

LEGAL AND INSTITUTIONAL MEANS TO IMPLEMENT INTEGRATED WATER RESOURCES MANAGEMENT

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Abstract

At the dawn of the XXIst Century, it is opportune to review the history of water law and to take stock of the means currently available for the implementation of integrated water resource management. From traditional customary law which, for millennia, has governed and still governs water resources management in vast areas of our World, concepts and practices have since a few centuries been made the subject of man-made legislation promulgated under the aegis of different legal systems. In parallel, the transfer from the historical Kingdoms and Empires into modern political States has called for the development of international law the concepts whereof, as far as water resources are concerned, have largely been borrowed from domestic law. At the same time, it is international law that has produced the most advanced legal principles aiming at governing integrated water resources management as evidenced by the doctrine and as stated in the 1966 Helsinki Rules developed by the Water Resources Committee of the International Law Association. If they have defined the conceptual framework, these Rules have however failed to institutionalize the material instrument required for their implementation: the Integrated Water Resources Management Plan as the term of reference for the allocation and administration of equitable water rights.

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I. FROM CUSTOMARY TO MODERN WATER LAW²

1. Water and Customary Water Law

Water is a fascinating commodity. It is present on this Earth in liquid, solid and gaseous form. As a natural resource, it is present in the earth and in the atmosphere, in plants, animals and humans. Water is the blood of the Earth. Water sustains life. Water is life. Ever since man appeared on this Earth, human communities established themselves around water points and along streams.

All the great civilizations were born, flourished, and most of them decayed along the major rivers of the World: the Hindus along the Ganges, the Chinese along the Huang-Ho, the Persians and the Babylonians along the Tigris and Euphrates, and the Moguls along the Indus, the Egyptians along the Nile and the Hebrews along the Jordan. All these civilizations considered water as a sacred commodity escaping private appropriation. Water was at the disposal of the community and water use rights were strictly regulated. Water use for human and animal consumption and limited domestic purposes was free for all as were non-consumptive water uses for navigation, floating, fishing and recreational purposes. Consumptive uses, such as for irrigation, urban water supply and sewerage were

however highly regulated. Water consumption was treated as a community affair: water rights remained precarious and allocated periodically based on the seasonal availability of the resource and as a function of water use requirements. Community waterworks were constructed and maintained by the users themselves and water rights administered on behalf of the community by elected water masters and their crews of helpers and criers.

Private appropriation of water, lack of waterwork maintenance and pollution usually marked the decay and eventual disappearance of those hydraulic civilizations.

As long as human communities remained traditional, i.e., submitting to inherited, non-human precepts and rules, water management remained governed by orally transmitted customary rules and practices. With the passing of time, these rules and practices were progressively codified in order to prevent their disappearance. The Code of Manu of the Hindus, the Hammurabi Code of the Mesopotamians, the Li-Chi of the ancient Chinese or the Talmud of the Jews are examples.

Even in modern times, customary water law has survived in the living traditional communities who, away from the major urban centers, still represent today a majority of the World population. A typical example is the traditional water management system of the Hindus of Bali³ which has been integrated into modern Indonesian Water Law. Another example is Islamic Law⁴ which incorporates the most elaborate system of customary water law, a system still practiced today in most of the Moslem World.

Rather than inventing new water laws which are misunderstood and, therefore, not implemented by the local population, today Governments would be well advised to study and take stock of the customary rules and principles followed by their rural communities. Indeed, rather than imposing upon their populations new, disrupting innovations, they will discover that, most of the times, those customary principles and rules are perfectly consonant with the Laws of Nature or with what the most modern, environmentally-oriented legislations currently aim at establishing anew.

2. The Codification of Water Law

In Europe, the Roman civilization has constituted the bridge between the Eastern and the Western Worlds. It spanned from about 500 B.C., until the VIth century of our era, at which time the famous Justinian Codification was completed.⁵ This period of some 11 centuries witnessed the transition from the Monarchy to the Republic, then to the Principate and back to the Absolute Monarchy and then the split of the Empire into the Eastern and the Western, and the decay of the Western Empire.

The Justinian Code can be said to constitute the first ever systematic and comprehensive legal codification work which, later, profoundly influenced most of the systems of law throughout the World. It gave birth to the French Civil Law system, to the Common Law system of England, to the mixed Common and Civil Law system of the United States as well as, to a certain extent, to the Soviet legal system, all of which spread geographically to the West as well as to the East.

If, throughout the Roman period, the traditional principle of the 'personality of the law' was maintained and customary law remained the first source of the Law, this legal regime of water resources and of water rights was substantially modified over time. The major modification was the institutionalization, during the Republican period, of the legal regime of water as an appurtenance of the under- and over-lying land or, as it became known and still prevails at Common Law, the system of riparian rights. Water resources were classified into public and private waters depending on the legal regime of the appurtenant land. Water rights on private land were free for the landowner and water rights on public land became the subject of a public grant or concession. In order to protect the rights of third parties, private water rights were assorted with an elaborate system of easements and servitudes. And if the laws were in general permissive, the executive power was empowered to issue number of prohibitions (*interdicta*) giving plaintiffs a whole array of actions (*actiones*) before the courts.

It is important to note that, to a large extent, the customary concepts of community land (*res communis*) and of vacant land (*res nullius*), or of lands which were considered un-owned, be it publicly or privately, similarly applied to the waters occurring thereon or thereunder, thus leaving to their users either a precarious common right to use water or a permanent right of use obtained by acquisitive prescription.

In parallel, Roman Law institutionalized a strong, centralized, water administration vested with specific powers to manage city water supply and sewerage, navigation and floating, flood control and related waterworks and structures. Major diversions for irrigation were made subject to the concession regime but the development of irrigation structures and their management was left to the water users under customary law.

The subsequent periods saw the progressive classification of most waters into the class of public waters with a consequential reduction in the quantity of those waters still remaining in the private domain.

Following the fall of the Western Roman Empire in 565 A.D., Europe fell under Barbaric rule.⁶ The Visigoths in Spain, the Franks in Germany, the Angles and the Saxons in England, the Ostrogoths and the Frisians down from the North Sea, the Byzantines on the Eastern Mediterranean, the Bavarians in Bohemia and the Alamanns in the Rhine and Danube valleys, the Longobards and then the Franks and the Normans in Italy, the Franks and the Burgundians in France, all of them brought their own customs which applied to their own people while Roman Law became the law of the foreigners but progressively intermingled with and ultimately supplanted those customs. By the year 800, the Frankish King Carolusmagnus had established himself at the apex of the Holy Roman-Germanic Empire.

It is during this period, thanks to the admirable harmony and interplay prevailing among the Jews, the Christians and the Moslems who lived in southwestern Spain, that our Western Civilization was born. The unification of Europe under the Holy Roman-Germanic Empire was however achieved more under the influence of the Church and of the principles of Canon Law than under political rule. The Empire itself was not monolithic but consisted in an aggregate of feudal kingdoms paying allegiance to the Emperor as much as the local nobility paid allegiance to their respective kings. Human

communities in the Upper Middle Ages were organized under the traditional cast system in which the priests protected the faith and ruled as princes, the soldiers defended the community, the merchants supplied goods, and the peasants produced the food, needed by the whole community. If the priests-princes and the soldiers were fed and supported by the merchants and the peasants, the latter were protected and defended by the former. Water law largely turned back to its former traditional customary status, public waters returned to the community and water rights to common and/or private use rights.

This system prevailed until the fall of the Order of the Templars in the XIIIth Century which marks the beginning of the Lower Middle Ages, a period of decay. By that time, the priests-princes had usurped full political power and appropriated the water resources on their respective feuds. Royalties were being levied for water use. In parallel, Roman Law was being re-discovered and revived by the School of Glossators in Bologna, Italy. As a result, from the XIVth to the XVIth centuries the Post-Glossators developed their own laws under the shield of Roman Law. These developments eventually gave rise to the Reform in the XVIth and lead to the French Revolution of 1791 which, as its name indicates, seated God's creature in thy Throne. And, with the upsurge of nationalities, political states and national territories, the principle of 'territoriality of the law' replaced the heretoforth prevailing principle of 'personality of the law'.

