition, contaminated rainfall, agricultural

[17] Austria, Croatia, Denmark, Hungary, Italy, Lithuania, and Slovenia. See E. Almássy and Zsuzsa Busás, Inventory of Transboundary Groundwaters, UN ECE Task Force on Monitoring and Assessment (1999) (identifying the percentage of groundwater in various European countries' drinking water supplies: Austria (99 per cent), Belarus (80 per cent), Bulgaria (60 per cent), Croatia (90 per cent), Estonia (70 per cent), Finland (57 per cent), Germany (75–90 per cent), Hungary (95 per cent), Lithuania (100 per cent), The Netherlands (67 per cent), Portugal (60 per cent), Slovak Republic (80 per cent), Slovenia (90 per cent), Switzerland (84 per cent), Ukraine (65 per cent)) at 21.

[18] UNESCO, ed., The United Nations World Water Development Report, 78 (2003).

[19] Burke and Moench, *supra* note 3 at 1.

[20] UNESCO, ed., *supra* note 18 at 78.

[21] Burke, *supra* note 9 at 31.

[22] In contrast, rising water tables can lead to waterlogging problems.

[23] Examples of these problems can be found in Brian L. Morris et al., Groundwater and its Susceptibility to Degradation: A Global Assessment of the Problem and Options for Management, United Nations Environment Programme (2003).

run-off, improperly treated or untreated wastewater, discharge from municipal and industrial sources, and accidental spills of undesirable materials are all potential sources of contamination.[24] In addition, improper extraction techniques can pollute even the deepest aquifer.

4. Transboundary and International Groundwater

It goes without saying that the problems mentioned are not only of a domestic nature. A large number of aquifers exist that are intersected by a political boundary and, hence, are transboundary and international in nature. Others are located entirely within the territory of one state but are hydraulically linked to a transboundary river.[25] They could be regarded as "international aquifers"[26] because they are part of an international system. Such a "system approach" would be similar to the Watercourses Convention, under which it is sufficient for a domestic tributary to be considered as "international" if it is part of a system of waters parts of which are located in different states (see Articles 1 and 2). In some instances, the transboundary—let alone, the international—nature of an aquifer is not clear or contested by one side.[27]

As most of the legal instruments analyzed cover only transboundary aquifers, this article will focus on this particular type. Interesting and difficult questions remain to be addressed regarding the legal regime that should apply to those aquifers that are international, but not transboundary, in nature and their harmonization with existing rules of international water law.

III. CURRENT LEGAL REGIME AND ITS GAPS

1. Overview

From the point of view of legal recognition, international groundwater law is the poor cousin of surface water law.[28] Whereas numerous treaties deal

[24] Asit Biswas, *Introduction: Water Crisis: Current Perceptions and Future Realities, in* Salman, ed., *supra* note 2 at 1, 8.

[25] Different models have been developed to exemplify in which cases aquifers could be regarded as international. See Julio A. Barberis, International Groundwater Resources Law, FAO Legislative Study No. 40, at 36 (1986); and Gabriel Eckstein and Yoram Eckstein, *A Hydrogeological Approach to Transboundary Ground Water Resources and International Law* 19 Am. U. Int'l L. Rev. at 201, 231 (2003).

[26] "Transboundary" could be seen as being a sub-category of "international"—that is, every transboundary aquifer would be an international one, but not vice versa.

[27] A UN ECE map of a survey of European transboundary aquifers shows that a number of aquifers had only been indicated by one country as being transboundary. See UNESCO, International Hydrological Programme, Internationally Shared (Transboundary) Aquifer Resources Management, at 12 (2001) available at <http://www.iah.org/News/2001/isarm.pdf> (last accessed 23 October 2004).

[28] For literature on international groundwater law, see, for example, Barberis, *supra* note 25; Julio Barberis, *The Development of International Law of Transboundary Groundwater* 31 Nat. Resources J. at 167 (1991); Joseph W. Dellapenna, *supra* note 7; Gabriel Eckstein and Yoram

with surface waters, very few address only groundwater or contain groundwater-specific provisions. In many instances, the scope of water treaties includes surface and groundwater or a drainage basin, but the substantive treaty norms and the powers of joint bodies are heavily biased towards surface water management.[29] There are a number of reasons for this neglect of groundwater. Among them are the complex nature of aquifers, the fact that the physical and chemical processes remain essentially unseen, the existence of factual uncertainties, and a lack of data. Groundwater, being that it is water in the ground, is also sometimes perceived as falling within the ambit of the exclusive sovereignty of the territorial state. While it is obvious when a body of surface water is shared, it is, to a large extent, invisible in the case of an aquifer. Limitations of sovereignty with respect to shared surface water are undisputedly part of customary international law.[30] The same is less accepted when it comes to groundwater.[31]

2. Groundwater in the Watercourses Convention: Gaps in Scope and Normative Content

The Watercourses Convention is the most recent, comprehensive, and authoritative framework of international water law. It clarifies that at least some types of groundwater fall within the remit of international law. It suffers, however, from shortcomings, both in respect of its scope and the adequacy of its articles.

Eckstein, *supra* note 25; Stefano Burchi and Kerstin Mechlem, eds., Groundwater in International Law: Compilation of Treaties and other Legal Instruments, FAO Legislative Study No. 86 (2004); Ximena Fuentes, *The Utilization of International Groundwater in General International Law, in* Guy Goodwin-Gill and Stefan Talmon, eds., The Reality of International Law—Essays in Honour of Ian Brownlie, at 177 (1999); Gerhard Loibl, *Groundwater Resources—A Need for International Legal Regulation?* 5 Austrian Rev. Int'l and Eur. L. at 81 (2000); Stephen McCaffrey, The Non-Navigational Uses of International Watercourses (2003) at 414, Chapter 13; Ludwik A. Teclaff, *Transboundary Ground Water Pollution: Survey and Trends in Treaty Law* 19 Nat. Resources J. at 629 (1979); and Albert E. Utton, *The Development of International Groundwater Law* 22 Nat. Resources J. at 95 (1982).

[29] Teclaff points out that in some cases treaties even protect surface water at the expense of groundwater, *supra* note 28 at 640 *et seq*. His examples are the Convention entre la République Française et la Confédération Suisse pour réglementer la pêche dans les eaux frontières, Paris, 9 March 1904, U.N.L.S., Legislative Texts and Treaty Provisions Concerning the Utilization of International Rivers for Other Purposes Than Navigation, Treaty No. 196, Doc. ST/LEG/SER.B/12, UN Sales Publication No. 63.V.4 at 701; and the Convention on the Protection of the Rhine against Pollution by Chlorides, Bonn, 3 December 1976, 16 I.L.M. 265 (1977). In the Protocol Amending the 1978 Agreement between the United States of America and Canada on Great Lakes Water Quality, as Amended on October 16, 1983, 18 November 1987, TIAS 11551, groundwater is dealt with merely as a cause of pollution of surface water—hence, as a threat to surface water quality and not as a resource to be protected in its own right; see Preamble, Article VI para. 1(q) and Annex 16.

[30] The Harmon Doctrine of absolute sovereignty is generally rejected.

[31] See McCaffrey, *supra* note 28 at 417.

A. Gaps in the Scope of the Watercourses Convention

The Watercourses Convention applies to international watercourses (Article 1). A watercourse is defined as a "system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus" (Article 2(a)). It is international if parts of the watercourses are situated in different states (Article 2(b)). This definition of a watercourse contains two problematic requirements. The first requirement is a "system of surface waters and groundwaters," the second is a "unitary whole . . . normally flowing into a common terminus." They exclude some important aquifers from the scope of the Watercourses Convention. In other cases, they make it difficult to determine to what extent, and between and among which aquifer states, the Watercourses Convention applies.

i. Surface-groundwater system requirement

The requirement of a "system of surface waters and groundwaters" excludes two types of aquifers: non-recharging ones such as parts of the Nubian Sandstone Aquifer System (see discussion earlier in this article) and recharging ones that are not linked to a body of surface water. In particular, the first type—that is, non-recharging aquifers—was intentionally omitted by the ILC. While the ILC had been developing the draft articles of the Watercourses Convention for over twenty years, it included groundwater within the scope of its draft articles only in 1991.[32] Its last special rapporteur, Robert Rosenstock, had proposed to include all types of groundwater.[33] However, a majority of ILC members was of the opinion that non-recharging aquifers should be further studied[34] and that the topic was not ripe for inclusion in the draft articles.[35] Instead, the ILC adopted a resolution on what it misnamed "confined transboundary groundwaters." With this term it intended to refer—according to the preamble of the resolution—to groundwater not related to surface watercourses[36] (see discussion earlier in this article). It recommended that states "be guided by the principles contained in the draft articles on the non-navigational uses of international

[32] McCaffrey, *supra* note 28 at 417.

[33] Robert Rosenstock, Special Rapporteur, *Second Report on the Law of Non-Navigational Uses of International Watercourses*, II(1) Y.B. I.L.C. at 113 (1994).

[34] *Report of the Commission to the General Assembly on the Work of its Forty-Sixth Session*, *supra* note 15 at 90.

[35] See *Summary Records of the Meetings of the Forty-Sixth Session*, 2 May–22 July 1994, I Y.B. I.L.C. at 172 (1994).

