

3. THE DEVELOPMENT AND APPLICATION OF INTERNATIONAL WATER LAW

Objectives

After reading this chapter you should have a general understanding of how International Water Law has developed and how it fits within the field of international law. You should also have gained a basic understanding of some of the ways in which countries have attempted to use International Water Law to serve their interests.

Main Terminology

Customary international law; International watercourse; Riparian state or simply riparian; Shared freshwater resources; State; The law of international watercourses.

International Water Law has developed at an accelerating pace over the last century, in parallel with growing competition between countries for this precious and increasingly scarce resource. For the sake of terminological consistency and precision, this body of norms will generally be referred to as **the law of international watercourses**, to distinguish it from the other branch of international dealing with water, the law of the sea.¹ It should also be noted at the outset that we deal here with the use, protection, and management of **shared freshwater resources**² for purposes other than navigation; the latter activity, while it may of course interact with nonnavigational uses, is governed by a separate body of rules.

One of the overriding realities of the early 21st century is the growing competition between countries for increasingly scarce water resources. At the turn of

¹International Watercourse: A system of surface waters and groundwaters, parts of which are situated in different **states**, constituting by virtue of their physical relationship a unitary whole. This expression is sometimes also applied to a border-straddling aquifer that has no hydrologic connection to surface water.

²Freshwater, whether surface water or groundwater or a combination of the two, that is shared by more than one **state**. This expression is potentially broader than “**international watercourse**”, but in most cases bears an equivalent meaning.

this century, over one billion people lacked access to safe water and some 2.4 billion were without adequate sanitation facilities, according to the World Health Organization (WHO, 2000). Moreover, while the amount of freshwater on Earth remains constant, the global population continues to increase. The world currently has over 6.5 billion inhabitants, a figure which is projected to climb to over 9 billion by 2050 (UN Population Division, 2005). The result is less water on a per capita basis and growing competition for increasingly scarce water supplies.

An aspect of this problem that is not always appreciated is that much of Earth's freshwater is shared by two or more **riparian states**.³ According to a United Nations study, the world's 263 international drainage basins account for some 60% of global river flows (UNEP Atlas, 2002). The study indicates that around 40% of the world's population lives in these river basins, which form at least a part of the territory of 145 countries. When the decreasing availability of freshwater is combined with the extent to which it is shared internationally, the potential for disputes between countries over this precious resource becomes obvious.

How will **states** deal with these disputes? Are there relevant principles of international law that can be of assistance in resolving them? What guidance can be derived from past and ongoing disputes? This chapter will offer an introductory treatment of these questions. But our understanding of the development and role of International Water Law will be enhanced if we have at least a basic understanding of the international legal system within which it operates and of which it forms a part. The following paragraphs therefore offer a very brief overview of the international legal system.

At its most basic level, international law is the law governing the relations between sovereign "**states**," as countries are referred to in international law parlance. It governs their rights and duties vis-à-vis each other in a host of areas. International law consists, for the most part, of treaties and **customary international law**, which comprises the unwritten rules of international law formed through the practice of **states** that is engaged in out of a sense of legal obligation.

While international law is similar in many respects to domestic law in that it has counterparts to many domestic law subjects, there are important differences. Perhaps the most fundamental of these is that international law is a *decentralized* system. This feature has pervasive consequences, affecting everything from how international law is made to how it is enforced. For some, it even raises questions about whether international law can properly be characterized as "law." Let us look briefly at these overarching questions after first considering what it means for international law to be a decentralized normative order.

We are used to a legal system in which there are executive, legislative, and judicial branches. These have only rough counterparts in the international legal system. There is no international president or prime minister. While the U.N. Secretary General may appear at first blush to fill this role, in fact the U.N. Charter does

³A **riparian state** is a **state** in whose territory part of an **international watercourse** is situated.

not give him or her executive powers. Obviously, the Secretary General may have much greater influence than that, but this depends upon the incumbent's personal qualities more than his or her legal authority. The United Nations Security Council does have limited — though very important — executive powers in the field of international peace and security.

Similarly, there is no international legislature, *per se*. The U.N. General Assembly may appear to have some of the features of a legislative body but in fact the Charter gives the Assembly only powers of study and recommendation. (The sole exception is that the Assembly has the power to set the U.N.'s budget and apportion expenses as between member **states**.) It is only the Security Council, again, that may be said to have legislative powers on the universal level, but once more those relate to the narrow albeit crucial area of international peace and security.

A search for international counterparts to domestic courts will yield comparable results. There is no court with compulsory jurisdiction, or authority, over **states**. Jurisdiction is consensual in international tribunals, which means that **states** may generally decide for themselves whether they wish to submit a dispute to a neutral third party. The U.N.'s main judicial body, the International Court of Justice (ICJ) or World Court, adjudicates cases that **states** bring to it by mutual consent. A **state** may express its consent specifically, in a treaty provision, or generally, by means of a declaration to that effect filed with the court (some 65 **states** have filed such declarations). There are, of course, specialized international tribunals, as well. The International Criminal Court (ICC), which tries individuals for crimes under international law, has received much attention of late, as have the *ad hoc* international criminal tribunals set up to deal with the situations such as those in the former Yugoslavia, Rwanda, and Cambodia. In addition, **states** have established tribunals or dispute resolution processes to adjudicate disputes in such sectors as the Law of the Sea and international trade.

If there is no international legislature, how is international law made? It is made directly by its subjects, which are chiefly **states**. The two main sources of international law are treaties and **customary international law**. **States** participate voluntarily in the process of making law in each of these ways and accept the results as binding. The processes themselves are, of course, quite different: treaties are negotiated, signed, and ratified, while customary rules develop much less formally over time on the basis of **state** conduct. But **states** accept the processes as legitimate ways of making law. Refusal to do so, or to accept treaties or customary norms as binding, would make it very difficult for a **state** to function in the international community. A few words about each of these sources of law may be of assistance in understanding them.

A treaty may be called many things: treaty, convention, agreement, protocol, accord, covenant, charter, exchange of notes, even memorandum of understanding (MOU). Whether the instrument is actually a "treaty," in the international law sense of the term, depends chiefly on whether the parties intended to create legal obligations by entering into it. Treaties may serve a variety of purposes, from the sale of land (Russia's sale of Alaska to the United States), to the establishment of rules governing a particular field (such as diplomatic relations or **international**

watercourses) to the establishment of an international organization (the UN Charter). The importance of the treaty as a source of law — or obligation — continues to increase as **states** rely on treaties to an ever-greater extent to give their international relations in a wide variety of fields greater stability.

Customary international law, or simply custom, is composed of norms accepted by **states** through their conduct. The fact that customary rules are unwritten does not affect the influence they have on **state** behavior. One need only think of the power of unwritten social norms developed and accepted by individuals for evidence of how such norms can affect conduct. While a social norm will usually be unwritten, it will nevertheless generally exert a strong pull to compliance, often much stronger than a statute or other form of law such as a speed limit or stop sign. This is the case with customary norms as well. **States** accept **customary international law** as a legitimate law-creating process. They may derogate from most customary norms through treaties, but to the extent they have not done so customary law will continue to apply and will even fill gaps in treaties and provide rules for their interpretation.