Supreme power had been secularized and man-made laws set to rule the World. Napoleon crowned himself and then promulgated the French Civil Code of 1804 with its sacrosanct principle of absolute private ownership; it was soon followed by the Austrian Civil Code of 1869 and the German Civil Code of 1900.

In England, however, Roman Law had survived as the '*ius communis*', or the law applicable to all men, along with the customary laws prevailing in England and Wales, Scotland and Ireland. In the XIIIth century, the revolt of the Barons against the abuses of the Kings had produced the Magna Charta in 1215, a declaration of rights which is still considered today as embodying the fundamental principles of the unwritten Constitution of England. In spite of the proclamation of the Independent Church of England by Henry the VIIIth in 1534, these customs became known as the Common Law of England as sanctioned by the decisions of the Common Law courts. Another important facet of the English system of law is the Law of Equity according to which individuals claiming rights under the Common Law are entitled to claim 'equitable interests' before the Chancellor, the equity court that developed its own jurisprudence.

Spanish Law was imposed to Latin America following the discovery of the Continent by Christophorus Columbus in 1493. In that same year, Constantinople and the Eastern Roman Empire fell to the Turks but, thanks to the compilations of the Greeks, Roman-Byzantine Law continued to prevail in the relationships between the Christians and the Ottoman Empire, itself governed by Islamic Law, until the independence of the Balkan States in the XIXth century. In turn, the Civil Code was introduced by the French in Louisiana and in the Quebec while the Common Law was brought by the English, originally in the Eastern United States and in English-speaking Canada to then combine and become the legal system of the United States while keeping separate between the English-speaking Provinces of Canada and French-speaking Quebec.

Finally, the former Soviet system of law, which may be labeled the ‘all State rights system’, is worth mentioning as it still applies within some of the former Soviet Republics as well as in a number of States worldwide. Its most interesting feature is that it rests on an essentially economic base, namely the concept of ‘planned economy’ in which all powers vest in the State who, in turn, allocates and regulates individual rights, always as an incident of State requirements. Following the fall of communism and the dismantling of the USSR, the former Republics appear to have embarked on an all-out legislative reform aimed at adopting Western capitalism. These Republics would be well advised however to remember that, conceptually, the absence of private appropriation of water and the use of the plan as the term of reference for the allocation of water rights constitute the ideal means of integrated water resources management.

3. The Legal Regime of Water and Water Resources

It is now a recognized fact that water, unlike land, sub-soil, plant, animal and human life, because of its transient nature, escapes the legal definition of ‘thing’ or ‘object’. Since, to the jurist however, everything requires a legal definition in order to become subject to the rule of law, use has historically been made of a fiction according to which water is classified as an appurtenance of the land. Hence, at Civil Law, he who owns the land owns the water falling on, surging from, flowing along or across his land or contained within its sub-soil. At Common Law, this is called the ‘riparian doctrine’ although here, rather than ownership, it is the rightful access to the water that qualifies the user.

Strictly speaking, the lawyer has never been fully satisfied with such a fiction when applied to water in movement. This is why all legal systems have always made a distinction between ‘measurable’ water which, when contained in a cup, a container, a pond or a well ‘of which the bottom can be seen’, could be legally owned on the one hand, and atmospheric, running, percolating or flowing waters on the other hand which were either declared to follow the legal regime of the appurtenant land, were classified as escaping the legal realm (*res nullius*) or were legally appropriated by the sovereign under such doctrines as the ‘Public Domain’ at Civil Law or as ‘State Ownership’ or ‘State Control’ at Common Law.

The importance of this distinction lies in the fact that water has historically been one way or the other the subject of ‘appropriation’, be it by the individual under private law or by the sovereign under public law. It is worthwhile in this connection however to underline the fact that, where private and public ownership of water co-exist, the sovereign always enjoys a better ownership than private owners.

At private law, absolute ownership, the strongest private right in theory, soon became assorted with a whole array of limitations commanded by the rules of good neighbourliness which defined what became known as the regime of ‘easements and servitudes’ intended to protect the interests of third-parties in opening to them ways of access to, or a form of protection against third-party land based harmful effects of, this precious resource.

With the advent of the concepts of nationalities, of political states and of national territories, these private law principles were imported into nascent international law to become the well known but dead-locked concepts of ‘absolute territorial sovereignty’ and

of ‘absolute territorial integrity’ sanctioning the behaviour of upstream and downstream riparian States like that of landlords at private law.

It is not until the beginning of the 19th century that the hydrologist, the hydrogeologist and the water engineer defined the concept of the hydrological cycle as the time-space manifestation of water which contributed the long awaited definition of the water resources as the ‘thing’ so much looked after by the lawyers. Not quite, though, until the Water Resources Committee of the International Law Association finally formulated the concept of the ‘international drainage basin’ within the framework of its Helsinki Rules of 1966.⁷

It is opportune at this stage to recall the definition of the drainage basin as has been couched by the ILA in Article 2 of the Helsinki Rules: “*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 underground waters, flowing into a common terminus.*”

It follows that any water resource is measurable within the cup or receptacle formed by the surface watershed collecting atmospheric waters, their run-off into surface streams and percolating waters into subterranean streams down to where both discharge into their common terminus, usually the sea, a definition applying to both national, or internal, and international basins.

The only exception suffered by this definition relates to contained aquifers, or fossil waters, which, like still waters, are measurable and therefore, as in the case of the water contained in one’s cup, receptacle, pond or shallow well, are subject to appropriation and regulated at law as any other legally owned ‘thing’ or ‘object’.

4. National and International Water Resources Law

The fundamental difference between national, or domestic, and international law lies in the fact that if at domestic law there is a legislator enabled by the Constitution and a judicial power capable of ensuring law enforcement, international law lacks both.

The development of international waterborne commerce in the XVIth century called for the internationalization of navigable rivers and waterways in Europe.⁸ This was done by means of treaties between the Great Powers of the time such as, for example, the 1535 Treaty between the Ottoman Empire and France which established the freedom of navigation on the Danube for the riparian States.⁹ A similar treaty was then entered into in 1580 between the Ottoman Empire and Great Britain.¹⁰

The XVIIth century saw the institutionalization of the boundary on rivers either separating or crossing the territory of two or more States. These became known, respectively, as ‘contiguous’ and ‘successive’ rivers. Unlike with non-navigable contiguous rivers, the setting of the frontier on successive rivers was generally absent of complex issues. Similarly, the delimitation of the frontier on navigable contiguous watercourses such as the Rhine, for instance, was by simply making the frontier follow the deepest navigation channel (the ‘Thalweg’) as in the 1648 Peace Treaty between France and Germany.¹¹

Although equity would have called for the frontier on non-navigable rivers and watercourses to follow the median line, quite different solutions were adopted over time starting with the 1689 Treaty between Russia and China which set the frontier at the Chinese bank on the Amour River.¹²

From the beginning of the colonial era in the XVIIIth century, a variety of systems for the delimitation of the frontier in international rivers developed while the principle of freedom of transit and navigation for riparian states was being established within the newly acquired colonies and in Europe. While the 1713 Treaty between France (Guyana) and Portugal (Brazil) made both banks of the Amazon Portuguese,¹³ the 1763 Treaty between France, Great Britain and Spain established the frontier on the median line of the Mississippi.¹⁴ In Europe, the 1774 Treaty between France and Switzerland for a tributary of the Rhône¹⁵ and the 1779 Treaty between Austria and Germany in respect of certain tributaries of the Danube¹⁶ declared these water courses to form a condominium, whereas the 1780 Treaty between France and Germany established a regime of co-sovereignty over a tributary of the Rhine.¹⁷ Finally, an interesting exception relates to the 1793 Treaty between Russia and Poland which declared a tributary of the Vistula to be a '*flumen nullius*'.¹⁸

It is however not until the XIXth century that the regime of freedom of navigation was internationalized by riparian States such as France, Germany and The Netherlands for the Rhine in 1831,¹⁹ Austria and Russia for the Danube in 1840,²⁰ the United Kingdom for the Indus in 1843,²¹ Argentina for the Plata in 1852²² and, finally, by the European Powers for the Congo by virtue of the 1885 Act of Berlin.²³

As to the XXth century, it witnessed the transfer from the concept of 'international river' to that of 'international river basin' as the system of surface streams delimited by the watershed. Practical illustrations are the 1909 Treaty between the USA and Canada in respect of their boundary waters,²⁴ the 1919 Peace Treaty of Versailles in respect of the Rhine²⁵ and the 1922 Treaty between Colombia and Peru in respect of the Amazon river system.²⁶ It is not until 1966 however that the ILA defined the concept of 'international drainage basin'.