[36] This is evident from the preamble of the resolution in which the ILC defined "confined groundwater" as "groundwater not related to an international watercourse." See also Fuentes, *supra* note 28 at 180.

watercourses, where appropriate, in regulating transboundary groundwater'' (Article 1).[37]

The second type are aquifers that are recharged solely from rain percolating through the ground and which discharge either directly into the sea or into another aquifer, or where the aquifer itself is the end point due to evaporation. One example is the Mountain Aquifer underlying Israel and the West Bank, which is recharged solely by precipitation in the highlands of the Judean mountains.[38] Another one is the Rus Aquifer, shared by Saudi Arabia and Qatar, which terminates in marine springs in the Persian Gulf.[39] It has been argued that these aquifers would qualify as ''international watercourses'' if they straddled a boundary, because the surface water element of the system requirement would be fulfilled by the fact that the aquifer is recharged from rain.[40] This interpretation seems questionable because rain is not ''surface water'' in the sense of the Watercourses Convention. The ILC used the term ''surface water'' only for bodies of surface water—a watercourse was conceived as a ''hydrologic system composed of a number of different components'' including ''rivers, lakes, aquifers, glaciers, reservoirs and canals'' and groundwater.[41] All elements of the surface water part of this definition listed by the ILC are distinct bodies of surface water, not diffuse and unchannelled waters such as rain, atmospheric moisture, or surface water run-off.

ii. ''Unitary whole'' and ''common terminus'' requirement

The second problematic requirement of the definition of a ''watercourse'' is that surface and groundwater constitute ''by virtue of their physical relationship a unitary whole and normally [flow] into a common terminus.'' The ILC was aware of the fact that these requirements in many cases do not correspond to hydrological realities, yet it decided to include them in its definition of a watercourse in order to limit the geographical scope of the draft articles.[42] As a result, there are cases in which the applicability of the Watercourses Convention is difficult to determine.

An aquifer can be hydraulically linked to two or more river basins, and an aquifer and a river can operate as distinct systems, although some hydraulic linkages may exist. While surface water generally flows into a common terminus, often the sea, aquifers may have multiple termini in adjacent

[37] *Report of the ILC to the General Assembly on Its Forty-Sixth Session*, reprinted in *supra* note 15 at 135.
[38] Eckstein and Eckstein, *supra* note 25 at 213.
[39] See <http://www.fao.org/waicent/faoinfo/agricult/agl/aglw/aquastat/countries/qatar/index.stm> (last accessed on 10 January 2004).
[40] McCaffrey, *supra* note 28 at 430.
[41] *Report of the ILC to the General Assembly on Its Forty-Sixth Session, supra* note 15 at 90.
[42] *Ibid*.

river basins.[43] As has been stated earlier, aquifer systems can differ from river systems, and surface water and groundwater basins do not necessarily overlap. For instance, the deep flow systems in the tightly folded Copper Belt dolomites straddle the Congo and Zambezi river basin divides and the co-incident international border between Zambia and the Democratic Republic of Congo. In addition, while the majority of the groundwater associated with the Danube terminates, like the watercourse, in the Black Sea, a small portion reappears as the source of the river Aach, which is a tributary of the Rhine. This phenomenon was the object of the dispute in the well-known 1927 *Donauversinkung* case of the German Staatsgerichtshof.[44]

As these examples show, surface and groundwater do not necessarily constitute one unitary whole, otherwise the two or more basins that are hydraulically linked via the aquifer would also have to be regarded as one unitary whole, which is neither foreseen under the Watercourses Convention nor appropriate. The examples illustrate also that surface and groundwater do not necessarily share a common terminus. Each river with which the aquifer is hydraulically linked has its own terminus. In such cases, it is not clear whether any rights and obligations exist under the Watercourses Convention and, if they do, between or among which states. According to the ILC, ''as a matter of common sense and practical judgement the Danube and the Rhine remain separate unitary wholes.''[45] Despite the fact that the Rhine and the Danube are hydraulically linked, they are not regarded as one single watercourse. Whether this commentary should be interpreted as excluding from the scope of the Watercourses Convention the aquifer that links the two rivers and all other aquifers with similar characteristics that do not fit the ''unitary whole'' and ''common terminus'' requirements is open to debate. Clearly, if such aquifers, or the rivers to which they are linked, are transboundary, cross-border effects can occur. Therefore, rules of international law should apply, not only between or among the states sharing the watercourse but also between or among those sharing the aquifer. Remarkably, the German Staatsgerichtshof applied principles that were generally consonant with those of modern international water law in the *Donauversinkung* case. While such an application of the law might lead to complicated and

[43] The qualifier ''normally'' to the common terminus requirements does not call for a different interpretation. It was intended to cover specific cases as the Rio Grande, the Irawaddy, the Mekong, and the Nile. While, according to the ILC, all these rivers are systems of surface and groundwaters constituting, by virtue of their physical relationship, a unitary whole, they flow into the sea in whole or in part via groundwater, a series of distributaries that may be as much as 300 kilometres removed from each other (deltas) or empty at certain times of the year into lakes and other times into the sea. *Ibid.* at 91.

[44] Staatsgerichtshof für das Deutsche Reich, Land Württemberg und Land Preußen gegen das Land Baden betreffend die Donauversinkung, Decision of 18 June 1927, Entscheidungen des Reichsgerichts in Zivilsachen, Volume 116, Appendix, at 18.

[45] *Report of the ILC to the General Assembly on Its Forty-Sixth Session, supra* note 15.

partly overlapping relationships of rights and duties, it is inevitable in order to adequately manage existing shared bodies of underground water.

The approach of the Watercourses Convention is also unsuitable in cases wherein sections of hydraulically linked surface and groundwater constitute distinct systems rather than a unitary whole. One example is the vast regional multi-termini Guaraní Aquifer, which is shared by Argentina, Brazil, Paraguay, and Uruguay and located in the Paraná and Chaco-Paraná basins that extends over 1,222,000 square kilometres. Almost 90 per cent of the aquifer is covered by a confining layer that prevents direct recharge, so it is primarily fed through rainfall infiltrating in places where the confining layer is not present.[46] There is some hydraulic relationship with the overlying river basins. Yet, the Guaraní Aquifer has a flow system largely independent of surface waters, and its management needs to be distinct from the management of the La Plata River itself[47]—a situation that is not foreseen under the Watercourses Convention.

B. Gaps in the Normative Content of the Watercourses Convention

To the extent that groundwater falls under the scope of the Watercourses Convention, it is subject to the same provisions as surface water. These provisions are geared primarily towards surface water management and have shortcomings regarding groundwater. In fact, the basic concept of the Watercourses Convention—the watercourse itself—evokes connotations of surface water and not of groundwater.

Equitable Utilization. Among the principles that the Watercourses Convention enshrines, the general principle of equitable and reasonable utilization (Article 5) is as adequate for transboundary groundwater resources as for international surface water resources. The list of factors relevant to determining what equitable and reasonable utilization means (Article 6) comprises ''geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character,'' but leaves out—tellingly—hydrogeological ones, namely those factors that deal with groundwater characteristics. While they do fall under the category ''other factors of a natural character,'' the omission reveals the emphasis on surface water. A groundwater instrument should specify factors of particular groundwater relevance, such as net recharge, hydrostatic pressure, the time in which the aquifer responds to changes, and chemical as well as geothermal properties, among others. The suggestion to equitably share an aquifer by apportioning a volume of water proportionate to the segment of the aquifer on each state's

[46] UNESCO, *supra* note 27 at 45 *et seq*.

[47] The hydraulic relationship with the Chaco-Paraná is not yet fully established because of lack of data.

territory[48] has to be rejected as too simplistic. In order to determine equitable utilization, multiple criteria need to be taken into account. In addition, the amount of accessible water does not necessarily correlate to the size of an aquifer segment.

No Significant Harm. More problematic is the adequacy of the way in which the obligation not to cause significant harm is formulated in Article 7 of the Watercourses Convention. It reflects the general rule *sic utere tuo ut alienum non laedas* (so use your own as not to harm that of another). As already outlined in this article, the consequences of degrading an aquifer are frequently more far-reaching than the impairment of the quantity or quality of surface water, in particular, because the self-purifying qualities of groundwater are, in contrast to surface water, generally very low. In addition, some of the negative effects of groundwater use on other resources, such as land subsidence due to aquifer compaction caused by lowering water tables, cannot be remedied. Consequently, it has been argued that the no-significant harm rule might need to be applied with greater stringency.[49] The standard of "significant" could be tightened to "appreciable" harm, "significant adverse effect,"[50] or another stricter term.

If a stricter standard is at all necessary, it might not be required for all cases of potential harm. Some types of harm resemble those caused by surface water use. Shallow wells may have been in use for centuries. If modern deep drilling technology allows for the exploitation of an aquifer in a previously unused part, these wells might dry up or cost more to pump. For such a conflict between historic and modern uses, which was discussed extensively during the drafting of the Watercourses Convention, the threshold of "significant" is adequate. It is rather in cases of grave and irreversible effects that a different standard of diligence or harm could be contemplated. However, in these cases, the threshold of significant harm will easily be crossed, particularly if the time factor is given due attention in assessing whether harm is significant or not. There is a need to clarify and spell out what constitutes significant harm, for instance, in an exemplary non-comprehensive list, but not necessarily to develop a new standard. It should also be noted that the significant harm threshold is a standard that is not only used in international water law for drawing the line between what a state is and is not allowed to do.[51]

[48] Julio Barberis, *The Development of International Law of Transboundary Groundwater*, 31 Nat. Resources J. at 167, 177 *et seq*. (1991).

[49] McCaffrey, *supra* note 28 at 430.