As with its creation, the enforcement, or implementation, of international law is unlike that of law on the national level (see also Chapter 8). This is due largely to the fact that, as we have seen, international law is a decentralized system. There are exceptions, of course, but in general the international legal system relies to a much greater extent than national ones on unilateral recourse to self-help for enforcement. The exceptions have to do largely with self-contained regimes, such as that of the U.N. Charter concerning the use of force and the World Trade Organization (WTO).

Enforcement of international law may thus be viewed as being either centralized, in the sense that the enforcement measures are taken or authorized by an international body, or decentralized, in the sense that such measures are taken unilaterally. Centralized enforcement is typically limited to issues of great importance to the international community, such as the use of force or the commission of crimes under international law. Decentralized or unilateral enforcement may take such forms as economic sanctions, diplomatic measures or even, in extreme cases, the use of force (although this is unlawful under the U.N. Charter except in self-defense or as authorized by the Security Council).

For Further Discussion. Some nonlegal experts criticize International Water Law as ambiguous and not effective. However, given the track record of the treaties and the fact that International Water Law is in the basis of all negotiations among basin **riparians**, one has to conclude that there is not yet a better alternative. Still, room for improvement exists. With what we know so far, what are the stronger and weaker aspects of existing International Water Law in terms of equity and enforcement of transboundary water use arrangements?

It is perhaps more helpful to think in terms of compliance with international law rather than its enforcement. To paraphrase one noted authority, most countries observe most of their international obligations most of the time (Henkin, 1979). Why is this, given the lack of an international police force or courts with compulsory

jurisdiction? The answer is that it is generally in their interest to do so. **States** participate directly in lawmaking and thus ordinarily accept the rule of law in question. They observe the rules in part out of considerations of reciprocity: I will treat your citizens in my territory fairly because I expect that you will do the same for my citizens in your territory. But efforts to bring a **state** back into compliance with its obligations often do not involve the taking of reciprocal measures — e.g., raising a tariff on the violator’s exports in response to its having exceeded an agreed tariff level. Instead, **states** often take advantage of particular areas of strength they enjoy vis-à-vis the other **state** — for example, agreeing to open a market for a particular product in exchange for returning to compliance with a water treaty. Countries generally do not want to be viewed as law-breakers for fear that other **states** would not deal with them. **States** accused of breaching an international obligation do not respond that they are not bound by international law. Instead, they assert some form of defense or challenge the factual basis of the accusation. In other words, they make arguments based on international law.

It should be obvious from the foregoing that the international legal system is rather rudimentary in comparison with those on the domestic level. When there is a lack of symmetry in the power of the **states** involved in a particular dispute, it can be difficult to achieve resolution. But it is important not to lose sight of the fact that violations are the exception, and when they occur they are most often resolved peacefully and satisfactorily.

Against this background, we may examine the development and application of International Water Law. The chapter will begin by tracing the historical development of International Water Law. It will then offer an overview of the most basic principles of **the law of international watercourses**. Finally, the chapter will illustrate how these principles have been interpreted and applied in selected disputes between nations. Treaties relating to **shared freshwater resources** will be dealt with in Chapter 8.

HISTORICAL DEVELOPMENT OF THE LAW OF INTERNATIONAL WATERCOURSES

This section is introduced by two historical case studies intended to illustrate how political units related to each other regarding **shared freshwater resources** in ancient times and in the “modern” era, in this case the 19th century. It then looks at the evolution of International Water Law, from three perspectives: subject matter; approaches; and legal principles.

Two Historical Case Studies

Ancient Times

It is perhaps not surprising that since the dawn of history, social or political units of humans have been cooperating or competing with each other over **shared**

freshwater resources. In fact, the vital role of water in human life has led people to congregate near sources of fresh water since time immemorial. Rivers nourished the great ancient societies, which have come to be known as the fluvial, or hydraulic civilizations, and drove their economies. A well-known work argues that the bureaucratic structures needed for extensive irrigation works in Asia led to the formation of certain forms of government (Wittfogel, 1957). These ancient societies flourished not only in the Old World river basins of the Nile, Tigris–Euphrates, Indus, Yellow, and Yangtze, but also in the New World regions of Mexico and coastal Peru (Teclaff, 1967). But even before the rise of these civilizations, evidence of early canals and dikes suggests that small communities in places such as predynastic Egypt and Mesopotamia had found it necessary to cooperate in order to control and utilize effectively the waters of major rivers (Teclaff, 1985). Breakdowns in these cooperative relationships resulted in conflicts, with the victor sometimes absorbing the vanquished, leading eventually to the formation of empires.

But historical evidence also suggests that conflicts over water between ancient city “**states**” or principalities at least sometimes resulted in the conclusion of formal agreements concerning water boundaries, allocation, or similar matters in dispute. The best known of these is the earliest recorded treaty of any kind (Nussbaum, 1954). It was concluded in approximately 3100 B.C. following hostilities between the Mesopotamian city **states** of Umma, the upper **riparian**, and Lagash (known today as Telloh), the lower **riparian** (Nussbaum, 1954; Teclaff, 1967). These cities appear to have been in almost constant conflict over water supplies. The dispute in question erupted when Umma violated a previous allocation of waters and ended with a victory by Lagash, the laying of a boundary stone and the digging of a boundary canal into which Euphrates waters were diverted (Nussbaum, 1954; Teclaff, 1967). The treaty memorializing these terms is recorded on the well-known “Stela of the Vultures,” which is housed in the Louvre (Teclaff, 1967). Unfortunately, however, the agreement did not end the dispute over irrigation water between the two city-**states**. With a view to finally settling it, a later ruler ordered that a new canal be dug to bring water to Lagash from the Tigris. This canal, known today as Shatt-al-Hai, is still in use (Lloyd, 1961).

Both the facts that the observance of the agreement was provided for and the manner in which this was done are of present interest. The boundary stone was laid not by the ruler of the victorious party, Lagash, but by the king of an upper **riparian** city **state** that exercised hegemony over both Umma and Lagash. In addition, the citizens of Umma — the city that had precipitated the conflict — swore to uphold the treaty in the name of the most powerful Sumerian gods, which both parties worshipped. The deities would in effect be guarantors of the agreement and would punish any violation (Nussbaum, 1954).

This case study demonstrates that literally for thousands of years, political units have been involved in conflicts over **shared freshwater resources**. It further shows that the contesting parties have attempted to resolve those disputes through recorded agreements couched in specific terms that were guaranteed by reference to some normative order, even if that was represented by a higher temporal or spiritual power. In tracing the development of **the law of international watercourses**,

it is impossible to ignore these early arrangements, even though they precede by hundreds and sometimes thousands of years the rise of the modern nation **state** and international law as we know it today.

The very fact that co-**riparian** social and political units have found it expedient and even necessary to enter into cooperative relationships with regard to their shared water resources since ancient times provides valuable insight into the way in which groups of humans have been brought together by and have interacted with regard to rivers throughout history. The simple fact is that the importance of water to humans, individually and in organized groups, has led them to seek stability in their relations concerning shared watercourses through the development and acceptance of customs, as well as through more formal acts such as agreements. These customs and agreements form what we know today as international law.