4.1 International Water Resources Law²⁷

Notwithstanding the hopes placed first in the League of Nations and its Permanent Court of International Justice and, subsequently, in the United Nations with its Security Council and Court of International Justice, one has to realize that unless States are prepared to abandon part of their sovereignty in favour of some type of 'supra-national' entity, such institutions, while extremely useful as discussion fora, are bound to remain limited by the veto power of a privileged few and, irrespective of their name as 'courts', to serve but as mere arbitral tribunals. Indeed, State sovereignty remains a political absolute and limitations thereto will only be acceded to on a strictly voluntary and reciprocal basis.²⁸

This does not mean, however, that there is no international law; very much to the contrary, but subject to some qualifications. According to Article 38 of the Statute of the International Court of Justice which has been ratified by a very large number of members

of the international community, the sources of international law are: a) international conventions, whether general or particular; b) international custom as evidenced by a general practice accepted as law; c) the general principles of international law; and d) judicial decisions and the teaching of the most highly qualified publicists of the various nations, 'as subsidiary means for the determination of rules of law'.

The first source, conventional or treaty law, consists in the bulk of specific treaties and/or conventions entered into by States over time.²⁹ General conventions are those promoted by international organizations and offered for voluntary ratification by member states or for adhesion by non-member states. Such conventions, e.g., the 1921 Barcelona Convention on the freedom of navigation³⁰ and the 1923 Geneva Convention on the development of hydro-electric power,³¹ for instance, generally receive few ratifications. The reason is probably that sovereign states prefer to commit themselves on specific matters rather than on so-called principles of general application.

The second source, international custom as evidenced by a general practice accepted as law, considers the actual behaviour of states as reflected by the international treaties and conventions which they have executed. For an international custom to be so recognized, such treaties and convention must however evidence (i) that signatory states systematically refer therein to the same principles when applied to similar conditions and (ii) that they are convinced of the obligatory force thereof.

The third source, the general principles of international law, aside from those of 'law and justice' incorporate in fact mere moral precepts such as the obligation to respect signed treaties (*pacta sunt servanda*) or the so-called no-harm clause (*sic utere tuo ut alienum non laedas*) and its corollary at water law expressed as the 'natural flow' doctrine the respect of which is left in practice to the free will of sovereign States. Indeed, even if a State is recognized in breach of any such principle by the International Court of Justice, enforcement of the Court's sentence is left to the traditional remedies at international law, i.e., retorsion measures such as embargo, or war.³²

As to the fourth source, judicial decisions and the teaching of the most highly qualified publicists, and although labeled 'subsidiary', it has undoubtedly considerable weight in identifying what may be called the 'consensus' of the community of nations, which consensus is not without having a determinant coercive power over individual States.

In the absence of a supra-national legislator, and considering that the above sources are listed according to the way in which the International Court of Justice is to consider them when attempting to resolve an international dispute, it may be argued that the sources of international law, in essence, comprise but:

- a) customary rules as evidenced by international treaties and conventions; and
- b) judicial decisions and the teaching of the most highly qualified publicists, as a subsidiary source.

If the application of court decisions as a subsidiary source of international law does not require qualification, the matter of how to consider the teaching of the most highly qualified publicists, i.e., the doctrine, deserves some comment.

Such recent works as the Helsinki Rules of the International Law Association,³³ the Bellagio Draft Treaty³⁴ or, to a certain extent, the Draft Convention prepared by the International Law Commission (ILC) of the United Nations³⁵ do fall into this category as do all studies, books and articles in Law Journals and other similar publications contributed by scholars of international law.

The work of the Anglo-American International Law Association undertaken as from 1958 in continuation of that initiated by the European '*Institut de Droit International*' in 1911 and which produced the 1966 Helsinki Rules, as complemented and supplemented through 1996, is commonly labeled 'codification of international law', a term which may be misleading.

Indeed, to the Civil Law lawyer, 'codification' has the meaning of 'making law', a function which is definitely not that of the doctrine. To the Common Law lawyer, however, 'codification' may mean making law by writing out recognized Common Law rules into a Code of laws; it may also mean, simply, 'stating the law', i.e., declaring what the law is, or should be.

It is evident that the Helsinki Rules are merely declaratory of what the rules of international law state or should state. As a matter of fact, great care has been taken by their authors in distinguishing between rules *de lege lata*, or which *shall* be considered as binding, and those *de lege feranda*, or which *should* in fact be considered as recommendations or as rules of law 'in the making', also sometimes referred to as 'soft law'.

Symptomatic of this distinction is the fact that, in undertaking its parallel drafting work, the ILC felt the need to prepare a Convention intended to be submitted to Member Nations for ratification. This fact in itself evidences the ILC's implied position that, in the absence of a general convention, or of a great number of specific treaties evidencing a rule of customary law, there is no international law.³⁶

It may be that the initiative of the ILC was to try and attract support to the recognition of the Helsinki Rules as, in fact, the contents of the Draft Convention add little or nothing thereto.³⁷ Unfortunately, by having gone through the international political debate, the outcome is most disappointing in that the terminology carefully carved out, and the logical sequence engineered, by the ILA in drafting of the Helsinki Rules have been totally lost to the effect that, notwithstanding the large representation of states in the various ILC sessions, very few ratifications, if any, should be expected.

As to the Bellagio Draft Treaty, which falls into the same category as the Helsinki Rules, it constitutes a most interesting attempt at making a specific practical experience available to the international community in a ready-made treaty format. Considering that its two original authors have been active members of the ILA Water Resources Committee which produced the Helsinki Rules, this effort could have been expected to yield most rewarding results.

Unfortunately, if the Draft Treaty can no doubt serve as a useful tool in the specific field of transboundary underground waters, and although earnest attempts have been made in the commentary to try and make it applicable to both surface and underground waters, this effort, as stated by the authors themselves, will have fallen short of expectations due to the same situation as was faced by the ILC Draft Convention: after it was submitted to a large political debate, the original draft suffered a complete revision. As the authors of the Draft Treaty themselves report: ‘Some of the substantive changes made do not meet fully the expectations and suggestions of our several contributors and advisers. Remaining inaccuracies and errors of judgment can be attributed only to the final revisers’.³⁸

Some examples of such discrepancies include the aim of the exercise itself, namely ‘to achieve joint, optimum, utilization of the available waters’ while, in the preamble, use is made of such expressions as ‘rational use and conservation’, ‘equitable basis’, ‘optimum and efficient use’, ‘rational management’ and ‘conjunctive use’, a series of conflicting propositions; at Article I, definition 4., ‘conjunctive use’ is defined as ‘the integrated development and management of surface and groundwater as a total water supply system’, a verbiage conflicting with prior definitions; at Article II. 1, mention is made of ‘reasonable and equitable development and management’ while, in Article II. 2., reference is made to ‘optimum utilization and conservation’; at Article V. 1, the creation and maintenance of a comprehensive and unified database is limited to ‘. . . pertaining to transboundary groundwaters’ in contradiction with the predicament of ‘conjunctive use’; the treatment of transboundary transfers at Article XI is so succinct as to serve no purpose whatsoever; and the protection of prior rights under Article XIV is most surprising within a framework treaty supposed to introduce flexibility in water allocation as suggested by the wording of Article VIII, 2 & 3.

The Bellagio Draft Treaty has nevertheless the merit of addressing such matters as Enforcement and Oversight Responsibilities, Comprehensive Management Plans, Planned Depletion and Inquiry in the Public Interest which constitute appreciable novelties.

Notwithstanding the terminology however, all these arrangements have but reduced the principle of equitable utilization to an effective quantitative apportionment of the waters shared among their contracting basin states.

As to international water resources treaties, they have almost all created some sort of international institution, be it a Frontier Delimitation Commission or a Boundary Commission, a Navigation Commission, an Irrigation Commission, a Joint-Commission, Committee or Co-coordinating Bureau, a Mixed-Commission, a Permanent Commission, a Water Regulation Committee, a Joint Permanent Technical Commission, a Joint-Committee for Economic Co-operation, Inter-State Commissions, a Regional Organization, a Commission of Mediation, Conciliation and Arbitration or a Judicial Commission, with or without dispute settlement powers. Most of these have appeared chronologically, replacing or duplicating each other; some never functioned, few are still operational in some sectoral aspects of water resources administration but none was structured for integrated water resources management under the principle of equitable utilization.