[50] This term is used in Article 12 of the Watercourses Convention and implies a stricter standard than significant harm. *Report of the ILC to the General Assembly on Its Forty-Sixth Session, supra* note 37 at 111.

[51] The same standard was used by the ILC in its draft articles on the Prevention of Transboundary Harm from Hazardous Activities adopted by the ILC at its fifty-third session in 2001, *Report of the ILC to the General Assembly*, Official Records of the General Assembly, 56th Session, Supplement No. 10, UN Doc. A/56/10, chap. V.E.1 and in its work on international

The no-significant harm obligation must be reconciled with the principle of equitable utilization. The "package" of Articles 5 to 7 of the Watercourses Convention deals with this issue. It is convoluted and unclear on how the principles relate to each other and which one takes precedence, although there are some indications that equitable utilization prevails.[52] This problem should be reconsidered with respect to groundwater management since much of the harm that is inflicted upon aquifers or by their use is irreversible. The overall focus of the Watercourses Convention is on the uses of waters rather than on their protection—although the latter is mentioned in Article 5, paragraph 1. Protection and preservation are relegated to Articles 20 to 23. Given the current development of aquifer degradation as well as the need to enable long-term utilization, protection should play a more prominent role. In cases of pollution, the no-significant harm rule of Article 7 needs to be read conjunctively with Article 21. According to Article 21, paragraph 2, "[w]atercourse States shall . . . 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." Unlike Article 7, Article 21 is not qualified by the principle of equitable and reasonable utilization (Article 5).[53] Hence, if a state does not exercise due diligence[54] to prevent, reduce, and control pollution, it violates its obligations under the Watercourses Convention if its action causes significant harm to another watercourse state.

Finally, the scope of Article 7 of the Watercourses Convention is too limited to prevent important types of harm to aquifers. Article 7 only deals with the utilization of an international watercourse and the harm to another watercourse state that results from such utilization. In the case of aquifers, harm is not only caused by the utilization of the aquifer itself but also by the use of other resources such as land or hydraulically linked surface water.[55] For example, agricultural or industrial land use leading to non-point and

liability for injurious consequences arising out of acts not prohibited by international law (International liability in case of loss from transboundary harm arising out of hazardous activities), see Pemmaraju Sreenivasa Rao, Special Rapporteur, *Second Report on the Legal Regime for the Allocation of Loss in Case of Transboundary Harm Arising out of Hazardous Activities*, UN Doc. A/CN.4/540 of 15 March 2004.

[52] Stephen McCaffrey, *International Water Law for the 21st Century: The Contribution of the UN Convention* 118 Water Resources Update at 11, 13 (2001).

[53] McCaffrey, *supra* note 28 at 431.

[54] Articles 21–3 are obligations of due diligence according to a statement of understanding accompanying the Watercourses Convention, Convention on the Law of the Non-Navigational Uses of International Watercourses: *Report of the Sixth Committee Convening as the Working Group of the Whole*, UN Doc. A/51/869 of 11 April 1997, para. 8.

[55] While land use also has an impact on surface water quality, the problem is of greater magnitude regarding groundwater. Different views exist on whether the Watercourses Convention applies to land areas adjacent to watercourses, and there are strong indications that it is not

point source pollution in a recharge zone is likely to cause pollution of an aquifer. Leaking tanks of a petrol station are clearly not "the utilization of a watercourse," yet they can render the waters of an aquifer permanently unfit for most uses. Diversion or abstraction of water from a river recharging an aquifer (an influent river) can cause a lowering of the water table. A new provision similar to Article 7 should therefore not only prohibit the causing of significant harm to another watercourse state in utilizing an international watercourse, or rather aquifer, but also the causing of significant harm to a transboundary aquifer by other activities.

Exchange of Data. Article 9 deals with the duty to exchange on a regular basis readily available data and information on the condition of the watercourse. This procedural obligation has the function to enable compliance with the equitable utilization and no-significant harm rules. Only where sufficient information is exchanged can it be assessed, whether an existing or planned use is equitable or whether significant harm is inflicted upon another state. The assumption behind Article 9 is that, in principle, sufficient data is available in order to make this obligation meaningful. Groundwater management, however, is faced with the difficulty that in most countries availability of data on both groundwater quantity and quality is significantly less than that for surface water.[56] Geological heterogeneity and meteorological variety both contribute to a relatively high degree of uncertainty in the estimation of key parameters to characterize aquifer systems. This uncertainty usually results in substantial error bands in the prediction of the impact of given scenarios of groundwater abstraction and contaminant loading.[57] Hence, what Article 9 achieves for surface water, it will, in many cases, fail to achieve for groundwater. Therefore, a new obligation is necessary to the effect that, in light of the uncertainty about the nature and extent of some aquifer systems, states shall employ their best efforts to collect and generate, ideally in accordance with best available practice, new data and information to define an aquifer more completely. In addition, geological and hydrochemical factors could be added to the factors of a "hydrological, meteorological, hydrogeological and ecological nature and related to the water quality as well as related forecasts" (Article 9).

Different Kinds of Uses. Article 10, which deals with the relationship between different kinds of uses, is as relevant for groundwater as for surface waters. In the development of an instrument for groundwater, it could, however, be reconsidered if certain uses, such as the fulfilment of vital

the case. See André Nollkaemper, *The Contribution of the International Law Commission to International Water Law: Does It Reverse the Flight from Substance?* 27 Netherlands Y.B. Int'l L. at 39, 63 (1996), but also McCaffrey, *supra* note 28 at 256 (who argues in favour of this assumption).

[56] See Biswas, *supra* note 24 at 8.

[57] Foster, *supra* note 10 at 20.

human needs and environmental requirements should not enjoy inherent priority over other demands, such as those of industry.[58]

Planned Measures. Article 11 is the introductory article to Part III on 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. It suffers from a similar limitation regarding scope as Article 7. The utilization of an aquifer affects, in many instances, the condition not only of the aquifer but also of other resources. Land subsidence and soil salinization due to aquifer drawdowns are cases in point. Mexico City has, for instance, a land-subsidence rate of up to 0.4 metres per year.[59] According to Article 11, a state would have to exchange information on the effect of a drawdown on the condition of the aquifer, but not on the land overlying it, as land is not part of a watercourse.

Joint Mechanisms. The establishment of joint mechanisms for the watercourse is addressed in Article 8 paragraph 2, in the context of cooperation and in Article 24 concerning management. Joint mechanisms and commissions have proved to be of great practical value in facing day-to-day challenges of managing an international watercourse. For aquifers, their potential has until now not yet been fully developed (but see discussion on this subject later in this article).

C. Assessment

One achievement of the Watercourses Convention was that it clarified that groundwater resources were subject to the principles of international water law, such as the doctrine of equitable and reasonable utilization, the duty not to cause significant harm, and the duty to cooperate. However, unfortunately, there are groundwater-relevant gaps in scope and normative content. The focus of the Watercourses Convention is disproportionately on surface water management. Some important types of aquifers fall outside its scope. Its application to aquifers that are linked with several surface water basins is unclear. The substance of its provisions is not fully adequate to deal with groundwater. None of the provisions address issues that only or particularly occur in connection with aquifer use, such as the specific vulnerability of aquifers and the need for their protection; the risk of harm caused to the aquifer by activities other than the use of the groundwater; or the exchange of information on the effects of aquifer-related measures on other resources, such as land. Finally, the Watercourses Convention does not enshrine, or

[58] For a criticism of the lack of the Watercourses Convention to prioritize, see Nollkaemper, *supra* note 55 at 39, 60 *et seq*.

[59] Morris et al., *supra* note 23 at 19.

only weakly recognizes, a number of principles of environmental law that are increasingly applied to water in contemporary treaty and non-treaty law, such as the principle of sustainable use[60] or the precautionary principle, to name only some of particular relevance for groundwater use and protection.[61]

3. Groundwater in Bilateral and Multilateral Treaties

Bilateral and multilateral agreements have only in exceptional cases been concluded exclusively for aquifers.[62] One exception is the 1977 Arrangement relatif à la protection, à l'utilisation et à la réalimentation de la nappe souterraine franco-suisse du Genevois (Agreement on the Protection, Utilization and Recharge of the Franco-Swiss Genevese Aquifer—Genevese Aquifer Agreement), which deals with groundwater quality, quantity, abstraction, and recharge.[63] Among regional agreements that deal with surface and groundwaters is the 1992 [United Nations Economic Commission for Europe (UN ECE)] Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki Convention).[64] Its objective is to protect transboundary waters and to reduce transboundary impact. Transboundary waters "means any surface or ground waters which mark, cross or are located on boundaries between two or more States."[65] Transboundary impact is defined as "any significant adverse effect on the environment resulting from a change in the conditions of transboundary waters caused by a human activity. . . . Such effects on the environment include effects on human health and safety, flora, fauna, soil, air, water, climate, landscape and

[60] According to Article 5 of the Watercourses Convention, "watercourse States shall utilize an international watercourse in an equitable and reasonable manner. In particular, [it] shall be used and developed . . . with a view to attaining optimal and sustainable utilization thereof and benefits therefrom. . . ." Hence sustainability is not a principle, but only an objective to be attained within the framework of equitable utilization.

[61] Downstream states and some particularly environmentally minded states had advocated the inclusion of these principles in the Watercourses Convention. See Malgosia Fitzmaurice, *General Principles Governing the Cooperation between States in Relation to International Watercourses*, in this volume of the Yearbook of International Environmental Law. According to Tanzi, the reference to sustainability in Article 5 of the Watercourses Convention is "involute" and only "mild," but brings the convention in line with general international environmental law. Attila Tanzi, *The UN Convention on International Watercourses as a Framework for the Avoidance and Settlement of Waterlaw Disputes* 11 Leiden J. Int'l L. at 441, 456 (1998).