The Modern Era

While navigation had been the subject of international agreements and claims for some time, what has been characterized as “the first diplomatic assertion of any rule of international law” concerning the non-navigational uses of **international watercourses** was made by Holland in 1856 (Smith, 1931). The claim concerned the River Meuse, which rises in France, flows through Belgium and into the Netherlands where it forms a common delta with the Rhine. The Dutch government in 1856 protested against Belgian diversion of water from the Meuse into the Campine Canal. Holland contended that the diversion caused it harm in three ways: diminished navigability of the Meuse; increased velocity of a related watercourse; and flooding of land (Smith, 1931). The position of the Dutch government was stated as follows:

“The Meuse being a river common both to Holland and to Belgium, it goes without saying that both parties are entitled to make the natural use of the stream, but at the same time, following general principles of law, each is bound to abstain from any action which might cause damage to the other. In other words, they cannot be allowed to make themselves masters of the water by diverting it to serve their own needs, whether for purposes of navigation or of irrigation.” (Translation of the letter in the original Dutch in Smith (1931), where the original may also be found.)

This statement is interesting in several respects, including the references to “natural” use and “damage” to another **state**. What would qualify as a “natural” use? A dam? Or only use for domestic, agricultural, and municipal purposes? As to “damage,” is Holland using this term in its absolute sense, so that no damage whatsoever would be permitted in its view? Or did it have in mind a meaning more in line with today’s concept of prohibited harm, which would include only “significant” harm or the like? We do not know the answers to these questions, but the questions do arise when one looks at the text of this claim through today’s lenses. The two governments ultimately settled the dispute in treaties of 1863 and 1873 (UN Treaty Collection, Nos. 157 and 158).

The Evolution of the Law of International Watercourses

The way in which **the law of international watercourses** has evolved may be viewed from several perspectives (McCaffrey, 1993). In this subsection, we will look at evolution of the subject matter covered, approaches to regulating the subject matter, and the legal principles themselves.

Subject Matter

When political units have decided that they need to regulate their uses of **shared freshwater resources**, what kinds of uses have they been concerned about? Have these, or at least the emphasis given to them, changed over time?

As we have already seen, the earliest recorded agreement regarding shared freshwater concerned its allocation for irrigated agriculture. Along with use for domestic purposes, irrigation and navigation were most likely the principal uses of freshwater in ancient times, and even well into modern times. There is evidence that people traveled in boats on the Tigris and Euphrates Rivers of Mesopotamia in the fifth millennium B.C. and on the Nile in the fourth millennium (Teclaff, 1991). There were evidently no general rules applicable to navigation on these rivers in ancient times, the freedom to navigate on a river depending on obtaining the permission of the ruler who controlled it. Navigation developed later in Western Europe but during the Roman Empire was open to the public, except for commercial activity, on rivers within the Empire's borders. After the fall of Rome, cities gradually asserted dominion over stretches of rivers in their territories and even entered into agreements allocating exclusive control among themselves.

The Peace of Westphalia in 1648, consisting of the Treaties of Munster and Westphalia, is generally regarded as marking the emergence of the modern nation-state and thus the beginnings of the international legal system we know today. The Treaty of Munster granted the Dutch Republic independence from Spain and opened the lower Rhine to free navigation. However, it also declared the Scheldt River in the Spanish Netherlands closed to navigation as a concession to Amsterdam in its commercial rivalry with Antwerp (Wescoat, 1996). Given the steady growth in the economic importance of navigation in Western Europe, it is not surprising that the major peace treaties of the 19th and early 20th centuries addressed the subject.

The chief purpose of the Congress of Vienna of 1815 was to establish a balance of power in Europe to maintain the peace following the Napoleonic Wars, though Napoleon's final defeat, at Waterloo, did not come until 9 days after the signing of the Congress's Final Act. The latter instrument established freedom of navigation for commercial purposes on the Rhine and other rivers of Western Europe (Congress of Vienna, 1815). This was followed by the General Treaty of Peace of 1856 ending the Crimean War, which established freedom of navigation on the Danube for all countries, following the model of the Congress of Vienna. An innovative feature of both the Congress of Vienna and the 1856 treaty was the establishment of river commissions charged with administering the rivers concerned (Wescoat, 1996). Such commissions are increasingly a feature of treaties relating to **international**

watercourses and play an important role in international river basin management. Finally, the 1919 Treaty of Versailles, ending the First World War, declared certain important rivers of Western and Eastern Europe, including the Rhine, Meuse, Elbe, the Oder, and the Danube, to be international, opening them to commerce and trade (Treaty of Versailles, Articles 331–362 and 378; Wescoat, 1996).

The Treaty of Versailles is perhaps even more noteworthy for its provisions, few though they are, on non-navigational uses — hydropower, irrigation, and water supply (Treaty of Versailles, Articles 358, 359; Wescoat, 1996). This was the first time a major peace treaty — and peace treaties were the principal multilateral treaties of the time — dealt with such uses and reflects their growing significance in Europe. The importance of non-navigational uses, such as irrigation and fishing, is underscored by the Versailles Treaty’s recognition that they may, under certain circumstances, take precedence over navigational uses — something that was virtually unheard-of up to that time. It soon became evident that accordingly, an absolute priority for navigation over other uses was inconsistent with the optimal use and management of a watercourse. Non-navigational uses had become too important, economically and socially, to be trumped automatically by navigation. Accordingly, it is generally recognized today that navigation should be treated like any other use in resolving a conflict between uses of an **international watercourse**.

Since at least the early 20th century, an increasing number of treaties have addressed quantitative allocations of water rather than, or in addition to, navigation rights. The treaties establishing these allocations usually seek to adjust competing demands by **riparian states** for irrigation water. Since irrigated agriculture accounts for 70–80% of a **state**’s total water use in most cases, where more than one **state** on a given river uses water for this purpose, it is important that they establish the quantities they are entitled to use.

A final step in the evolution of subject matter areas covered by international water law concerns protection of the ecosystems and environment of **international watercourses**. While the capacity of humans to pollute watercourses increased immensely in the West with the industrial revolution, even in the Middle Ages freshwater was polluted to the extent that it may have been responsible for such epidemics as the Black Plague of the 14th century. Treaty approaches to the prevention of water pollution evolved from those aimed at the protection of fisheries (for human consumption) to those setting water quality standards or objectives, or regulating the discharge of specified pollutants. Treaties embodying the latter approach are often aimed not only at protecting the resource for human use, but also at protection of the aquatic ecosystem *per se*. Indeed, the general treaty on the use of **international watercourses** adopted by the United Nations in 1997 goes so far as to require that the parties “protect and preserve the ecosystems of **international watercourses**” (UN Convention, 1997, Article 20).

Regulatory Approaches

As with the kinds of uses regulated, the very approach to regulating the uses of **international watercourses** has itself evolved. We look briefly here at two of the

principal aspects of this development: the definition of the freshwater that is being regulated; and the manner in which it is regulated.

As to the definition, or even conception, of the freshwater being regulated, this has changed significantly over time as understanding of hydrology has improved. In addition, of course, older agreements that were concerned with navigation seldom found it necessary to define what was meant by “river” or “watercourse” at all. It was enough to refer to navigable rivers that “separated or crossed” the **states** concerned, or words to this effect (Congress of Vienna, 1815, Article 108). Agreements typically applied to a “river” or “lake” but seldom mentioned tributaries or, even less, groundwater or entire drainage basins.