As has been recommended elsewhere,³⁹ each international drainage basin should be equipped with an international institution responsible, initially, for inventory purposes, then for planning and, subsequently for plan implementation control, for water rights administration and for the prevention and settlement of water disputes.⁴⁰

4.2 National Water Resources Laws

If domestic law offers a comprehensive legal system structured on legislative, executive and judiciary powers giving both authority to the rule of law and ensuring its enforcement, international law has been shown to rest almost exclusively at the mercy of the strongest party. As has also been evidenced, however, international water resources law has developed faster than domestic water resources laws.

A majority of states confronted with water resources problems have by and large accepted the concepts of the drainage basin, of the conjunctive use of surface and underground waters and of the necessity to eradicate the water ownership privilege in order to effectively manage water use rights.

Although national laws have now to be revised in order to institutionalize these new concepts, the mass of existing sectoral, use-oriented laws and regulations needs consolidation. But more important, as will be seen later on, is the absolute necessity to reorganize the water resources management function and to find a solution to the plague of inter-departmental duplication of functions and powers from the central government down to the water users' level.

III. INTEGRATED WATER RESOURCES MANAGEMENT

1. The Helsinki Rules of 1966

It is now a generally accepted principle that water resources, with the exception of water contained in one's cup, receptacle, pond or shallow well and contained, or fossil waters, should not be appropriated as these constitute a common good for those users who depend on them.

If, today, the concept of 'shared international water resources' has practically become an evidence at international conventional law, domestic law has not yet succeeded in freeing itself, in respect of water resources, from the concepts of Public Domain or of State Control; and although the concept of State Control could be interpreted as going away from that of state ownership, in practice it comes to the same as far as private rights are concerned.

The reason for this situation stems simply from the fact that if, at international law, shared water resources are evidently apprehended by the drainage basin, the domain of domestic law is the national territory which has nothing to do with a hydrologic unit. Drainage basins are either wholly comprised within the national territory or form part of an international basin.⁴¹ Historically, therefore, States have long left the resource in the dominion of individual landowners with, as the only limitations to their absolute ownership

rights, the regime of easements and servitudes assorted with the principle of civil liability for damages and its corollaries of restoring the prior situation (the Roman Law *clausula rebus sic stantibus*) or of indemnifying (the Roman Law *restitutio in integrum*) themselves based on the moral principle of ‘no harm’ which the Post-Glossators of the XVIth Century have couched in Latin terms as the maxim ‘*sic utere tuo ut alienum non laedas*’ in order to probably give it a legal connotation which it does not have.⁴²

More recently, however, States have gradually excerpted navigable watercourses, then rivers declared public and ultimately all water resources from the private dominion in order to vest the national water resources in the State thereby leaving to individuals rights of utilization granted by means of permits, licenses and/or concessions; excepted, though, are those waters used for limited drinking, household and animal watering purposes which remain free of access to the riparian landowner, if not to all under still prevailing customary laws.

If, at international law, the conventional rule of the ‘community in the waters’, or of the ‘community of interests’ is now gradually substituting for those of ‘absolute territorial sovereignty’ and ‘absolute territorial integrity’, Article 4 of the Helsinki Rules establishes, limitatively, that “*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.*” It is noteworthy in this connection that States are no longer to be the appropriators of international water resources which are held in trust by the community of Basin States for an equitable sharing of the right to use them in the common interest.⁴³

Expressed in practical terms, by adopting the principle of ‘equitable utilization’ the Basin States recognize that water cannot be quantitatively apportioned in an equitable fashion as any such quantitative apportionment, while equitable at the time of allocation, soon becomes inequitable due to seasonal changes in the hydrology and water use patterns within the basin, not to mention the periodic variations of the hydrologic cycle and unpredictable climatic alterations.⁴⁴

To be equitable, the allocation of the waters is to be expressed in percentages of the total available resource in such a way that, if corresponding quantities of water do vary in time, all water users are affected or benefit in equitable proportions.

As a result, it may be said that the Helsinki Rules have achieved the transfer from the historical quantitative apportionment by States of international water resources into a new qualitative system of allocating to the Basin States an equitable share in the beneficial use thereof.

At this time, domestic law could gain immensely from such a system as developed at international law by holding the national water resources no longer in ownership or under any other form of preferred sovereign right but in trust for their equitable utilization by basin water users. Such a system, as will be seen later on, is in fact not different from that known by traditional societies or from that which prevailed in Europe until the French Revolution.

2. Integrated Water Resources Management

The water resources literature is replete with such terms as ‘rational management’, ‘conjunctive use’, ‘optimum use’, ‘environmental management’, ‘sustainable development’, ‘sustained yield’, ‘integrated resources conservation and development’, ‘reasonable and equitable utilization’ and the like, each most probably appropriate within its particular field of specialization but none being of general application.⁴⁵

To take but a trivial example as close as possible to water, a banker manages liquidities: cash in, cash out, cash balance, deposits, savings, reserves, investments, yields, expenses, cost accounting, loans, rate fixing and the like. Water resources, as the wealth of the community, require but the same kind of manager.

Water resources within the drainage basin need to be inventoried, quantitatively and qualitatively; the water demand needs to be assessed, and no more than available water may be allocated under pain of bankruptcy of the water bank. Water resources must be protected, quantitatively and qualitatively; they must be developed and used more efficiently in order to increase their availability. Water resources must be used in the best possible way, both quantitatively and qualitatively, in order to benefit all users equitably. As is now recognized, surface and underground waters must be used conjunctively and the safe yield of underground water resources must be protected. Water resources must be managed in such a way as to respect the environment and, notwithstanding the assertions of the environmentalists, all natural resources, including man, must be managed in a way respectful of the environment because there is nothing on earth called the ‘Environment’ that is in any way manageable ! May be different environments or sets of environment, but no ‘Environment’ as such.

Therefore, ‘integrated water resources management’ should be construed as the sum of activities that will ensure ‘the conservation, development and utilization of the water resources of the drainage basin for the benefit of the basin community’.⁴⁶

Under such a principle, there is no room for ‘optimum’ conservation, development or use as the optimization of one element would by definition have to be at the expense of the others. The criterion instead should be ‘integrated’ conservation, development and utilization which, by reference to the ultimate users, is expressed in the legal realm as having for purpose to be ‘equitable’.⁴⁷

And, as with the definition of the drainage basin, that of ‘integrated water resource management’ is applicable to the waters of both internal and international basins,⁴⁸ let alone captured aquifers or fossil waters and, who knows, may be icebergs one day !

3. The Integrated Basin Water Resources Management Plan

The recognition of such concepts and principles as those of the ‘community interest’ and of ‘equitable utilization’ no doubt constitute the achievement of the 20th Century in water resources legal doctrine, if not yet in State practice. In promoting such concepts and principles and in setting-up mechanisms for the administration of international water

resources and for the settlement of disputes, the Helsinki Rules omitted however to institutionalize the necessary instrument to convert the still subjective principle of 'equitable utilization' into an objective term of reference for integrated water resources management: 'the integrated water resources management plan'.⁴⁹

There is no need here to elaborate on the planning function and its intrinsic technical, economic and social parameters which have been amply developed by the water resources engineer, economist and planner. What needs to be stressed, however, is that international water resources management will always remain a highly political affair in the hands of sovereign States and that the only way to limit political intolerance in water affairs is by obliging States to make their decisions based on the evidence of bare, technical facts and of prevailing economic realities and social imperatives.⁵⁰

The same holds true at the national level when considering conflicts of power within the government administration at the central, regional and local levels. Water resources should be managed as a 'family affair' in which the government units concerned should act as a 'good family father' and with the active participation of the water users and of their associations.