[62] A collection of older treaties dealing with groundwater is contained in Ludwik A. Teclaff and Albert E. Utton, eds., International Groundwater Law (1981). Newer treaties and nonbinding instruments can be found in Burchi and Mechlem, *supra* note 28.

[63] Arrangement relatif à la protection, à l'utilisation et à la réalimentation de la nappe souterraine franco-suisse du Genevois, Geneva, 9 June 1977, Le Conseil d'Etat de la République et Canton de Genève—Préfet de Haute-Savoie, reprinted in Teclaff and Utton, *supra* note 62 at 464 [hereinafter Genevese aquifer agreement].

[64] [United Nations Economic Commission for Europe] Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 31 I.L.M. 1312 (1992) [hereinafter Helsinki Convention].

[65] *Ibid.*, Article 1, para. 1.

historical monuments or other physical structures or the interaction among these factors."[66] By virtue of these wide definitions, the Helsinki Convention does not suffer from many of the limitations of the Watercourses Convention. All transboundary groundwaters fall within its scope, and its transboundary impact provisions are more encompassing than the no-significant harm obligation of the Watercourses Convention. In addition, it incorporates and applies to water some of the fundamental principles of contemporary environmental law such as the precautionary principle, the polluter-pays principle, and the principle of sustainable development (Article 2 paragraph 5(a), (b), and (c)). It thereby demonstrates that the protection of transboundary waters is part and parcel of international environmental law.[67] As accession to the Helsinki Convention is likely to become open to non-member states of the UN ECE, its relevance might further increase.[68]

The 2000 SADC Protocol[69] is largely modelled upon the Watercourses Convention and, therefore, shares its limitations. The revised 2003 African Convention on the Conservation of Nature and Natural Resources (African Convention)[70] aims to enhance environmental protection and to foster the conservation and sustainable use of natural resources, among them surface and underground water (Articles II and VII).[71] For the Member States of the European Community (EC), the EC Directive 2000/60 Establishing a Framework for Community Action in the Field of Water Policy (Water Framework Directive)[72] provides for a detailed and ambitious regime of quantity and quality control for surface and groundwater, including specific and timed steps to be taken. A proposal for a daughter directive on the protection of groundwater against pollution, which will together with the Water Framework Directive eventually replace the current groundwater directive,[73] was submitted in September 2003.[74] The purpose of the daughter

[66] *Ibid*., Article 1, para. 2.

[67] Fitzmaurice, *supra* note 61.

[68] See, Meeting of the Parties to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Amendment to Articles 25 and 26 of the Convention, Annex, Decision III/1, para. 1(a), UN Doc. ECE/MP.WAT/14 of 12 January 2004.

[69] SADC Protocol, *supra* note 5.

[70] African Convention on the Conservation of Nature and Natural Resources, Maputo, 11 July 2003, available at <http://www.africa-union.org/Official_documents/Treaties_% 20Conventions_% 20Protocols/nature% 20and%20natural%20recesource.pdf> (last accessed 10 June 2004) [hereinafter African Convention]. Its predecessor is the African Convention on the Conservation of Nature and Natural Resources, Algiers, 15 September 1968, 1001 U.N.T.S. 3.

[71] "Underground water" normally comprises both water in the saturated (groundwater) and in the unsaturated zone.

[72] Water Framework Directive, *supra* note 1.

[73] EEC Directive 80/68 of 15 July 1980 on the Protection of Groundwater against Pollution Caused by Certain Dangerous Substances, OJ L. 20, 30 August 1980, 43 [hereinafter Groundwater Directive].

[74] *Proposal for a Directive of the European Parliament and of the Council on the Protection of Groundwater against Pollution*, 19 September 2003, Doc. COM (2003) 550 final [hereinafter Proposal on the Protection of Groundwater against Pollution].

directive is to establish specific measures to prevent and control groundwater pollution.

Bilateral treaties that specifically address groundwater among other subject matters include, *inter alia*, the 1973 Agreement on a Permanent and Definitive Solution to the Salinity of the Colorado River (known as Minute No. 242),[75] which limits groundwater pumping by both Mexico and the United States close to the Arizona–Sonora boundary near San Luis; the 1994 Treaty of Peace between the State of Israel and the Hashemite Kingdom of Jordan (Israel–Jordan Peace Treaty);[76] and the 1995 Israeli–Palestinian Interim Agreement on the West Bank and the Gaza Strip (Israeli–Palestinian Interim Agreement).[77]

The scope of more and more basin or watercourse specific treaties encompasses surface and groundwater either explicitly, or arguably implicitly, by covering the water resources of a particular basin.[78] Treaties are generally based upon the areal limits of surface water management, primarily the river basin. The substantive provisions often reflect only negligible concern with groundwater or none at all. For example, in the Agreement on the

[75] International Boundary and Water Commission United States and Mexico, Minute No. 242 of 30 August 1973, Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River, 12 I.L.M. 1105 (1973) [hereinafter Minute No. 242].

[76] Treaty of Peace between the State of Israel and the Hashemite Kingdom of Jordan, Arava/Araba Crossing Point, 26 October 1994, 34 I.L.M. 43 (1995), Article 6 and 18 and Annexes II and IV [hereinafter Israel–Jordan Treaty of Peace].

[77] Israeli–Palestinian Interim Agreement on the West Bank and the Gaza Strip, Washington, DC, 28 September 1995, 36 I.L.M. 551 (1997), Annex III, Protocol Concerning Civil Affairs, Article 40, Principle 3(a) and (c) [hereinafter Israeli–Palestinian Interim Agreement].

[78] See, *inter alia*, the Convention and Statutes Relating to the Development of the Chad Basin, Fort Lamy, 22 May 1964, reprinted in FAO, Treaties Concerning the Non-Navigational Uses of International Watercourses—Africa, Legislative Study No. 61, at 10 (1997); the Agreement between the Federal Republic of Nigeria and the Republic of Niger Concerning the Equitable Sharing in the Development, Conservation and Use of Their Common Water Resources, Maiduguri, 18 July 1990, reprinted in FAO, Treaties Concerning the Non-Navigational Uses of International Watercourses—Africa, Legislative Study No. 61 at 219 (1997); the Convention on Cooperation for the Protection and Sustainable Use of the Danube River, Sofia, 29 June 1994, O.J. L. 342, 12 December 1997, at 19 [hereinafter Danube Convention]; the Agreement on Cooperation for the Protection and Sustainable Use of the Waters of the Spanish–Portuguese Hydrographic Basins, Albufeira, 30 November 1998, 2099 U.N.T.S. 275 (English translation at 347) [hereinafter Luso-Spanish Cooperation Agreement]; the Protocol for the Sustainable Development of Lake Victoria Basin, Arusha, 29 November 2003 (on file with the author); and the Convention on the Sustainable Management of Lake Tanganyika, Dar es Salaam, 12 June 2003 (on file with author).

Not all modern treaties comprise groundwater. Treaties for specific projects typically do not deal with groundwater as well as some river treaties such as the ones for the Meuse and the Scheld (Agreement on the Protection of the River Meuse, Charleville Mezieres, 26 April 1994, 34 I.L.M. 854 (1995); the Agreement on the Protection of the River Scheldt, Charleville Mezieres, 26 April 1994, 34 I.L.M. 859 (1995); or the Agreement on Cooperation in the Use and Protection of Transboundary Rivers Concluded between Khazachstan and China, Astana, 12 September 2001 (on file with author). For some basin treaties, it can be difficult to determine whether groundwater is comprised or not, if the terms ''waters of the basins'' or ''basin'' are not defined.

Cooperation for the Sustainable Development of the Mekong River Basin,[79] the "parties agree to cooperate in all fields of sustainable development, utilization, management and conservation of the water and related resources of the Mekong River Basin"[80] and "to protect the environment, natural resources, aquatic life and conditions, and ecological balance of the Mekong River Basin from pollution and other harmful effects resulting from any development plans and uses of water and related resources in the Basin."[81] Groundwater is, however, neither mentioned explicitly in the agreement nor dealt with by the Mekong River Commission. Tendencies to pay more attention to groundwater will be discussed later in this article. It is noteworthy that in some federal jurisdictions such as Australia[82] and the United States[83] interstate compacts can also provide valuable insights into legal rules for transboundary aquifer management.

4. Non-Binding Instruments

A number of non-binding legal instruments address groundwater with more specific and detailed provisions than treaty law. Already the 1977 Mar del Plata Action Plan[84] lists various recommendations for groundwater management. It focuses primarily on the utilization of aquifers and on increasing aquifer-related knowledge.[85] Fifteen years later, in 1992, in the Dublin Statement on Water and Sustainable Development of the International Conference on Water and the Environment (Dublin Statement),[86] and in

[79] Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, Chiang Rai, 5 April 1995, 34 I.L.M. 864 (1995).

[80] *Ibid.*, Article 1.

[81] *Ibid.*, Article 3.

[82] See, for instance, the Border Groundwaters Agreement, State of South Australia—State of Victoria, 15 October 1985, available at <http://www.parliament.sa.gov.au/Catalog/legislation/Acts/G/1985.104.htm> (last accessed 10 June 2004) or the Murray Darling Basin Agreement, 24 June 1992, available at <http://www.mdbc.gov.au/about/governance/_pdf_word/MDB Agreement.pdf> (last accessed 10 June 2004).