However, as uses of shared freshwater intensified, knowledge of freshwater systems grew and the subject matter covered expanded, watercourse agreements increasingly moved away from a narrow conception of their scope of coverage (McCaffrey, 1993). This trend has been matched by the work of expert groups and learned societies, discussed in the following subsection (ILC Draft Articles, 1994; Helsinki Rules, 1966). Today, it can be said that watercourse treaties generally tend to take a holistic approach, regulating the use and management by the parties of entire drainage basins or watercourse systems.

The second aspect of this trend concerns the manner in which shared freshwater is regulated. While earlier treaties generally focused on the resolution of a particular dispute or problem between the **states** concerned — often involving navigation or fishing — modern agreements exhibit more of a tendency to lay down systems for the integrated management and development of the **international watercourse** in question (McCaffrey, 1993). These systems typically envisage multiple kinds of uses and are often administered by institutional management mechanisms established by the **riparian states** to assist them in implementing their commitments to cooperate in the use of common water resources. The emphasis is thus on planning, management, and integrated development — a proactive approach rather than the more reactive one followed in the past.

Legal Principles

This subsection considers the evolution of the legal principles governing the use of **international watercourses**. The idea that there are legal restrictions on a **state**’s use of **international watercourses**, apart from those contained in treaties, has been traced to the practice of the constituent entities of the Holy Roman Empire (Berber, 1959) and is supported by the writings of commentators dating at least from the 19th century (e.g., Caratheodory, 1861; de Martens, 1883–1887; Farnham, 1904). This concept has been endorsed by learned societies since as early as 1911. In that year, the Institute of International Law (IIL), a highly respected group of experts in the field of international law, adopted the Madrid Resolution on International Regulations regarding the Use of **International Watercourses**. The Madrid Resolution’s “Statement of reasons” contains the following passage: “**Riparian States** with a common stream are in a position of permanent physical dependence on each other which *precludes the idea of the complete autonomy*

of each **State** in the section of the natural watercourse under its sovereignty” (IIL Madrid Resolution, 1911, emphasis added). The IIL and other organizations of high repute have continued to produce drafts reflecting rules of international law in the field as those rules have developed through **state** practice during the 20th century. These efforts include the IIL’s 1961 Salzburg and 1979 Athens Resolutions, the International Law Association’s 1966 Helsinki Rules on the Uses of the Waters of International Rivers (Helsinki Rules, 1966), and the Draft Articles on the Law of the Non-navigational Uses of **International Watercourses** adopted in 1994 by the U.N. International Law Commission (ILC Draft Articles, 1994). A mere review of the dates of these instruments shows the increasing frequency with which the subject has been treated by expert groups and, in the case of the UN Convention, the international community. This growing attention in turn reflects the expanding importance of the law governing **shared freshwater resources** and the need to develop and clarify it to prevent disputes and promote cooperation.

The two latter drafts deserve particular emphasis. The Helsinki Rules constituted the first effort at a comprehensive codification of the law in the field and are still referred to for guidance by governments, organizations, and scholars. The ILC Draft Articles were prepared by the United Nations’ foremost body of experts in the field of international law. The U.N. General Assembly established the ILC in 1947 and has since called upon it to prepare drafts that codify and progressively develop rules of international law on various topics. Its drafts often form the basis for the negotiation of multilateral treaties on the subjects they address. The ILC’s draft articles on **international watercourses** formed the basis of a general, multilateral treaty on the subject, the 1997 U.N. Convention on the Law of the Non-navigational Uses of **International Watercourses** (UN Convention, 1997), which we will consider in the following section. Both these drafts take an expansive approach to the scope of the subject-matter, defining the physical scope of coverage broadly (international drainage basin in the case of the Helsinki Rules and **international watercourse** system in the case of the ILC Draft Articles). They cover all the principal uses of **international watercourses** and contain procedures for the avoidance and settlement of disputes. While the main rules reflected in these instruments will be discussed in the following section, it can be stated here that those rules represent a distillation of **state** practice over the years in relation to **shared freshwater resources**. Since the instruments are designed to cover any **international watercourse** in the world, the rules they contain are quite general. But the fact that the international community now accepts that there are such general rules in itself constitutes considerable progress over the situation prevailing a century, or even a half-century, ago.

A BRIEF OVERVIEW OF PRINCIPLES OF INTERNATIONAL WATER LAW

As we have seen, **states** sharing freshwater resources have developed basic rules governing the use of those resources in their practice over many years. These rules

form part of **customary international law**, which as noted earlier is a body of unwritten law that is binding on all **states**. Countries sharing freshwater may also wish to enter into treaties applying and adjusting rules of customary law to suit their specific situations and the watercourses they share. Many **states** have done this; over 400 such international agreements have been concluded since the early 19th century (UNEP Atlas, 2002) and the pace seems to be quickening.

In 1997, the United Nations General Assembly adopted the Convention on the Law of the Nonnavigational Uses of **International Watercourses** (UN Convention, 1997). The U.N. Convention was negotiated by a special working group of the General Assembly open to all U.N. member **states**. The negotiations were based on a draft prepared by the U.N. International Law Commission, an expert body charged with the codification and progressive development of international law. Because of the process by which it was produced as well as its content, the U.N. Convention is widely regarded as reflecting in a number of respects rules of **customary international law** relating to the use by **states of international watercourses** for purposes other than navigation. The most basic of these rules are those relating to equitable and reasonable utilization; prevention of significant harm; and notification and consultation regarding planned measures. These rules apply to all forms of shared freshwater, including both surface water and groundwater. Each will be discussed briefly in the following paragraphs.

Perhaps the most fundamental rule of **the law of international watercourses** is that of equitable and reasonable utilization of **shared freshwater resources** (UN Convention, 1997, Articles 5 and 6). This rule requires that **states** use and protect international freshwater in a manner that is equitable and reasonable vis-à-vis other **states**. Equitable and reasonable utilization requires that each **riparian state** take into account all relevant factors, ranging from physical ones to those relating to the use by itself and other **states** of the watercourse and their dependence upon it. The object of this rule is to achieve a fair balance among the uses of an **international watercourse** by the **states** sharing it. In the *Gabčíkovo-Nagymaros Case*, discussed below, the International Court of Justice referred to what it described as the “basic right” of a **state** to “an equitable and reasonable sharing of the resources of an **international watercourse**” (*Gabčíkovo-Nagymaros Case*, 1997, p. 54).

The second obligation of **states** sharing freshwater resources is to prevent the causing of significant harm to other **states** through activities related to an **international watercourse** (UN Convention, 1997, Article 7). This obligation means that **states** must take all appropriate measures to avoid such harm and, if it is nevertheless caused, to do their best, consistent with their rights and obligations of equitable utilization, to eliminate or mitigate it.

The third basic obligation under **customary international law** relating to **international watercourses** is that a **state** planning a new project that may adversely affect other **states** sharing an **international watercourse** must provide timely advance notice of those plans to the other **states** (UN Convention, 1997, Articles 11–19). The **state** in which the new measures are planned must

then, if requested by the notified **state**, enter into consultations and, if necessary, negotiations concerning the planned measures and any necessary modification of them to avoid violation of the rights of the latter **state**. 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**.