It is noteworthy as well that, if the definition of the Drainage Basin encompasses the whole of the surface watershed and underground waters flowing into a common terminus, it similarly applies to each tributary of a given mainstream. If planning by drainage basin is needed and if basin plans require integration into the national water resources management plan, development will generally initiate at the level of tributaries so that the basin plan will in fact consist essentially of the aggregate of those sub-basin plans engineered for tributaries, which plans will then leave little or nothing to add beyond river training works in terms of mainstream management. Indeed, the 'large dam' fancy of the 1960s has fortunately been abandoned. Let us just remember the little advantages and enormous harmful effects of the Aswan Dam on the Nile.

Each drainage basin and sub-basin therefore needs one 'banker' to manage its water resources. And like the banker, the water resources manager has to establish the balance sheet of the available water resources, i.e., the quantitative and qualitative inventory of existing water resources, the quantitative and qualitative inventory of existing water uses and the quantitative and qualitative inventory of the water demand in order to compile the balance, which may be positive or negative, of available waters for an equitable allocation of corresponding water use rights.

Of paramount importance, however, is to recall that a water resources plan is never complete; it is a dynamic, ongoing technical exercise requiring continued adjustment in accordance with changing hydrologic, economic and social conditions.

III. THE INTEGRATED WATER RESOURCES ADMINISTRATION⁵¹

1. Legal Aspects

As has been seen above, if the principle of equitable utilization defined some thirty years ago has nowadays received various degrees of general acceptance by the international community, still few international basin states and national governments have clearly incorporated this principle into their international treaties and national legislations. The attachment to such historical concepts as territorial sovereignty and public/private ownership rights in water undoubtedly constitutes an extremely strong barrier to overcome. But time will eventually be subdued.

It is also evident that, left alone, such a principle remains purely theoretical. In order to render it operational, all the factors allowing for a water use right to qualify as being equitable have to be institutionalized as well. And the only way to achieve this purpose is by institutionalizing the integrated basin water resources plan so that it can effectively serve as the term of reference for measuring the equitable nature of corresponding water use rights.

Once supplied with such an instrument, the responsible administration is enabled to allocate water rights which will be equitable because they will be based on the prevailing water balance of the basin and on technical, economic and social factors largely absent of undesirable political bias.⁵²

Furthermore, water use rights have to be equitable not only upon allocation but throughout their effectiveness in time. Therefore, water use rights have by definition to be precarious so that they may be calibrated at all times and changed or cancelled if found to be no longer equitable. It therefore follows that, in order to achieve this purpose, the water resources administration, in its capacity of the Trustee of the national water resources, has to be empowered to attach terms and conditions to water uses in the form of authorizations, permits and concessions.

Water users are thus afforded full protection in their water rights as long as these conform to the granted terms and conditions of use. If water rights conforming to such terms and conditions need to be modified, varied or cancelled, but only then, water users are to be entitled to equitable compensation in cash or in kind, i.e., in an alternate water supply.

Finally, the responsible water resources administration should be endowed with administrative jurisdictional powers in order to prevent and settle water disputes, appeal to higher administrative instances and to the judiciary being of course reserved.

2. Institutional Aspects

By the time the historical use-oriented management of water resources was abandoned by States in favour of the integrated management concept, the vexing question of which institution was to be made into the national water resources manager soon cropped up. For practical purposes, the major water user institution was chosen such as the Ministry of Agriculture or of Irrigation in Common Law countries, and the Ministry of Public Works

in Civil Law countries. As was legitimately to be expected, the corresponding major water use became privileged and 'water power' then became the pry of empire building politicians and competing ministers. Some attempts at vesting this new power with neutral institutions such as the Ministry of Planning, a usually powerless ministry, or with the Presidency yielded no better results.

Then came the reign of the Ministries of Water Resources or of Natural Resources and the Environment, themselves flanked by some kind of parliamentary or inter-ministerial commission the members of which, too busy with other things and in any way not listen to by the '*primus inter pares*' Ministry, soon versed into consistent absenteeism.

This situation is further exacerbated by the administrative structure of government which is merely replicating the national discrepancies at the intermediate, provincial or state, and local levels. In federal States, however, inter-provincial or inter-state agreements – the Inter-State Compacts in the United States – were usefully devised to partially erase the non-correspondence of water resources with administrative boundaries.

It may be stated that the experience of federal States proved extremely useful at the time States reached the objective of multi-purpose and, subsequently, of integrated management of their shared water resources. The fairly simple, single purpose, Boundary, Navigation or Electric Power Joint Commissions, Committees or Boards initially vested with limited inventory, negotiating, planning or police powers became called upon to apprehend the joint investigation, conservation and development of international water resources for their multi-purpose use, an originally purely technical mandate soon to be marred with essentially political considerations.

Looking at state practice, it would seem that international water resources treaties have largely been over-ambitious in attempting, at the outset, to establish the perfect international water resources administration at the expense of a progressive institutionalisation of the various components of the management exercise which should normally result in the framing of a joint water resources management plan. With such a plan as the central objective, joint investigations, centralization and exchange of data may progressively move to joint planning, joint plan implementation and, then, to national harmonization and international control.

Of major significance, again, is the fact that integrated water resources management is not a static but an eminently dynamic exercise: the plan is never complete but continuously develops as conservation and development activities progress.

The Helsinki Rules do provide framework rules for the conventional establishment of the required institutional structure⁵³ which, in addition to integrated water resources management proper, should be vested with water rights administration prerogatives⁵⁴ and with a conciliation and arbitration function.⁵⁵

In considering the integrated management of water resources, a careful distinction should however be made between the functions and powers associated with (i) the formulation and execution of the water resources policy, (ii) the formulation and execution of the water

resources development plan and (iii) the administration of water rights. To place all of these under one hat is bound to failure. And the necessary decentralization of the national water resources management function to the basin level is only adding to the existing confusion of responsibilities and powers of the relevant government authorities at the national, regional and local levels.

If the new water ministry or authority should rightly be vested with the policy formulation function and parliament with the approval of the national water resources policy, its implementation ought to rest with each individual government department within its own fields of competence. The water ministry or authority should however be empowered to coordinate and control the water resources development work executed by those various government departments; conversely, those departments should feed the water ministry or authority with all the data and information which they produce within their respective fields of competence.

As to the national water resources policy, it is expressed in the form of the national water resources management plan designed to dictate the general guidelines to be followed for the conservation and development of the national water resources and for the overall administration of water rights.

3. The Drainage Basin Administration

With the introduction of the integrated basin water resources management concept, a non-political unit is thus to be added to the traditional government administration and its decentralized, regional and local, units. Indeed, the drainage basin unit, the necessary hydrological unit allowing for integrated water resources management, is a purely technical unit either wholly comprised within one, or extending over two or more, local or regional administrative units. Each drainage basin administration is to produce its own water resources management plan which, in aggregate with all other such plans, are to constitute the national water resources management plan.

The apparently insuperable problem of conflicts of jurisdiction between these new technical units and the regular political subdivision of decentralized government is however nothing more than a false problem.

Indeed, the exclusively technical functions of each drainage basin administration are the constitution and maintenance of their respective basin water resources inventory, of the inventory of existing water uses and of the water demand within their basin and, on this basis, the formulation and submission of their integrated water resources management plan to the central administration for approval as part of the national water resources management plan. As in the case of the water resources ministry or authority, however, each drainage basin administration should see its prerogatives limited to the coordination and control of the implementation of its basin water resources management plan by each of the central and decentralized units of government concerned, each acting within its own sphere of territorial competence.

The means of articulating such a joint water resources management undertaking requires the active participation of the basin water users and of their associations on the one hand, and, on the other hand, that of all government units operating within the geographical area of the basin, each within the limits of its territorial area of jurisdiction. There is nothing to change in the existing local government structure, save for the institutionalization of what may be designated as the ‘basin parliaments’, or fora for the consultation and exchange of views of all stakeholders within the drainage basin.

Finally, the basin water resources administration, as the basin water master, should be vested with specific powers to issue the required authorizations, permits and concessions for water uses and to prevent and settle water disputes, i.e., the water rights administration.