[83] See, for instance, the Interagency Agreement in the Matter of the Coordinated Management of the Pullman-Moscow Ground Water Aquifer, 20 April 1992.

[84] Mar del Plata Action Plan, *Report of the United Nations Water Conference*, Mar del Plata, 14–25 March 1977, UN Doc. E/CONF.70/29.

[85] It mentions the studying and analysis of data on groundwater for planning purposes (3(o)); assistance for recording quantitative as well as qualitative characteristics of groundwater resources (4(b)); groundwater databanks (4(b)(ii)); the utilization of groundwater aquifers in the form of collective and integrated systems, to exploit groundwater aquifers to their physical limits and to protect springs and groundwater from overdraught and salinity, as well as to ensure proper sharing of the resources (10(a)); exploring the potential of groundwater basins, the use of aquifers as storage and distribution systems, and the conjunctive use of surface and subsurface resources to maximize efficacy and efficiency (10(b)); and supporting research on low-cost groundwater pumping equipment.

[86] Dublin Statement on Water and Sustainable Development, International Conference on Water and the Environment: Development Issues for the Twenty-First Century, available at <http://www.wmo.ch/web/homs/documents/english/icwedece.html> (last accessed 10 June 2004) [hereinafter Dublin Statement].

Chapter 18 of Agenda 21 adopted at the United Nations Conference on Environment and Development,[87] in response to increasing water problems, the focus was no longer on utilization but rather on sustainable use, integrated water resources management, and the protection of water resources and ecosystems.[88] The Conference of the Contracting Parties to the Convention on Wetlands of International Importance Especially as Waterfowl Habitat[89] adopted in Resolution VIII.40 Guidelines for Rendering the Use of Groundwater Compatible with the Conservation of Wetlands.[90]

At the regional level, the UN ECE adopted a Charter on Groundwater Management (Groundwater Management Charter), which deals with groundwater policies; strategies; allocation; legislation; economic measures; exploration, abstraction, recharge, and pollution control permits; wells and boreholes; monitoring and control; impact assessment, inventories, planning, and forecasting; land-use policies; protection zones; pollution from agriculture, urban, and industrial sources; control of mining activities; heat pumps; research; education and information; and international cooperation.[91] The UN ECE also developed detailed Groundwater Monitoring Guidelines.[92] The United Nations Economic and Social Commission for Western Asia (ESCWA) is currently developing guidelines on groundwater management. They are intended to cover what is perceived to be exclusively national groundwater without touching on transboundary issues.[93]

One of the most important instruments with respect to non-recharging as well as recharging groundwater is the so-called Seoul Rules, which were adopted by the International Law Association (ILA) in 1986.[94] These rules render the earlier 1966 Helsinki Rules of the ILA,[95] which were a precursor of the Watercourses Convention, applicable to aquifers unconnected to the surface waters of international drainage basins. Since the Seoul Rules, the

[87] Agenda 21, *Report of the United Nations Conference on Environment and Development*, UN Doc. A/CONF.151/26/Rev.1, Volume 1, Annex II.

[88] See Principle 1 of the Dublin Statement and Agenda 21 Chapters 18.1–18.6, 18.12, 18.23, 18.24, 18.26, 18.27, 18.35, 18.37–18.40, 18.76, and 18.85 among others.

[89] Convention on Wetlands of International Importance, Especially as Waterfowl Habitat, Ramsar, 2 February 1971, available at <http://www.ramsar.org/key_conv_e.htm> (last accessed 10 June 2004).

[90] Resolution VIII.40 Guidelines for Rendering the Use of Groundwater Compatible with the Conservation of Wetlands adopted at the 8th Meeting of the Conference of the Contracting Parties, 18–26 November 2002, accessible at <http://www.ramsar.org/key_res_viii_40_e.pdf> (last accessed 10 June 2004).

[91] Charter on Groundwater Management, adopted by the UN ECE at its forty-fourth session (1989) by Decision E (44), UN Doc. E/ECE/1197 ECE/ENVWA/12 [hereinafter Groundwater Management Charter].

[92] UN ECE Task Force on Monitoring and Assessment, Guidelines on Monitoring and Assessment of Transboundary Groundwaters (2000).

[93] Only an outline is available in English up to now (on file with author).

[94] Seoul Rules, reprinted in ILA, Report of the Sixty-Second Conference Held at Seoul, at 251 (1987).

[95] Helsinki Rules, reprinted in ILA, Report of the Fifty-Second Conference Held at Helsinki, at 484 (1967).

Helsinki Rules apply to all groundwaters intersected by a boundary between two or more states "whether or not the aquifer and its waters form with surface waters part of a hydraulic system flowing into a common terminus."[96] An aquifer that "does not contribute water to, or receive water from, surface waters of an international drainage basin constitutes an international drainage basin for the purposes of the Helsinki Rules."[97] Hence, the Seoul Rules dispensed with the requirements that limited the scope of the Helsinki Rules in a manner similar to those of Article 2 of the Watercourses Convention and made them applicable to all cases left out by the latter. In addition, the Seoul Rules contain provisions dealing with pollution; consultation, information, and data exchange; cooperation; and integrated management. Thereby, the ILA recognized that the particularities of groundwater require special rules.[98]

An attempt by a multidisciplinary group of independent scholars to devise rules for transboundary aquifers is the Bellagio "Draft Agreement Concerning the Use of Transboundary Groundwaters."[99] One of the core suggestions of the Bellagio draft is the establishment of a commission charged with joint management, including abstraction and allocation questions and the protection of the shared resource. The draft contains detailed provisions on the functions of the commission, exploration and development of the resource, databases, water quality protection, conservation areas, management plans, planned depletion, transboundary transfer of waters, planning for draught and the accommodation of differences, and the resolution of conflicts. It was a pioneering effort that could still inspire aquifer agreements, especially if the provisions of the Bellagio draft were complemented by environmental provisions on sustainable use, preventive action, environmental impact assessments, and others. Until now, no groundwater treaty has been modelled upon the draft, which, among other reasons, may be due to the fact that it is clearly tailored to the US–Mexico border situation.

IV. TOWARDS CLOSING THE GAPS

1. Tendencies at the Bilateral and Multilateral Level

Despite the relatively rare appearances of groundwater in international law, there are some emerging tendencies to address groundwater-specific challenges and problems, some of which shall be discussed in this article.[100]

[96] Seoul Rules, *supra* note 94, Article 1. [97] *Ibid.*, Article 2, para. 2.

[98] After finalization of this paper the ILA adopted its new "Berlin Rules on Water Resources" in August 2004, which contain a separate chapter on groundwater. ILA, Report of the Seventy-First Conference Held in Berlin (forthcoming, 2005).

[99] "Draft Agreement Concerning the Use of Transboundary Groundwaters"; reprinted and commented in Robert D. Hayton and Albert E. Utton, *Transboundary Groundwaters: The Bellagio Draft Treaty* 29 Nat. Resources J. at 663 (1989).

[100] Due to limitations of space only provisions that deal specifically with groundwater will be mentioned as evidence of emerging state practice. The same and more trends could be distilled

A. Managing Aquifers

Surface and groundwater basins do not necessarily have the same boundaries. A groundwater basin underlying a surface water basin can be of a different extension and shared by other states than the topographically determined surface water basin. In order to address problems of excessive abstraction and pollution, it may be necessary to manage aquifers, particularly large regional ones, as units in their own right—not just as adjuncts to surface water—and to create institutional mechanisms for their management. In international law, there are developments in this direction. According to the UN ECE Protocol on Water and Health, states "shall develop water-management plans in transboundary, national and/or local contexts, preferably on the basis of catchment areas or groundwater aquifers."[101] Article VI(2) of the UN ECE Groundwater Management Charter states that "the territorial competence of [water authorities or co-coordinating bodies] with respect to groundwater management should not necessarily be limited to . . . catchment areas, but should allow for encompassing, as appropriate, management of aquifers in their entirety." The 1992 Dublin Statement commends "effective management [that] links land and water uses across the whole of a catchment *or groundwater aquifer*."[102] Agenda 21 contains an objective to "have all countries establish the institutional arrangements to ensure the efficient collection . . . of information . . . at the level of catchments and *groundwater aquifers* in an integrated manner."[103]

For a small number of aquifers, such an approach has begun to become reality. One early and exceptional example is the management of the Genevese Aquifer, which is regulated by the 1977 Genevese Aquifer Agreement,[104] which established a joint commission for the administration of the shared aquifer. For the Nubian Sandstone Aquifer System, a joint authority was established for the study and development of the aquifer system in the early 1990s.[105] Among other matters, the authority is responsible for collect-

from an analysis of legal instruments covering indistinctively surface and groundwater or water resources in general.

[101] UN ECE Protocol on Water and Health, *supra* note 1, Article 6, para. 5(b).

[102] Dublin Statement, *supra* note 86, Principle No. 1 [emphasis added].

[103] Agenda 21, *supra* note 87, Chapter 18.24(d) [emphasis added]. See also the 2003 African Convention, *supra* note 70, Article VII, para. 3, that contains a duty for states, "if need arises, to set up inter-state commissions for the rational management and equitable utilization and to resolve disputes arising from the use of [transboundary surface or underground water] resources, and for the cooperative development, management and conservation thereof."

[104] Genevese aquifer agreement, *supra* note 63.