These are the three most fundamental rules of **customary international law** regarding the use of **international watercourses** and other conduct that affects them. Other obligations may be derived from these rules, notably obligations to prevent and control pollution and to protect and preserve the ecosystems of **international watercourses**. The latter may be regarded as an emerging obligation under **customary international law** but it is in fact implicit in the obligations of equitable utilization and prevention of significant harm.

For Further Discussion. Let us discuss the three rules of **customary international law** regarding the use of international law. Do you see any way they can contradict each other? Can they be enforced in a reasonable way? Can they be interpreted differently by different **riparians**? Could you suggest additional means to make them more complementary to each other?

A SURVEY OF SELECTED INTERNATIONAL WATER DISPUTES

Having reviewed briefly the most fundamental obligations of **customary international law** relating to **shared freshwater resources** as they have developed over the years, we will now look at a selection of disputes over **international watercourses** to see whether and how these rules have evolved and how they have been applied. This section will focus on illustrative disputes from four regions: North America, Asia, Europe, and Africa.

North America

The Rio Grande

The Rio Grande rises in Colorado, flows through that **state** and New Mexico, then forms the border between the United States and Mexico from the vicinity of the sister cities El Paso, Texas and Ciudad Juárez, Chihuahua, Mexico, to its mouth at the Gulf of Mexico. The river has been the subject of disputes between the United States and Mexico since at least the late 19th century. At that time, Mexico complained that diversions in Colorado and New Mexico were reducing the Rio Grande to a dry bed at Ciudad Juárez, where the river begins to form the border between the two countries. Mexico contended it had a right to the water, its use of

it being prior to that of the United States by hundreds of years (McCaffrey, 2001, Chapter 4). The United States attributed the low flows to drought but the **State** Department asked the Attorney General for a legal opinion on the respective rights of the two countries to Rio Grande water. The Attorney General, Judson Harmon, responded in 1895 with an opinion that has since become known as reflecting the “Harmon Doctrine” (Harmon Opinion, 1895). In that opinion, Harmon stated that on the basis of his examination of all available evidence of international law, because the United States enjoyed “absolute sovereignty” within its territory, it was free to use the waters of the Rio Grande regardless of the consequences for Mexico.

Interestingly, as we will see in Chapter 8, the United States ultimately entered into a treaty with Mexico in 1906 whose purpose was to allocate Rio Grande water “equitably” between the two countries (Rio Grande, 1906). In the treaty, the United States agrees to construct a large storage reservoir in New Mexico and to deliver specified quantities of water to Mexico. This case thus illustrates a situation in which the parties began by taking extreme positions but ultimately concluded an agreement that both viewed as achieving an equitable apportionment.

The situation was reversed a century later, with the United States complaining that Mexico was failing to deliver certain quantities of water into the lower Rio Grande as required by a later treaty. A prolonged drought in a region that is already semi-arid, coupled with population growth as well as expanded industry and agriculture, has resulted in critical water shortages on both sides of the border. The Rio Grande is in fact so over-utilized that it has often not reached the Gulf of Mexico in recent years. A 1944 treaty between the United States and Mexico (Rio Grande, 1944) specifies the quantities of water each country is allocated from the lower Rio Grande. From 1992 to 2002, Mexico accumulated a debt to the United States under the treaty of over 1.5 million acre feet of water (1.8 billion cubic meters, or 1.85 cubic kilometers).

In the same 1944 treaty, the two countries entrusted the International Boundary and Water Commission, or IBWC, with the settlement of all disputes arising between them under the agreement. Decisions of the IBWC are recorded in the form of “Minutes,” which become binding upon the parties if not disapproved within 30 days. This novel procedure, which is particularly valuable in treaties dealing with shared freshwater, effectively permits the basic agreement to be amended so that it is kept up to date and the parties are able to respond to current problems.

After months of difficult negotiations over Mexico’s water debt, the commissioners of the IBWC signed Minute 308 in June 2002, providing that Mexico is to provide 90,000 acre-feet (111 million cubic meters) of water to the United States by October 2002, the last year of the current five-year payment cycle under the treaty (Minute 308, 2002). In March 2005, Mexico and the United States announced that Mexico’s water debt would be eliminated by the end of September 2005 through a combination of water transfers and additional deliveries (IBWC, 2005).

While Minute 308 does not purport to guarantee a long-term solution to the problem of water shortages in the lower Rio Grande, it at least illustrates the advantages of institutionalized cooperation, of having a forum in place that can assist the **states** concerned with the solution of their water problems when they arise.

The case also shows what is possible when the countries sharing an **international watercourse** enjoy good, even if not perfect, relations.

Asia

The Euphrates

While as we have seen, the waters of the Euphrates have been the subject of disputes for thousands of years, a current controversy was sparked by Turkey's massive GAP (Guneydogu Anadolu Projesi — Southeast Anatolia Development Project) project in southeastern Anatolia, which affects both lower **riparian states**, Syria and Iraq. It has been predicted that this project, which involves over 20 dams and massive irrigation schemes, will drastically reduce flows to the two downstream **states** at a time when their water needs are increasing. For example, Lowi estimates that the share of Euphrates water available to Iraq after 2000 will be 4,473 million cubic meters per year, down from 29,351 from 1986 to 1990 (Lowi, 1995). For international relations aspects of this conflict, see Chapter 7.

There are bilateral treaties and joint mechanisms between the parties, but no basin-wide agreement or joint mechanism. At one point, Turkey threatened to cut off the flow of Euphrates water unless Syria ceased to provide sanctuary to the Kurdish Workers' Party (PKK), which has waged a violent independence campaign against the Turkish government. The legal positions advanced by Turkey and Iraq, the uppermost and lowermost **riparians**, are similar to those espoused by the United States and Mexico in the late-19th century dispute over the Rio Grande. Iraq has based a claim to 700 cubic meters of water per second on what it termed its "acquired rights" to the use of Euphrates water for irrigation, based on thousands of years of use for that purpose. Turkey, on the other hand, has stated that it has no legal obligations vis-à-vis the lower **riparian states** concerning the Tigris and Euphrates. Yet at the same time, Turkey has said it has taken all measures necessary to avoid causing significant harm to the downstream **states** and that it will guarantee a flow of 500 cubic meters per second below the GAP project (McCaffrey, 2001). The latter statements may indicate a recognition by Turkey that it does in fact have legal obligations, even if for political reasons it does not want to admit this.

The situation is thus potentially volatile. Given the present situation in Iraq, it does not seem likely that the Iraqi government will be in a position to focus on negotiations with its upstream neighbors in the near future. It seems inevitable that Turkey's continued development of the Euphrates will constrict water supplies available to Syria and Iraq. It is, however, possible that the European Union, which Turkey aspires to join, may use its influence to try to convince Turkey to come to a water sharing agreement with Syria and Iraq or perhaps to submit the question of equitable allocation among the basin **states** to a third party for resolution. Win-win solutions are doubtless possible, but without regular communication and institutionalized cooperation they will be difficult for the countries to find.