Such an institutional structure is of application to both national and international drainage basins. Recent examples worth studying are the water laws of Tunisia (1975),⁵⁶ Spain (1999)⁵⁷ and Brazil (2000)⁵⁸ as well as the international agreements in respect of the Parana River (1992)⁵⁹ and of the Mekong River (1995).⁶⁰

IV. CONCLUSION AND SOME ADDITIONAL REMARKS

1. The New Concepts – The New Vision

It appears from this brief review of the evolution and recent trends in water law that the XXIst century will undoubtedly witness the comprehensive institutionalization of a number of new concepts and principles that can be summarized as follows:

- From Use-Oriented to Resource-Oriented legislation
- The Drainage Basin – first legal definition ever of ‘Water Resources’
- The Conjunctive Use of Surface and Underground Waters
- From Absolute Territorial Sovereignty and Integrity to State Sovereignty and Responsibility – No more ‘Natural Flow’, ‘No-Harm’ or ‘Limited Territorial Sovereignty’ concepts
- From Equitable Apportionment to Equitable Utilization – 1966 Helsinki Rules
- Integrated Water Resources Management as ‘the sum of activities required to ensure the balanced conservation, development and utilization of the water resources of the drainage basin’ – no more ‘optimum’, ‘environmental’ or ‘sustainable’ development and/or utilization
- The Integrated Basin Water Resources Development Plan as the instrument for policy formulation and implementation
- The Basin Water Resources Administration as the instrument to formulate the plan, to control its implementation, to allocate water use rights and to prevent and/or resolve water disputes.

It may therefore be anticipated that number of governments will embark on, or pursue, corresponding legal and institutional reforms while States will enter into new international water resources agreements. The temptation to copy from existing laws and agreements will be strong. Two words of caution though. Firstly, each country having its proper hydrologic setting, legal and institutional traditions and historical heritage, there can be no

such thing as a 'model water law'. While taking inspiration from adequate foreign experience, each State must make the effort to imagine its own legal framework based on its own realities. Secondly, if harmonization of the national legislations of States sharing international water resources is desirable, copying from one another will only lead to confusion and misunderstanding on the part of the respective local populations. If there must be harmonization, it should not be of the laws and institutions as such, but of the fundamental principles of water resources management which are to be translated into an appropriate language in the particular legislation and institutional framework of each individual State.

Furthermore, the most ideal water law will remain academic unless its provisions are effectively enforced. To be enforceable, such provisions must be understandable by the water users communities and must be enforced by competent officers and/or administrators at all levels of government. Contrary to the views prevailing among the 'modernists', traditional societies are extremely well equipped in this respect as traditional water user communities have for ages managed their scarce water resources in accordance with those so-called, in fact re-discovered, 'modern' principles ! In many instances, rather than trying to impose a new institutional framework from the top down, governments would be well advised to take stock of their grass root, traditional, institutional frameworks and to project them up to the national level.

While indulging in this exercise, legal drafters will most likely be confronted with fancy terminologies and faced with so-called new concepts which, if adopted bluntly, are likely to cause more confusion than to clarify particular situations, some of which are complex by nature. Hence, the following few remarks.

2. Sustainable Water Resources Management

Introduced recently by the environmentalists, this expression is meaningless. What does or what could 'sustainable management' effectively mean ? The term 'sustainable' was most probably engineered by the environmentalists to allegedly find a compromise to the insuperable opposition between 'conservation' and 'development'. The correct original expression, however, had been formulated long ago by the foresters who have been true environmentalist even before the term 'environment' was invented: that of the 'sustained yield', a principle that was later adequately applied to the management of underground waters and could very well be applied to the diversion of surface waters as well.

As has been said above, the 'environment' as such having no limits, there can be no environmental management. There are however a large variety of environments in which the aggregate of all natural resources, including man, when apprehended within a given drainage basin constitute a manageable whole. There is an ecological management of natural resources, including water, and this is what the concept of 'integrated water resources management' suffices to define.

3. Water Pricing

A most vexing problem in water resources management has been, and continues to be, that of 'water pricing'.⁶¹ Indeed, if it is unanimously recognized that investment in water resources development must be productive, most traditional communities around the World do regard water as a sacred, not an economic, commodity escaping the mercantile realm. Water, as such, cannot be traded nor sold.⁶²

Here again, there have been and still are exceptions. Even in the traditional Islamic system of water law, certain schools of doctrine do recognize the trading of appropriated water (water contained in one's cup, receptacle, pond or shallow well) and of corresponding water rights. It nevertheless remains that water in motion, be it surface or underground, cannot be sold.⁶³

All customary water laws have always recognized the principle that, if water may not be sold, the service of making water available has a cost that must be assumed by he who benefits from the water so made available. The whole traditional irrigation water management system by local water users' associations is based on a contribution in cash or in kind which the developers receive from those who benefit from their work.⁶⁴ Such a contribution has of course to be proportional to the benefit enjoyed and has one way or another to be measured in proportion to the amount of water supplied. As long as it is not the water that is so sold but the service of conveyance that is remunerated, there can be no objection.

The same principle applies to municipal water supply and, although the water is metered, metering is only a way to compute a water conveyance charge that is proportional to the service provided.

There is therefore no need for water to be considered an economic commodity while ensuring that users can and will contribute financially to the costs of water conveyance, of water pollution abatement and of maintaining the quality of this precious natural resource. It ought to be remembered, however, that water is sustaining life and that the supply of water to low-income populations has always been subsidized or even made available free-of-charge. There is no reason whatsoever for such a system not to be maintained, if only within economically depressed areas.

4. Privatization

A last remark ought to be made in respect of a recent tendency by modern authors and international organizations to promote the privatization of water distribution alleging that the private sector is more efficient than the public sector.⁶⁵ While it would indeed be wishful to contradict such a fact, but considering that privatization is profit-oriented, the concept of making a profit on water would definitely be seen as a hurting proposition within traditional environments. Access to water being considered one of man's sacred rights and knowing that the needy in all countries of the world will never afford the means to pay the full price of the water conveyance service, the supply of water for domestic purposes has always been, and will continue to have to be subsidized. The generally applied system by which economically strong water users pay more in order to allow less

privileged classes of water users to have access to the water they need is ethically correct and there is no reason to dispense with it.

One way to solve this apparent impasse could be to promote private supply and conveyance corporations operating under free economy criteria, but to subject these enterprises to the public concession regime in such a way that their profit making tendencies may be monitored and controlled by the State in the interest of the well being of the community.

Under World Bank pressure, Chile for instance introduced the privatization of its water sector in 1981.⁶⁶ Today, most, if not all, water rights in the country have been hoarded by the few wealthy and are the subject of pure speculation at the expense of the less well-to-do users who are now deprived of their water. An example definitely not to be followed.

Notes

1. This article constitutes a condensed, supplemented and edited version of the working papers presented by the author before the following two expert consultation meetings:

Integrated Water Resources Management, National and International Legal and Institutional Requirements – A New Vision, by Bernard J. Wohlwend, Consultant, Economic Commission for Western Asia, Expert Group Meeting on Legal Aspects of the Management of Shared Water Resources, Sharm El-Sheikh, Egypt, 8-11 June 2000, Doc. E/ESCWA/ENR/2000/WG.1/6, 39 pp., (to be published in the Proceedings); and

Transboundary Drainage Basins - A New Vision, by Bernard J. Wohlwend, Consultant, International Water Resources Association (IWRA), Expert Consultation on "Policy and Institutions for Integrated Water Resources Management", Salvador, Bahia, Brazil, 3-6 September 2000, 32 pp., (to be published in the Proceedings).