[105] It was established first by Egypt and Libya. Sudan and Chad became members of the authority subsequently. An unofficial English translation of the Arabic original of the treaty is on file with the author. In 2000, two concise technical agreements were concluded: one on monitoring and exchange of groundwater information, the other on monitoring and data sharing, both were adopted in Tripoli on 5 October 2000 (on file with author).

ing and updating data, conducting studies, formulating plans and programs for water resources development and utilization, implementing common groundwater management policies, training technical personnel, rationing the aquifer waters, and studying the environmental aspects of water resources development.[106] Cooperation efforts are also ongoing with respect to the North-Western Sahara Aquifer System (SASS). At the end of 2002, Algeria, Libya, and Tunisia agreed to institutionalize cooperation in the management and development of the water resources in the form of a small secretariat attached to the inter-governmental Observatoire du Sahara et du Sahel. The secretariat will ensure continuity of cooperation in hydrogeological data collection and aquifer modelling in aid of domestic planning and decision-making by the concerned countries.[107] For the Guaraní Aquifer, which is shared by Argentina, Brazil, Paraguay, and Uruguay, an institutional framework for management and preservation is being developed as part of a GEF-financed project.[108] For the Iullemeden Aquifer System, overlain by Mali, Niger, and Nigeria, an FAO technical cooperation project has the objective to facilitate the establishment of a legal mechanism for tripartite consultation in the management of the shared aquifer system in order to complement a larger GEF-financed project with the aim of managing hydrogeological risk.

These are encouraging tendencies that show that an aquifer system is increasingly seen as a unit that requires holistic management. States are more and more willing to recognize the shared nature of transboundary aquifers and to draw consequences in the form of institutionalized cooperation. Joint institutions have proven to play an important role in surface water management as demonstrated by the countless joint river or basin bodies and commissions. It goes without saying that where aquifers are hydraulically linked to surface water bodies, it is necessary to integrate the management of the two resources and to find suitable institutional arrangements that either bestow responsibility for both resources on one joint authority or that coordinate the responsibilities and tasks of separate bodies.

B. Integrated Water Resources Management

Integrated water resources management can be defined as ''a process, which promotes the co-ordinated development and management of water, land and

[106] Stefano Burchi, Marcella Nanni, and Kerstin Mechlem, *Sustainable Utilization of Groundwater Resources: Legal and Institutional Aspects, in* UNESCO, ed., Non-Renewable Groundwater Resources—A Guidebook on Utilisation for Water Resource Policy-Makers (forthcoming 2004).

[107] On file with author.

[108] See the project's website at <http://www.sg-guarani.org/> (in Spanish, last accessed on 29 January 2004).

related resources, in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems."[109] It implies that surface and groundwater are used conjunctively (this dimension is often called "conjunctive use") and that water quality and quantity management are integrated. This principle is of key importance for the management and preservation of groundwater. Groundwater and surface water are interrelated elements of the same hydrological cycle. The management of other resources, particularly of land, impacts on groundwater quality and quantity, and, conversely, the management of groundwater affects other resources. The lowering of the water table might lead, for instance, to the drying up of a wetland. A polluted coastal aquifer can cause land-based pollution of marine waters. Surface water can pollute groundwater and vice versa.

More and more treaties and international instruments mention integrated water resources management explicitly or implicitly and often specify that this principle comprises the integration of surface and groundwater management. According to the UN ECE Protocol on Water and Health, "[w]ater resources should, as far as possible, be managed in an integrated manner on the basis of catchment areas. Such an integrated approach should apply across the whole of a catchment area, whether transboundary or not, . . . the whole of a groundwater aquifer or the relevant parts of such a catchment area or groundwater aquifer."[110] The parties to the African Convention shall take appropriate measures with due regard to the integrated management of water resources;[111] Articles 2(e) and 6 of the Framework Convention on the Protection and Sustainable Development of the Carpathians (Carpathian Convention) contain obligations of sustainable and integrated water/river basin management;[112] and in the 2002 Framework Agreement on the Sava River Basin, the parties agreed "to cooperate on management of the waters of the Sava River Basin in a sustainable manner, which includes integrated management of surface and ground water resources."[113] Integrated water resources management is also foreseen in Articles III and XVII of the UN ECE Groundwater Management Charter, Principle 1 of the Dublin

[109] Global Water Partnership Technical Advisory Committee [hereinafter TAC], Integrated Water Resources Management, TAC Background Papers No. 4, Stockholm, 2000, at 22.

[110] UN ECE Protocol on Water and Health, *supra* note 1, Article 5(j).

[111] African Convention, *supra* note 70, Article VII, para. 2(b)).

[112] Framework Convention on the Protection and Sustainable Development of the Carpathians, available at <http://www.unep.ch/roe/assets/programme_activities/environmental_law/04_emi/documents/final_carpathian_convention.pdf> (last accessed 20 April 2004) [hereinafter Carpathian Convention].

[113] Framework Agreement on the Sava River Basin, Bosnia and Herzegovina, Republic of Croatia, Republic of Slovenia and Federal Republic of Yugoslavia, Kranjska Gora, 3 December 2002, available at <http://www.unece.org/env/water/text/Sava-agreement.pdf> (last accessed 20 April 2004), Article 11.

Statement, Agenda 21,[114] and the Johannesburg Plan of Implementation of the World Summit on Sustainable Development.[115]

Integrated water resources management is an ambitious goal. In practice, its implementation causes great difficulties as it typically cuts across the mandates and powers of several institutions and exceeds the management and institutional capacities of developing countries, in particular.[116] Nevertheless, it is in keeping with the hydrological cycle and obliges parties and joint bodies to manage all waters and related resources of basins in a holistic way.

C. Sustainable Use

i. Limiting drawdowns[117]

Aquifers often store vast amounts of water—depletion is typically not the main concern. It is not sheer quantity as such, but the quantity that is economically, physically, and technologically recoverable both now and in the future, that counts. This quantity can be but a fraction of the overall volume and is largely a function of the level of groundwater. Water level decline affects the economics of abstraction, can cause salinization and other water quality decline, and can have negative effects on the sustainability of dependent uses typically long before the resource base itself is threatened with physical exhaustion. Wetlands and stream flows may dry up even when the total amount of water stored in a basin remains huge.[118] In order to utilize an aquifer in an equitable and sustainable manner, not only the quantity of the water but also the pressure and the overall benefits of the aquifer count. In cases in which abstraction exceeds recharge, one question to be addressed is over what time periods the resource balance should be evaluated, especially in the more arid climates where major recharge can occur as infrequently as once in a decade or once in a century.[119]

Allocation, abstraction, and sustainable use have been dealt with in state treaty practice. The 1964 Agreement between the Government of the Polish

[114] See, *inter alia*, Agenda 21, *supra* note 87, Chapters 18.3 and 18.76(c)(iii) (the latter being on conjunctive use).

[115] Johannesburg Plan of Implementation, in *Report of the World Summit on Sustainable Development*, Johannesburg, 26 August–2 September 2002, UN Doc. A/CONF.199/20, para. 26(a) [hereinafter JPOI].

[116] For examples, see Shammy Puri, *Issues in Developing Co-operation or the Sustainable Management of Transboundary Aquifers, in* Janos Bogardi and Saskia Castelein, eds., Selected Papers of the International Conference from Conflict to Cooperation in International Water Resources Management: Challenges and Opportunities, UNESCO-IHE Delft, the Netherlands, 20–22 November 2002, UNESCO-IHP (2004), at 37.

[117] The discussion of other uses than water abstraction is beyond the scope of this article.

[118] Burke et al., *supra* note 9 at 39. On the other hand, some reduction may also be desired, since it often improves land drainage and maximizes groundwater recharge rates by reducing "rejected" recharge.

[119] *Ibid.* at 23.

People's Republic and the Government of the Union of Soviet Socialist Republics Concerning the Use of Water Resources in Frontier Waters refers to the protection of frontier groundwaters against depletion and pollution.[120] Minute No. 242 limits groundwater pumping within five miles of the US–Mexican boundary to a certain quantity.[121] The Genevese aquifer agreement aims at ensuring the protection of the waters in the aquifer, foresees yearly aquifer utilization programs, and limits abstraction.[122] The 1994 Israel–Jordan Peace Treaty foresees that "Israel shall retain the use of [the Groundwater in Emek Ha'arave/Wadi Araba] in the quantity and quality detailed" and that neither Israel nor Jordan "shall take . . . any measure that may appreciably reduce the yields of quality of [these] wells and systems."[123] The possibility of increasing the abstraction rate is limited.[124] In Article 40 of Annex III of the 1995 Israeli–Palestinian Interim Agreement, the parties agreed to "[maintain] existing quantities of utilization from the [water] resources, taking into consideration the quantities of additional water for the Palestinians from the Eastern Aquifer . . . as detailed in this article" and to "us[e] the water resources in a manner which will ensure sustainable use in the future, in quantity and quality."[125] Groundwater abstraction exceeding certain limits must be notified under the Tripartite Interim Agreement between the Republic of Mozambique and the Republic of South Africa and the Kingdom of Swaziland for Co-operation on the Protection and Sustainable Utilisation of the Water Resources of the Incomati and Maputo Watercourses.[126] In such cases, the UN ECE Convention on Environmental Impact Assessment in a Transboundary Context requires an environmental impact assessment.[127] In soft law, the UN ECE Groundwater Management Charter, among other instruments, calls on states to take account of the amount of groundwater in reserve and of the rate of its replenishment in allocating groundwater resources.[128]

[120] Agreement between the Government of the Polish People's Republic and the Government of the Union of Soviet Socialist Republics Concerning the Use of Water Resources in Frontier Waters, Warsaw, 17 July 1964, 552 U.N.T.S. 175 (English translation at 188), Article 3, para. 7.