Europe

The Danube

The case concerning the *Gabčíkovo-Nagymaros Project* between Hungary and Slovakia involved a treaty concluded in 1977 by Hungary and Czechoslovakia providing for the construction of a major project consisting of a series of dams and other works on a 200-kilometer stretch of the Danube River, most of which forms the border between the two countries (*Gabčíkovo-Nagymaros Case*, 1997). Concerns relating to the project, including its possible environmental consequences, began to surface in Hungary in the 1980s, resulting eventually in Hungary's decisions to suspend, then abandon work on the project, and to announce in May 1992 that it was terminating the 1977 treaty.

Czechoslovakia rejected Hungary's purported termination of the agreement as ineffective because it did not comply with the law of treaties. Czechoslovakia had already completed construction of most of the works for which it was responsible under the treaty when Hungary abandoned the project and was confronted with a difficult decision regarding how to proceed. It ultimately decided to put the project into operation to the extent that it could by acting alone, without Hungary's participation. Czechoslovakia therefore dammed the Danube in October 1992 at a point on the river upstream of where it begins to form the border, and where it lies entirely within what was then Czechoslovak territory. This dam and related works, known as Variant C (because it was one of the possible variants of the original project considered by Czechoslovakia in response to Hungary's withdrawal), enabled Czechoslovakia to channel much of the flow of the Danube — between 80% and 90% — through the project's bypass canal, on Czechoslovak territory, and thus to put the upstream portion of the project into partial operation. But this also meant that the stretch of the Danube between the dam and the point at which the bypass canal rejoins the Danube — much of which forms the border between the two countries — contained only 10–20% of the water it had formerly.

Slovakia became an independent **state** on 1 January 1993 and succeeded to Czechoslovakia's interest in the project by agreement with the Czech Republic. (The court later held that Slovakia succeeded to the 1977 treaty vis-à-vis Hungary, as well.) By Special Agreement of 7 April 1993, Hungary and Slovakia submitted the dispute to the International Court of Justice (ICJ) in The Hague.

Among Hungary's contentions in the suit was that Czechoslovakia, which was in the position of an upstream **state**, had no right to divert through the bypass canal on its territory the quantity of Danube water it was unilaterally diverting by means of the Variant C dam. According to Hungary, this was in part because the diversion by Czechoslovakia violated the principle of equitable utilization of shared water resources and the prohibition of causing a **co-riparian** significant harm. For its part, Slovakia argued that it was implementing the treaty to the extent it could without Hungary's participation, and that the reduction in the flow of the Danube in the stretch in question was merely what was envisaged by the treaty. The ICJ held that Hungary had not lawfully terminated the treaty and in fact had breached it,

but that this could not mean that Hungary had “forfeited its basic right to an equitable and reasonable sharing of the resources of an **international watercourse**,” which was the effect of Slovakia’s Variant C (*Gabčíkovo-Nagymaros Case*, 1997, para. 78).

This case is a recent one, involving two European **states**, and their arguments were made in the context of a proceeding before the International Court of Justice, the principal judicial organ of the United Nations, rather than in a political context involving diplomatic exchanges. This might account for the fact that neither party took an extreme position. Instead, the arguments of both parties relating to International Water Law were well grounded in generally recognized principles. And the ICJ itself, in deciding the case, also relied in part on well-recognized principles of **the law of international watercourses**, in particular that of equitable and reasonable utilization.

The Rhine

The Rhine is Western Europe’s longest river. It passes through or forms the borders of Switzerland, Liechtenstein, Austria, Germany, France, and the Netherlands. The basin is home to some 60 million people and the river provides drinking water to approximately 20 million. The Rhine serves one of the most highly developed regions on Earth.

Pollution of a watercourse that is so heavily relied upon is therefore a source of concern. While it was once called Europe’s biggest sewer, from which the famed Rhine salmon had disappeared by the late 1950s, much progress has been made — even if it has been slow — since the International Commission for the Protection of the Rhine against Pollution (ICPR) was established in 1950 (ICPR, 1950). The first salmon had returned by 1993 but whether they are fit for human consumption is an issue due to heavy metal concentrations. In its latest incarnation, the ICPR serves as the principal forum for cooperation between Rhine **riparians** in their efforts to protect and sustainably develop the Rhine ecosystem.

The case we will focus upon here, however, involves pollution of the Rhine by chlorides, largely from Mines de Potasse d’Alsace (MDPA), a French **state**-owned potassium mining concern. While Rhine chloride levels are now declining, and potash mining in Alsace ended in 2002 due to exhaustion of the deposits, for many years discharges of waste salts into the Rhine by MDPA was a serious irritant in relations between France and the Netherlands, the country most harmed by the chloride pollution.

Chloride pollution of the Rhine had been a major problem since levels began to rise rapidly in the middle of the 20th century. In 1986, the Rhine **riparians** attempted to address the issue by concluding the Convention for the Protection of the Rhine from Pollution by Chlorides (Rhine, 1986). This agreement called for a progressive reduction of Rhine chloride levels, beginning with the injection, at a depth of 1500–2000m below Alsatian ground level, of 20 kg/s of salts in the form of brine. In an effective reversal of at least one interpretation of the “polluter-pays principle,” costs of this means of disposal were to be borne as follows: France and

Germany, 30% each; the Netherlands, 34%; and Switzerland, 6%. The cost-sharing formula reflects economic reality more than principle or law, namely, that it is cheaper for a victim of pollution to pay for prevention than for clean-up. In the case of the Netherlands, clean-up means treating the water to make it suitable for, *inter alia*, horticultural and domestic uses.

Implementation of the Convention has been problematic, however. First, concern on the part of Alsatian residents that the injections would pollute groundwater delayed French ratification. Then in 1991 the parties agreed in an additional protocol to the Chlorides Convention that injection would not be used as a disposal method. Instead, France was allowed to discharge waste salts into the Rhine, up to a level of 200 mg/l. Amounts above that level could be stored temporarily on land, but France was permitted to increase discharges during high river flows. The costs of temporary storage were to be shared according to the above-mentioned formula.

This case demonstrates that even in Western Europe, a region that prides itself on protecting the environment and following international law, prevention of transboundary pollution can be difficult. This may be especially true in democracies, in cases in which pollution abatement could threaten the jobs of significant numbers of people. The case also shows that while none of the countries involved would be likely to dispute the principle that a country should not cause transboundary pollution harm, economic and political concerns may lead them to agree on a different regime in the interest of putting an end to the problem. A solution to this problem proved elusive despite the fact that the dispute involved a politically, socially, and economically homogeneous group of **co-riparian states**. Other factors would also have indicated the likelihood of a positive outcome: good political relations, and economic integration, as between the **riparians**; an applicable agreement; and a joint institution within which the problem could be discussed. But the source **state** evidently concluded that the domestic, political, and economic cost of instituting alternate disposal methods would be greater than the cost — both economic and diplomatic — of failing to cease causing harm to the Netherlands. The result might have been different if the pollution had been of a toxic character, posing serious health risks to downstream residents.