2. For a comprehensive study of the history and evolution of water law, see: **Principles of Water Law and Administration, National and International**, by Dante A. Caponera, A.A. Balkema, Rotterdam, Brookfield, 1992, 260 pp., Chapters 2, 3, 5 & 6.
3. For a detailed study of Hindu water law and of customary water resources management and institutions in Bali, see: **Hindu Water Law and Administration in Bali**, by Bernard J. Wohlwend, in: *Report on the Conference on Global Water Law Systems*, Valencia, Spain, September 1975, published by Colorado State University, Fort Collins, Colorado, U.S.A., 1976, 26 pp., plus Annexes.
4. For a detailed study of Islamic water law and of Moslem customary water resources management and institutions, see: **Water Laws in Moslem Countries**, Vol. 1, by Dante A. Caponera, FAO Irrigation and Drainage Papers Nos. 20/1, FAO Rome, Italy, 1973, pp. 1-35

5. For a detailed review of Roman water law, see: **Principles of Water Law and Administration, National and International**, op. cit., Chapter 3., Sections 1 & 2
6. For a detailed review of water law during the Middle Ages, see: **Principles of Water Law and Administration, National and International**, op. cit., Chapter 3., Sections 3 & 4.
7. For a comprehensive discussion on the 1966 Helsinki Rules and subsequent Rules until 1996, see: **International Law Association Rules on International Water Resources**, edited by Slavko Bogdanovic, Yugoslav Association for Water Law, Yugoslav Branch of the International Law Association in Novi Sad, and the European Centre for Peace and Development (ECPD) in Belgrade, Prometej, Novi Sad, Yugoslavia, 1999, a bilingual publication, 277 pp. (Includes a consolidation of the 1966-1996 Helsinki Rules, with commentary).
8. See: **Principles of Water Law and Administration, National and International**, op. cit., Chapter 11.
9. 1, NORADDOUGHIAN, *Recueil d'actes internationaux de l'Empire Ottoman*, (1897-1903), 83.
10. Ibidem, 169.
11. UN/E/ECE/136, 183 (*In French*).
12. 17, MARTENS, N.R.G., Pt II, 173 (VERZIIL) (*In French*).
13. UN/E/ECE/136, 195 (Art. 10) (*In French*).
14. 1, MARTENS, Recueil, 2nd ed., 110 (Art. 7).
15. 2, MARTENS, Recueil, 2nd ed., 331 (VERZIIL) (*In French*).
16. Ibidem, 671.
17. Ibidem, 268.
18. 5, MARTENS, 2nd ed., 544 (VERZIIL) (*In French*).
19. See, Convention of 31 March 1831 in: 10, HERSTLET C.T., 471 (*In French*).
20. See, Convention of 25 July 1840 in: 1, MARTENS N.R.G., 208
21. See, Notification of H.M.'s Governor of India of 13 March 1843 in: 5, MARTENS, N.R.G., 125.
22. See, Decree of the Government of Buenos Aires of 3 October 1852 in: 42, BFSP, 1313.

23. 17, HERSTLET C.T., 62 (Arts 13-25).
24. ST/LEG/SER.B/12, 260 (Art. 1).
25. 29, HERSTELT, C.T., 603 (Arts 331-362).
26. 74, LNTS, 9 (Art. 8).
27. The analysis which follows is at substantial variance with the traditional approach to international water resources law as faithfully expounded, for instance, in: **Application of International Water Law to Transboundary Groundwater Resources, and the Slovak-Hungarian Dispute over Gabcikovo-Nagymaros**, by Gabriel Ekstein, 19 Suffolk Transnat'l L.R. 67 (1995), Part I, pp. 1-10.
28. '*Agreements that restrict the sovereignty of a state are indications of the reciprocity of interests of the contracting parties.*', quoted from: **Water Management in the Nile Basin: Opportunities and Constraints**, by Aziza Fahmi, published in: **Sustainable Development and Management of Water Resources: a Legal Framework for the Mediterranean**, edited by Sergio Marchisio, Gianfranco Tambourelli and Liana Peccoraro, Institute for Legal Studies on the International Community – CNR, Mediterranean Sustainable Development Law – MESDEL, Rome, Italy, 1999, 256 pp., pp. 133-147.
29. On the importance of international conventional law and the protection of prior rights, see for example: **Water Management in the Nile Basin: Opportunities and Constraints**, op. cit., pp. 133-147.
30. 7, LNTS, 36.
31. 36, LNTS, 75.
32. As a patent example, it can be shown that notwithstanding World protests and several U.N. Resolutions, Israel acted unilaterally to seize the headwaters of the Jordan in 1967, a situation which still prevails today. See: **Water Disputes in the Jordan Basin Region and their Role in the Resolution of the Arab-Israeli Conflict**, Environment and Conflicts Project (ENCOP) Occasional Paper No. 13, by Stephan Libiszewski, Center for Security Studies and Conflict Research, Swiss Federal Institute of Technology, Zürich, Switzerland and Swiss Peace Foundation, Bern, Switzerland, August 1995, 108 pp. See also: **Application of International Water Law to Transboundary Groundwater Resources, and the Slovak-Hungarian Dispute over Gabcikovo-Nagymaros**, op. cit., which demonstrates that, still today and notwithstanding general expectations, conventional law remains for the International Court of Justice the quasi sole source of international law.
33. For a doctrinal exposition of the 1966 Helsinki Rules, See: **The Law of International Drainage Basins**, edited by A.H: Garretson, R.D. Hayton & C.J. Olmstaed, published for the Institute of International Law, New York University School of Law, Oceana Publications, Inc., Dobbs Ferry, New York, 1967, 916 pp.;

and for the text of the 1966 and subsequent Rules, with commentary, see: **International Law Association Rules on International Water Resources**, op. cit.

34. **Transboundary Groundwaters: The Bellagio Draft Treaty**, by Robert D. Hayton and Albert E. Utton, International Transboundary Resources Center, School of Law, University of New Mexico, Albuquerque, NM, USA, November 1992, a bilingual publication, 59 pp. [29, Nat. Res. J., Summer 1989, p.663-722].
35. **Convention on the Law of the Non-Navigational Uses of International Watercourses**, as drafted by the International Law Commission of the United Nations (ILC), text in: United Nations (1997b) Report of the Sixth Committee convening as the Working Group of the Whole (A/51/869), 11 April 1997.
36. *A contrario*, see: Attila Tanzi: **The completion of the preparatory work for the UN Convention on the Law of International Watercourses**, in: *Natural Resources Forum*, Vol. 21, No. 4, 1997, pp. 239-245.
37. In fact: *'The ILC draft articles deal only with groundwater that is part of a river system. Groundwater not associated with rivers is not included.'*, quoted from **Transboundary Water Resources in the ESCWA Region – Utilization, Management and Cooperation**, E/ESCWA/ENR/1997/7, 10 September 1997, United Nations, New York, 1998, p. 66.
38. See: **Transboundary Groundwaters: The Bellagio Draft Treaty**, op. cit., Foreword, p. 666.
39. See: The 1966 Helsinki Rules, Chapter VIII, '**Administration of International Water Resources**' and Annex 1, '**Guidelines for the Establishment of an International Water Resources Administration**' in: *International Law Association Rules on International Water Resources*, op. cit, pp. 236-242.
40. See: Annex 2: '**Procedures for the Prevention and Settlement of International Water Disputes**' and Annex B, '**Model Rules for the Constitution of the Conciliation Commission for the Settlement of Disputes**', in: *International Law Association Rules on International Water Resources*, op. cit., Chapter X.
41. *'Thus international river and aquifer systems are the most evident example of the general contradiction between historically grown political boundaries of sovereign states and natural borders of eco-geographical regions.'*, quoted from **Water Disputes in the Jordan Basin Region and their Role in the Resolution of the Arab-Israeli Conflict**, op. cit., p. 69.
42. It is surmised here that the only general principles of international law applicable to States as subjects of international law are those of 'State Sovereignty' and its corollary of 'State Responsibility' according to which States enjoy absolute sovereign rights over their territory but are liable for the consequences of their acts causing harm to rights and interests in third States. The so-called 'principle of territorial integrity' constitutes no doubt a moral precept but not a legal one as any

claim to territorial integrity matures only provided a ‘substantial harm’ has been sustained and demonstrated. As to the so-called ‘shared international water resources’ (or of ‘community in the waters’), it refers to a situation of fact, not of law, and acquires a legal connotation only by conventional law under the principle of ‘reciprocity’.