[121] Minute No. 242, *supra* note 75.

[122] Genevese aquifer agreement, *supra* note 63, Articles 2, paras. 1 and 9.

[123] Israel–Jordan Treaty of Peace, *supra* note 76, Annex II Water and Related Matters, Article IV, para. 1.

[124] *Ibid.*, Annex II Water and Related Matters, Article IV, paras. 1 and 3.

[125] Protocol Concerning Civil Affairs to the Israeli–Palestinian Interim Agreement, *supra* note 77.

[126] Tripartite Interim Agreement between the Republic of Mozambique and the Republic of South Africa and the Kingdom of Swaziland for Co-operation on the Protection and Sustainable Utilisation of the Water Resources of the Incomati and Maputo Watercourses, Johannesburg, 29 August 2002, Annex III(g), available at <http://faolex.fao.org/faolex/index.htm> (last accessed 26 October 2004).

[127] [UN ECE] Convention on Environmental Impact Assessment in a Transboundary Context, Espoo, 25 February 1991, 30 I.L.M. 800 (1991), Article 2, para. 2 and Appendix I, para. 12.

[128] See Groundwater Management Charter, *supra* note 91, Article IV.

ii. Pollution protection

The importance of groundwater protection cannot be overestimated. The possibilities of cleaning up pollution from direct or indirect discharge of pollutants, including both point and non-point sources, from injection of polluted water, and from saline water intrusion are limited. Pollution has long-lasting effects on both the waters and the aquifer matrix due to slow flow patterns. Ludwik and Eileen Teclaff showed in 1979 that existing treaties and institutions established under them were far from adequate to cope with the increasingly serious problems posed by groundwater pollution and that groundwater pollution, and activities that may lead to it, were treated as a minor part of surface water quality management and not as a distinct problem necessitating separate provisions.[129] This assessment is still true to a large extent. The most comprehensive and detailed set of rules for groundwater quality protection can be found in EC law.[130] Due to the special nature of this regime, it shall not be expanded upon in this article, although it does need to be taken into account in water treaties of the EC Member States.

According to Article 3, paragraph 1(k) of the Helsinki Convention, the parties shall ensure that additional specific measures are taken to prevent the pollution of groundwater, and Annex III (Guidelines for Developing Water-Quality Objectives and Criteria) foresees that "water quality objectives and criteria . . . shall take into account specific requirements regarding sensitive and specially protected waters and their environment, for example, lakes and groundwater resources." The African Convention stipulates that the parties shall take appropriate measures with due regard to the prevention and control of surface and underground water resources through, *inter alia*, the establishment of effluent and water quality standards.[131] Article 6(b) of the Carpathian Convention contains a duty to pursue policies aiming at ensuring adequate supply of good quality surface and groundwater and (c) at conserving groundwater resources.[132] The Agreement on Cooperation for the Protection and Sustainable Use of the Waters of the Spanish–Portuguese Hydrographic Basins foresees the promotion and protection of "el buen

[129] Teclaff, *supra* note 28 at 629, 647, and 660.

[130] Of relevance are, *inter alia*, the Water Framework Directive (*supra* note 1), the Groundwater Directive (*supra* note 73); the *Proposal on the Protection of Groundwater against Pollution* (*supra* note 74); the EC Directive 99/31 of 26 April 1999 on the Landfill of Waste, OJ L. 182, 16 July 1999, at 1; the EEC Directive 80/778 of 15 July 1980 Relating to the Quality of Water Intended for Human Consumption, OJ L. 229, 30 August 1980, at 11 (as amended by EC Directive 98/83 of 3 November 1998 on the Quality of Water Intended for Human Consumption, OJ L. 330, 5 December 1998, at 32); and the EEC Directive 91/676 of 12 December 1991 Concerning the Protection of Waters against Pollution Caused by Nitrates from Agricultural Sources, OJ L. 375, 31 December 1991, at 1.

[131] African Convention, *supra* note 70, Article VII, para. 2(e).

[132] Carpathian Convention, *supra* note 112.

estado de las aguas superficiales y subterráneas'' and the prevention of ''la degradación de las aguas subterráneas y mejorar su calidad con vistas a alcanzar su buen estado.''[133] According to Article 6 of the Convention on Cooperation for the Protection and Sustainable Use of the Danube River (Danube Convention), states shall, as specific water resources protection measures, ''(a) enumerate groundwater resources subject to a long-term protection as well as protection zones valuable for existing or future drinking water supply purposes; [and] (b) prevent the pollution of ground-water resources, especially those in a long-term perspective reserved for drinking water supply, in particular caused by nitrates, plant protection agents and pesticides as well as other hazardous substances.''[134] By mentioning these sources of pollution, the Danube Convention hints at an important issue, namely that of land use regulation, which is often difficult to reconcile with claims of largely unfettered sovereignty in this field. Also, the Johannesburg Plan of Implementation of the World Summit on Sustainable Development calls for the protection of groundwater against pollution.[135]

Special consideration also should be given to the long-term effects of groundwater pollution. This necessity was recognized in the Seoul Rules, according to which basin states shall prevent or abate the pollution of international groundwaters in accordance with international law applicable to existing, new, increased, and highly dangerous pollution, and special consideration shall be given to the long-term effects of the pollution of groundwater.[136] The UN ECE Groundwater Management Charter lists as groundwater protection measures, *inter alia*, the development of groundwater vulnerability maps, the monitoring of groundwater, geo-ecological assessments of the impact of industrial and agricultural activities on groundwater, and the zoning of groundwater protection areas.[137]

2. Groundwater on the Agenda of the ILC

A. Overview

In its 1994 resolution (which was discussed earlier in this article), the ILC had recognized a ''need for continuing efforts to elaborate rules pertaining to confined transboundary groundwater.''[138] In 2002, it included the topic ''shared natural resources of states,'' comprising oil, gas, and ''confined''

[133] Luso-Spanish Cooperation Agreement, *supra* note 78, Article 4 and 13, para. 2(b); see also official English translation ''satisfactory condition of the surface waters and groundwater'' and ''[p]revent the degradation of groundwater and improve its quality in order to attain a satisfactory condition.''

[134] Danube Convention, *supra* note 78.

[135] JPOI, *supra* note 115 at para. 66(d); see also para. 25(d).

[136] Seoul Rules, *supra* note 94, Article 3, para. 1.

[137] Groundwater Management Charter, *supra* note 91, Article 2, para. 3. The protection of recharge areas as a legal obligation is also suggested by McCaffrey, *supra* note 28 at 430.

[138] *Report of the ILC to the General Assembly on Its Forty-Sixth Session*, *supra* note 37.

groundwaters in its long-term program of work[139] and appointed Chusei Yamada as special rapporteur for this topic.[140] As already mentioned, the ILC used the term "confined groundwater" for aquifers that are not related to surface waters. It intended to develop rules for those groundwaters that fall outside the scope of the Watercourses Convention, in particular, for non-recharging ones, and to explore their similarities with other non-renewable resources such as oil and gas.

In 2003, Yamada presented a *First Report on Outlines*[141] with a technical addendum on groundwater.[142] The report introduced the topic of shared natural resources, indicated how the special rapporteur intended to approach the subject, and gave an overview of the ILC's earlier work on groundwater during the development of the draft articles for the Watercourses Convention. The addendum presented the nature of groundwater, concepts, causes of degradation, technical issues, and terminology. Both documents reveal the complexity of the topic. Yamada pointed out that he deemed it necessary to have a good understanding of groundwater and to use hydrologically accepted terminology, expressed doubts about the viability of a legal distinction between some types of groundwaters and others, and indicated that the study of groundwater could take more time than originally foreseen.[143] Some members of the ILC supported the special rapporteur's views and suggested that priority be given to groundwater and that the topic of oil and gas be postponed until the ILC had concluded its work on groundwaters. Others stressed that dealing with the world water crises was the responsibility of the states under whose surface groundwater was found and that the ILC should not embark on the development of a prescriptive set of rules.[144] During the debate about the work of the ILC in the Sixth Committee of the UN General Assembly, a number of states supported the view of some ILC members that the principles of the Watercourses Convention should not be transposed automatically to the management of groundwater and that, in particular, the provisions regarding harm were too weak or that they required modification given the susceptibility of aquifers to degradation. Stricter standards of use, lower thresholds of harm, and heightened standards of diligence were

[139] *Report of the ILC to the General Assembly on Its Fifty-Fourth Session*, Official Records of the General Assembly, 57th Session, Supplement No. 10, UN Doc. A/57/10, chap. X.A.1, para. 518.

[140] *Ibid.* at para. 519.

[141] Chusei Yamada, Special Rapporteur, *Shared Natural Resources: First Report on Outlines*, *supra* note 15.

[142] Chusei Yamada, Special Rapporteur, *Shared Natural Resources: First Report on Outlines*, 30 June 2003, UN Doc. A/CN.4/533/Add.1.

[143] *Report of the ILC to the General Assembly on Its Fifty-Fifth Session*, Official Records of the General Assembly, 58th session, Supplement No. 10, 30 April 2003, UN Doc. A/58/10, chap. IX, B, paras. 377, 380, 403–6 and Doc. A/CN.4/533.