Africa

The Nile

The Nile River consists of two branches, the White and Blue Niles. The White Nile originates in the region of Lake Victoria and flows north to Khartoum, Sudan, where it is joined by the Blue Nile. The Blue Nile flows from Lake Tana, in the Ethiopian highlands, to its confluence with the White Nile. The Nile then flows north through Egypt and empties through its vast delta into the Mediterranean Sea. The Blue Nile supplies over 80% of the water reaching Egypt but its flow is torrential, in contrast to the slow and steady flow of the White Nile, making storage crucial. For discussion on international relations aspects, see Chapter 7.

While Egypt and the grandeur of its history are synonymous with the Nile in the minds of many, it is but one of the 10 **states** in the Nile River Basin (the others are Burundi, D.R. Congo, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda). Moreover, it is entirely dependent for its water supply upon other Nile **riparians**. For centuries, even millennia, this gave rise to no difficulties since Egypt was the only territory in the basin using significant amounts of water. But as Egypt's population and level of development, and thus its water needs, increased, and as other **states** in both the Blue Nile and White Nile basins became independent and began using more water, tensions over the Nile began to rise.

The first potential conflict arose beginning in 1920 between Egypt and Sudan, over the Gezira cotton scheme south of Khartoum and the associated Sennar Dam on the Blue Nile in Sudan. This was a classic problem involving a downstream **state** that had long-established uses and an upstream **state** that planned new ones. The pattern is repeated around the world because downstream **states** tend to have a flatter terrain that lends itself to agricultural development, while upstream **states** — especially those at a river's headwaters — tend to be more mountainous. The latter have more limited possibilities for water resources development, especially until the technology was developed to construct large dams for water storage and hydroelectric power production. A downstream **state's** long usage of a river's water often prompts it to argue that it has acquired the right to use the quantity of water that it has been using. According to this theory, such historic uses would trump any new uses by upstream **states** that conflicted with them. This could put the upstream **state** in a difficult position if its proposed new use would adversely affect the downstream **state**. An absolute reading of the obligation to prevent harm (the “no-harm” rule) would protect the downstream **state** against its upstream neighbor. However, a more flexible interpretation of that rule, or even more so the doctrine of equitable utilization, would allow a reasonable balance to be struck between the existing uses downstream and the new uses upstream.

British influence in the basin at the time allowed the issue to be resolved in the 1929 Nile Waters Treaty (Nile, 1929). The agreement was concluded between Egypt and Britain because the latter administered Sudan. It allocated specific quantities to each country, in a 12:1 ratio in favor of Egypt. The treaty further protected Egypt by requiring its previous agreement before any works were implemented on waters in the Nile system, “so far as all these [waters] are in the Sudan or in countries under British administration,” if those works would affect Nile waters to the prejudice of the interests of Egypt (Nile, 1929, para. 4(b)). To this day, Egypt maintains that this clause binds the Nile equatorial lakes **states**, including Kenya, Tanzania, and Uganda, as successors to Britain; those **states** vehemently reject this contention.

After its independence in 1956, Sudan stated that it did not consider itself bound by the 1929 Agreement. For its part, Egypt in 1952 adopted plans for what became the Aswan High Dam, which would create a reservoir extending some 250 km into Sudan. Sudan protested, complicating Egypt's efforts to obtain financing for the High Dam, but eventually the two countries concluded the 1959 Nile Waters Agreement (Nile, 1959). This treaty revised the allocations under the 1929 treaty to produce a 3:1 ratio, again in favor of Egypt, and protected Egypt's “established

rights,” and those of Sudan, in the amount of water each was using as of the date of the agreement (48 billion cubic meters for Egypt and 4 billion for Sudan, the 12:1 ratio under the 1929 Agreement) (Nile 1959, Article I(1)). Entitled “Agreement for the Full Utilization of the Nile Waters,” the 1959 treaty indeed allocated the lion’s share of the total flow of the Nile as between the two countries (74 billion cubic meters out of an estimated total natural flow of 84 billion). It also authorized the reservoir created by the High Aswan Dam (the Sudd el Aali Reservoir, known today as Lake Nasser). Through this agreement, then, Egypt did consent to a substantial re-allocation of Nile water as between itself and Sudan, at least in terms of the proportion each country would receive. But in return it received water security in the form of recognition of its “established rights,” the immense storage of Lake Nasser and agreement, with Sudan at least, on the quantity of water to which it was entitled.

This is all well and good, but the picture becomes more cloudy when it is enlarged to include the upper **riparian states**. Neither Ethiopia, which contributes some 85% of the water reaching Egypt, largely via the Blue Nile, nor the equatorial lakes **states** of the upper White Nile, were parties to either of these agreements and none recognizes either treaty as binding upon them. There is as yet neither a basin-wide agreement accepted by all **riparian states**, nor a permanent joint mechanism for the management of the Nile Basin. As discussed below, however, the Nile Basin **states** have recently established a transitional institution, the Nile Basin Initiative (NBI), which will continue to operate until it is replaced by a permanent mechanism, and are close to finalizing a Nile River Basin Cooperative Framework Agreement.

The most heated recent disputes over Nile waters have been between Egypt and Ethiopia, with Egypt being wary of Ethiopia’s plans to develop the river. The reverse is also true, however: Ethiopia fears that Egypt will attempt to use the massive irrigation projects currently being developed there, such as the Toshka, or New Valley project, to restrict the development that Ethiopia may rightfully undertake of its water resources. According to Waterbury, the Toshka project involves bringing some 200,000 ha under irrigation by diverting Nile water via a canal beginning on the west bank of Lake Nasser and running some 70 km to oases west of the Nile. Another project of major proportions is the so-called “Peace Canal,” which would pass under the Suez Canal and deliver Nile water to the Sinai Peninsula (Waterbury, 2002). Again, these existing and planned projects illustrate the tension between the “no-harm” and equitable utilization principles and demonstrate why downstream **states** will usually rely on the former while upstream **states** typically assert the latter.

Until recently there has been no mechanism within which Egypt and Ethiopia could communicate on a regular basis and attempt to identify win-win solutions to their Nile water problems. But beginning in the late 1990s, Nile Basin **states** have established a process, and now a transitional international organization headquartered in Uganda (Nile Headquarters Agreement, 2002), known as the Nile Basin Initiative (NBI). Through this process, Egypt and Ethiopia, as well as the other Nile Basin **states**, are identifying projects of mutual benefit. Subsidiary Action

Plans for the Blue and White Niles have been established, and the **states** involved in each meet together regularly (NBI website). These efforts hold promise and offer hope that the countries of the Nile River Basin will soon formalize their cooperation in a basin-wide agreement containing principles and obligations, and establishing a permanent joint institution.

While in their draft agreement, the Nile Basin countries have accepted in principle the obligations of equitable utilization and prevention of significant harm, until the agreement is finalized and enters into force they are likely to rely on their historic positions: acquired or historic rights and the “no-harm” rule in the case of Egypt; and equitable utilization, interpreted to allow the use of significant quantities of water, in the case of Ethiopia and other upstream **states**. But progress on the projects being planned jointly by these countries should go a long way to reconciling their respective positions.

CONCLUSION

In this chapter, we have looked at the way in which International Water Law has evolved and illustrations of how it has been applied in selected disputes. We have seen that the law in this field has developed largely in the 20th century, at least with regard to nonnavigational uses. We have also seen that **states** sometimes take extreme legal positions, perhaps as negotiating tactics, and that these positions have in certain cases given way to more balanced approaches agreed to in treaty form by the **states** concerned.

Whether or not the countries involved in a dispute over shared water resources are able to reach agreement on a treaty, principles of international law will always be in the background of their relations, influencing their arguments as well as the shape of any ultimate agreement. For this reason, the progressive achievement of clarity regarding the rules of international law applicable to shared freshwater should help to prevent disputes and, when they arise, to facilitate their resolution.

Practice Questions

1. Does a **state** have absolute sovereignty over its portion of an **international watercourse**?
2. Is a **state** required to notify other **riparian states** of a planned project that may have adverse effects on those other **states**?
3. Can a project such as a large irrigation scheme in a downstream **state** cause harm to an upstream **state**?
4. Does the legal concept of an “**international watercourse**” include groundwater that is related to surface water?
5. State the three most important rules of law governing **international watercourses**.

REFERENCES

- Agreement between the United Arab Republic and the Republic of Sudan for the Full Utilization of the Nile Waters, Cairo, 8 Nov. 1959, 453 UNTS p. 51.
- Berber, F.J. (1959). *Rivers in International Law*. London: Stevens & Sons.
- Caratheodory, E. (1861). *Du droit international concernant les grands cours d'eau*. Leipzig: Brockhaus.
- Case Concerning the Gabčíkovo-Nagymaros Project* (1997) I.C.J. 7.
- Congress of Vienna, 9 June 1815, Consolidated Treaty Series, Vol. 64, p. 453.
- Convention on the International Commission for the Protection of the Rhine against Pollution, Bern, 29 April 1963, 994 UNTS 3, formalizing the body that had initially been established in Basel on 11 July 1950 by an exchange of notes between France, Germany, Luxembourg, the Netherlands, and Switzerland. The Bern Convention of 29 April 1963 will be superseded upon the entry into force of the new Bern Convention of 12 April 1999. See the website of the ICPR, www.iksr.org/icpr.
- Convention on the Protection of the Rhine Against Pollution by Chlorides, Bonn, 3 December 1976, 16 ILM 265 (1977), commonly known as the Rhine Chlorides Convention.
- Convention concerning the Equitable Distribution of the Waters of the Rio Grande for Irrigation Purposes, 21 May 1906, UNTS No. 455.
- de Martens, F.F. (1883–1887). *Traite de droit international*, 3 vols., transl. from the Russian by Alfred Léo. Paris: Chevalier-Marescq et cie.
- Exchange of Notes between the UK and Egypt in regard to the Use of the Waters of the River Nile for Irrigation Purposes, Cairo, 7 May 1929, 93 LNTS p. 44.
- Farnham, H.P. (1904). *Law of Waters and Water Rights*. Rochester: Lawyers Co-operative Publishing Co.
- Headquarters Agreement between the Government of the Republic of Uganda and the Nile Basin Initiative, Kampala, 4 Nov. 2002 (copy on file with author).
- Helsinki Rules on the Uses of the Waters of International Rivers (1966). *International Law Association*, Report of the 52nd Conference, Helsinki. London: International Law Association, p. 484.
- Henkin, L. (1979). *How Nations Behave*. New York: Columbia University Press.
<http://www.ibwc.state.gov/PAO/CURPRESS/2005/WaterDelFinalWeb.pdf>
- Institute of International Law (IIL) (1911). Resolution on International Regulations regarding the Use of International Watercourses, *Annuaire de l'Institute de droit international*, Madrid Session, April 1911, vol. 24, pp. 365–367, Paris.
- International Boundary and Water Commission, United States and Mexico, Minute 308, 28 June 2002, available at http://www.ibwc.state.gov/NEW/what_s_new.htm
- International Law Commission of the United Nations (1994). Draft articles on the law of the non-navigational uses of international watercourses, *Y.B. Int'l L. Comm'n*, Vol. 2, pt. 2, p. 89.
- Legislative Texts and Treaty Provisions concerning the Utilization of International Rivers for Other Purposes than Navigation, U.N. Doc. ST/LEG/SER.B/12 (1964).
- Lloyd, S. (1961). *Twin Rivers*, 3rd edn. London: Oxford University Press.
- Lowi, M.R. (1995). *Water and Power: The Politics of a Scarce Resource in the Jordan River Basin*. Cambridge: Cambridge University Press.
- McCaffrey, S.C. (1993). *The evolution of the law of international watercourses*, *Austrian Journal of Public International Law*, 45, 87–111.

- McCaffrey, S.C. (2001). *The Law of International Watercourses: Non-Navigational Uses*. Oxford: Oxford University Press.
- Nussbaum, A. (1954). *A Concise History of the Law of Nations*, revised edition. New York: Macmillan.
- Opinion of U.S. Attorney General Judson Harmon, 21 Op. Att’y Gen. 274 (1985).
- Smith, H.A. (1931). *The Economic Uses of International Rivers*. London: P.S. King & Son.
- Teclaff, L. (1967). *The River Basin in History and Law*. The Hague: Martinus Nijhoff.
- Teclaff, L. (1985). *Water Law in Historical Perspective*. Buffalo, New York: William S. Hein.
- Teclaff, L. (1991). Fiat or Custom: The Checkered Development of International Water Law, *Nature Resources Journal*, 31(1), 45, 72–73.
- Treaty Relating to the Utilization of the Waters of the Colorado and Tijuana Rivers, and of the Rio Grande (Rio Bravo) from Fort Quitman, Texas, to the Gulf of Mexico, 3 Feb. 1944, 3 UNTS 314.
- Treaty of Peace between the Allied and Associated Powers and Germany, Versailles, June 28, 1919, G. Martens, *Recueil de traités* 11, 3rd ser.
- United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses, 21 May 1997, U.N. Doc. A/RES/51/229, 21 May 1997, 8 July 1997, 36 ILM 700 (1997).
- United Nations Environment Programme, Food and Agriculture Organization & Oregon State University, *Atlas of International Freshwater Agreements*, UNEP (2002).
- United Nations Department of Economic and Social Affairs, Population Division (2005). *World Population Prospects, The 2004 Revision*, U.N. Doc. ESA/P/WP.193, 24 Feb. 2005 at p. 1. The report is available on the Population Division’s website, http://www.un.org/esa/population/publications/WPP2004/WPP2004Highlights_final.pdf
- Waterbury, J. (2002). *The Nile Basin: National Determinants of Collective Action*, New Haven and London: Yale University Press.
- Wescoast Jr., J.L. (1996). *Main currents in early multilateral water treaties: A historical-geographic perspective, 1648–1948*, *Colorado Journal of International Environmental Law and Policy*, 7(1), 39–74.
- Website of the Nile Basin Initiative, <http://www.nilebasin.org>
- World Health Organization (WHO) (2000). *The Global Water Supply and Sanitation Assessment 2000*.
- Wittfogel, K.A. (1957). *Oriental Despotism: A Comparative Study of Total Power*. New Haven: Yale University Press.

ADDITIONAL READING

- Caponera, D.A. (1996). Conflicts over International River Basins in Africa, the Middle East and Asia, *Review of European Community & International Law*, 5(2), 97–106.
- McCaffrey, S.C. (2006). *Understanding International Law*. Atlanta: LexisNexis Publishers.