[144] *Ibid.*, paras. 389 and 391.

mentioned.[145] Neither the special rapporteur's report and its addendum nor the debates in the ILC and the Sixth Committee were limited to groundwater that was not related to surface water. The special rapporteur intends to deal with all aquifers in his work.[146]

In his second *Report on Shared Natural Resources: Transboundary Groundwaters*, the special rapporteur presented a first set of seven draft articles dealing with the scope of a new legal instrument, definitions, principles governing the uses of aquifer systems, the obligation not to cause harm, the general obligation to cooperate, the regular exchange of data and information, and different kinds of uses.[147] An addendum contained case studies and models of several types of transboundary and international aquifers.[148] The debate in the ILC, as well as issues raised during a meeting of a working group of the ILC on transboundary groundwaters with hydrogeological and legal experts[149] focused, *inter alia*, on the scope of the proposed articles and issues of terminology such as the distinction between aquifers and groundwater. At the 2005 session of the ILC, the special rapporteur will present his third report on groundwater in which he plans to propose the outline of a new legal instrument on groundwater and some or all of the remaining articles. A report on oil and gas and a final report containing a comprehensive review of the topic were originally scheduled for 2005 and 2006, respectively, but have been deferred until there has been more progress on the work on groundwater.

B. Scope, Principles, and the Type of a New Groundwater Instrument

The ILC's dealing with the topic might lead to the codification of a new international legal instrument on groundwater. In its work, the ILC faces a number of challenges in addition to the technical complexity of the subject. First, the determination of the scope is problematic in several ways. If, in order to avoid overlap, the scope is limited to those cases that are not covered by the Watercourses Convention, there will be one legal regime for groundwater not related to surface water (the new instrument) and another one for

[145] *Report of the ILC to the General Assembly on Its Fifty-Fifth Session*, *supra* note 143, at paras. 397 and 400 (for the debate in the ILC); and in *Summaries of the Work of the Sixth Committee*, available at <www.un.org/law/cod/sixth/58/summary.htm> (last accessed 2 December 2003) (for the debate in the Sixth Committee).

[146] Summing-up of the debate in the ILC on groundwaters by C. Yamada, United Nations, Geneva, 14 May 2004.

[147] Yamada, *supra* note 15.

[148] UN Doc. A/CN.4/539/Add.1.

[149] The working group sessions took place on 23 and 24 May 2004. Present were hydrogeological and legal experts from UNESCO (Alice Aureli and Raya Stephan), the FAO (Stefano Burchi, Jacob Burke, and the author), and the International Association of Hydrogeologists (Shammy Puri).

groundwater related to surface water (the Watercourses Convention). This situation would be problematic as the challenges faced in the management of both types of groundwater are essentially the same. An analysis of state practice shows that identical rules have been devised for all types of groundwaters (compare the Helsinki Convention or the ILA's Seoul Rules). Regulating essentially the same subject matter in two different ways should be avoided. A second option for the ILC would be to deal with all transboundary groundwaters or—a third option that would widen the scope even further—all international groundwaters (for the distinction between transboundary and international groundwater and its implications, see Part II earlier in this article) and to accept that there will be overlap with the Watercourses Convention, which could possibly be dealt with in a provision that indicates which regime takes precedence. In this case, a set of meaningful groundwater adequate rules could be devised. A fourth option, which is likely to be too ambitious, would be to develop international rules for groundwater in general, comprising international and purely domestic aquifers, and to distinguish between the two where necessary and appropriate. The optimal solution, namely one instrument that covers comprehensively surface and groundwater and their hydraulic linkages, is hardly feasible as the Watercourses Convention already exists. Hence, although surface and groundwater are part of the same hydrological cycle and *de facto* inextricably linked, the law will treat them as two separate subject matters.

In any case, the ILC will have to make use of its competency to progressively develop international law since codification alone will not be feasible due to a certain lack of custom. The new legal regime is unlikely to be the same as for oil and gas—even where only groundwater de-coupled from contemporary recharge is concerned. The indispensability of groundwater for human survival, its vulnerability to pollution, its multiple *in situ* and *ex situ* uses, and the dispersed ways in which it is abstracted, render it very different from oil and gas. Account will have to be taken of the significant developments in environmental law that have increasingly been incorporated into international water law. Sustainable management, the precautionary and preventive action principles, and a well-designed protection regime seem indispensable. A replication of the principles contained in the Watercourses Convention alone would not meet the specific requirements of groundwater management.

Finally, the ILC will have to decide what kind of instrument to develop. Different options exist. One option is a draft of a new groundwater convention. The binding nature of a convention, once entered into force, would be an advantage. However, a convention would be subject to a lengthy negotiation process that would possibly lead to an outcome of the smallest common denominator. A premature attempt at codification could also interrupt the current evolution of norms and could undermine the power of emerging

principles.[150] Another option would be a protocol or annex to the Watercourses Convention. However, as the Watercourses Convention might never enter into force, this seems problematic. Six years after its adoption, the convention has only sixteen signatories and twelve parties[151] instead of the thirty-five ratifications required for its entry into force.[152] A third option is the drafting of a non-binding instrument such as a set of recommendations or guidelines, or of articles for a convention that the ILC would then refrain from recommending for the negotiations of a treaty.[153] In a non-binding instrument, it is more acceptable to progressively develop law and to recognize emerging principles and rules. In many cases, compliance with a non-binding instrument seems to be the same as with a binding one. It could be developed faster, and, as it would not be subject to a negotiation process, its content would not be amended according to political interests. Rather, it would contribute to the development of customary international law and could serve as a stepping-stone towards a binding regime later on. Given that distinct principles of international groundwater law are only slowly emerging, that state practice is patchy, and that some resistance exists to the recognition of the application of international law in this field, a non-binding instrument could be a suitable option.

C. ILC as the Adequate Forum

Some doubts exist as to whether the ILC is an adequate forum to deal with issues that require extensive technical knowledge and where, due to a certain lack of evidence of customary law, the focus on the work is on progressive development of the law rather than on the codification of custom. While both fall within the mandate of the ILC, arguably the strength of the ILC lies in codifying custom on the basis of treaty and legal literature analysis.[154] The ILC might not be the most suitable body for the development of legal rules if there are too few rules to codify and too many policy choices to

[150] Thomas Franck, Non-Treaty Law-Making: When, Where and How? paper presented at a conference on the Development of International Law: Alternatives to Treaty-Making, Heidelberg, 14–15 November 2003.

[151] Status as of 1 December 2003. United Nations Treaty Collection, available at <http://untreaty.un.org/>.

[152] Watercourses Convention, *supra* note 4, Article 36.

[153] For the draft articles on state responsibility, the ILC recommended that the UN General Assembly take note of them and annex them to a resolution. Only at a later stage the General Assembly should consider the adoption of a convention. Official Records of the UN General Assembly, 56th session, Supplement No. 10, UN Doc. A/56/10 at 41. On the role of non-binding law in general, see, among others, Edith Brown Weiss, ed., International Compliance with Nonbinding Accords, Studies in Transnational Legal Policy, No. 29 (1997) and Dinah Shelton, ed., Commitment and Compliance—The Role of Non-Binding Norms in the International Legal System (2000).

[154] Nollkaemper, *supra* note 55 at 39, 51.

make.[155] While groundwater degradation is accelerating, the ILC's work can be painstakingly slow.[156] The drafting of the articles on the non-navigational uses of international watercourses took over twenty years. The speed of work depends not only on the commission itself but also on the states concerned and their approach to, and interest in, a topic.[157]

V. CONCLUSION

Groundwater constitutes 97 per cent of available freshwater on earth. At the international level, problems of groundwater over-abstraction and pollution, leading to the overall degradation of aquifers, are increasing. The characteristics of groundwater and the challenges faced in its management are distinct from those of surface water. They require special regulation, but there have been shortcomings in developing groundwater rules. The Watercourses Convention excludes important types of aquifers from its scope and its substantive provisions are not fully adequate to deal with the special requirements of groundwater. It is a typical example of water treaties that either explicitly deal with surface water alone or include groundwater nominally in their scope without paying detailed attention to it. It is primarily non-binding instruments that provide more groundwater-specific guidance.

There is, however, a tendency in state practice to increasingly develop groundwater-adequate rules. In some instances, aquifers are not only managed as adjuncts to surface water but as distinct units in their own right. The principle of integrated water resources management requires that states integrate the management of surface and groundwater, quantity and quality, and of water and related resources such as land. In line with the principle of sustainable use, rules have been devised on limiting excessive drawdowns and for the particular problem of groundwater pollution.

Groundwater is now also on the agenda of the ILC, which will develop a legal regime for its management over the coming years. The ILC's task is a challenging one. Less than ten years since the ILC's adoption of the draft articles on the non-navigational uses of international watercourses, the ILC will need to revisit most of the principles later codified in the Watercourses Convention. While some principles and rules might remain untouched, others will need to be adjusted, and newer ones, such as the principle of sustainable use or the precautionary principle, might have sufficiently matured to be included in a new instrument. Both emerging state practice

[155] *Ibid.* See also the remark made by former ILC member Ahmed Mahiou that the ILC is a codification body and not a think tank. *Summary Records of the Meetings of the Forty-Fifth Session*, 3 May to 23 July, I Y.B. I.L.C. at 97 (1993).

[156] Ian Sinclair, The International Law Commission, at 32 (1987).

[157] Bernhard Graefrath, *The International Law Commission Tomorrow: Improving Its Organization and Methods* 85 Am. J. Int'l L. at 595, 603 (1991).

at the bilateral and multilateral level and the work of the ILC could, in the long run, contribute to closing the existing gaps in international groundwater law.

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