43. Worth noting is the statement made by the Minister of Irrigation of Egypt before the Expert Group Meeting held in Sharm El-Sheikh in June 2000 under the auspices of the United Nations Economic and Social Commission for Western Asia (ESCWA) namely, when announcing that the so far bilateral Nile Commission was now opening to the remaining nine upstream Basin States, that “*When considering that common terminus, we realize that we are all upper riparians*” !
44. ‘*A changing climate would furthermore pose great challenges to international agreements on water distribution which may be concluded among the riparians of international water bodies. Traditionally, such treaties stipulate water amounts or quotas to be allocated to the parties involved. This is done on the assumption that the climate will remain stationary – i.e. variable in the short term but unchanging over time. Indeed, hydrologists and lawyers have few tools with which they can incorporate future changes of uncertain magnitude. A decrease in flow could make achieved agreements obsolete and revive old conflicts.*’, quoted from **Water Disputes in the Jordan Basin Region and their Role in the Resolution of the Arab-Israeli Conflict**, op. cit., p. 23.
45. For an interesting study of the origin and meaning of the ‘sustained development’ concept, see: **Le Partenariat euro-méditerranéen et la Tunisie**, by Slim Laghmani, in: **Sustainable Development and Management of Water Resources: a Legal Framework for the Mediterranean**, op. cit., pp. 25-29.
46. ‘*The concept of the integrated approach to water resource management focuses on giving due consideration to technical, economic, social and engineering requirements during the planning of water resources development programs, as well as implementing inter-related activities in an efficient, integrated and comprehensive manner. It also calls for setting priorities that meet social expectations and the availability of financial resources. Thus, integrated water resources management implies an approach that is interactive, flexible and dynamic in the areas of policy planning, analysis and strategy implementation.*’, quoted from **Updating the Assessment of Water Resources in ESCWA Member Countries**, E/ESCWA/ENR/1999/13, 12 October 1999, United Nations, New York, 1999, p.55; and ‘*The fragmented, supply-oriented approach to water development must give way to integrated water management with emphasis on a partnership of water suppliers and water users and on the conservation both of quantity and quality.*’, quoted from: **From Scarcity to Security – Averting a Water Crisis in the Middle East and North Africa**, IBRD, Washington D.C., 1996., pp. 4-5 .
47. ‘*Although the theory of “equitable share” overcomes the two extreme doctrines of absolute territorial sovereignty and integrity, it does not provide a patent remedy*

to all water disputes. The mentioned factors to be considered in defining 'equity' remain in part conflicting, and the agreements do not state relative weights or priorities among them.', quoted from **Water Disputes in the Jordan Basin Region and their Role in the Resolution of the Arab-Israeli Conflict**, op. cit., p. 70.

48. *'An integrated approach calls for planning to be carried out at the basin and national levels'*, quoted from **Updating the Assessment of Water Resources in ESCWA Member Countries**, op. cit., p. 56. See in particular a methodological approach to water resources planning in: **Transboundary Water Resources in the ESCWA Region – Utilization, Management and Cooperation**, op. cit., B. Methodology for Water Sector Planning, pp. 8-12.
49. For an interesting practical experience in basin planning see: **Water Resources Management in Spain**, by Antonio Fanlo Loras, published in: **Sustainable Development and Management of Water Resources: a Legal Framework for the Mediterranean**, op. cit., pp. 148-167.
50. See, for example: *'In the current Middle East peace process Israel negotiates with each of its immediate neighbours separately. It is true that this was a pre-condition of the Jewish State to consenting to the Madrid opening conference, since it did not want to find itself alone against several opponents. But it also corresponds to the differing interests manifest in each track of the conflict. This holds true for both the political core issues and water-related disputes. It is a central issue of this paper that, although all bilateral trials of the conflict deal in principle with distribution of shared resources, the relative weight of water disputes and their interconnections with traditional concerns – political and territorial – are quite different within each.'*, quoted from **Water Disputes in the Jordan Basin Region and their Role in the Resolution of the Arab-Israeli Conflict**, op. cit., p. 36.
51. For a detailed analysis of the water resources administration function, see: **Principles of Water Law and Administration, National and International**, op. cit., Chapter 9, 'National Water Resources Administration' and Chapter 12, 'International Water Resources Administration'.
52. In this sense: *'International law cannot decide the allocation of waters of the Euphrates and Tigris. Nonetheless, law provides a basis for negotiation. Equitable utilization is inherently flexible. It will not produce definitive solutions and allocations, but will serve as a foundation for negotiation and cooperation. An international watercourse agreement should lay down rights and obligations of riparians more precisely. In addition to the agreement, a joint watercourse institution is necessary to realize cooperation among watercourse States. To reach such an agreement, inventory studies of water and land resources of all the parties must be completed. This will enable them to base their needs on objective criteria, rather than subjective political ambitions.'*, quoted from **The Euphrates-Tigris basin: An overview and opportunities for cooperation under international law**, by Ibrahim Kaya, ARIDLANDS No. 44, Fall/Winter 1998, Conflict Resolution and Transboundary Water Resources, p.8.

53. See: **Administration of International Water Resources in: *International Law Association Rules on International Water Resources***, op. cit., pp. 236-238.
54. Ibidem, Chapter VIII, pp. 168-170.
55. Ibidem, Chapter 6, **Procedures for the Prevention and Settlement of Disputes**, pp. 214-219.
56. See: Tunisie, **Le Code de l'eau de 1975** in: *Législation et institutions des eaux souterraines en Algérie, en Libye et en Tunisie, Etude de droit comparé*, Etude réalisée pour l'Observatoire du Sahara et du Sahel et pour l'Organisation des Nations Unies pour l'Alimentation et l'Agriculture, par Bernard J. Wohlwend, Consultant, Document OSS No. 2074, Paris, avril 1997, 21 pp.
57. See: **Water Law No. 171/1999 of 1 December 1999 amending Water Law No. 29/1985 of 2 August 1985** in: *Boletín Oficial de las Cortes Generales, VI Legislatura, Serie A*, Madrid, Spain (*In Spanish*).
58. See: **Law No. 9.984 of 17 July 2000 establishing the National Water Agency**, published in the D.O. (Official Gazette) of 17 July 2000, Brasilia, Brazil (*In Portuguese*).
59. See: **Institutions for International River Uses, The Paraná River Bilateral Commission – Argentina and Paraguay – COMIP**, Working paper by Lilian del Castillo, International Water Resources Association (IWRA), Expert Consultation on "Policy and Institutions for Integrated Water Resources Management", Salvador, Bahia, Brazil, 3-6 September 2000, 21 pp., plus Annexes (to be published in the Proceedings).
60. See: **Agreement of 5 April 1995 on Cooperation for the Sustainable Development of the Mekong River Basin** (Courtesy communication of Ms Marcella Nanni, Water Law Expert and Alternate Member for Italy, ILA/WRC, Rome, Italy)
61. For a general discussion on water pricing, see: **Updating the Assessment of Water Resources in ESCWA Member Countries**, op. cit., pp. 60-67 and, in particular, the quotation '*In most of the ESCWA countries, the perception of water as an economic good is met with scepticism by decision-makers and by the public because of socio-economic hardship in some countries, and by the knowledge that water has been traditionally provided free of charge or at prices substantially below production costs through different forms of subsidies.*', at p. 61.
62. In this sense, see: **Water Resources Management in Spain**, by Antonio Fanlo Loras, in: *Sustainable Development and Management of Water Resources: a Legal Framework for the Mediterranean*, op. cit., pp. 148-167 and pp. 236-243.

63. For an extremely interesting discussion on ‘water ownership’, ‘water rights’, and ‘water pricing’, see: **Legal and Institutional Problems of Water Resources Management in Palestine**, by Abdel Rahman Tamimi, in: *Sustainable Development and Management of Water Resources: a Legal Framework for the Mediterranean*, op. cit., pp. 236-243.
64. ‘Community-based associations that take responsibility for water delivery and system maintenance can improve services and help recover costs. In Tunisia, such associations have been functioning effectively since colonial times, and today control practically all tubewell irrigation schemes.’, quoted from: **From Scarcity to Security – Averting a Water Crisis in the Middle East and North Africa**, op. cit., p. 6.
65. For a discussion of the privatisation issue, see: **Updating the Assessment of Water Resources in ESCWA Member Countries**, op. cit., pp. 75-79 and, in particular, the quotations ‘Alternative arrangements such as management, sub-contracting, and contract concessions can be used to combine private administration with and public ownership.’. . . ‘In many ESCWA countries, private administration and/or management may prove to be more appropriate than total privatization, from the security point of view, and would be an initial step in the direction of total privatization in the future.’, at p. 77, and ‘There is a strong belief that water is too important, to life and from the security standpoint of the region, to be given up to free market forces.’, at p. 79.
66. See: **Water Code of 13 August 1981**, promulgated by Decree having force of law No. 1.122, published in the DO (Official Gazette) of 29 October 1981, Santiago, Chile (*In Spanish*).

Selected Annotated Bibliography

1. **Rivers in International Law**, by F.J., Berber, Stevens-Oceania, London & New York, 1959.

A pre-1966 Helsinki Rules review of international law applicable to international rivers. Prof. Berber has been one of the leading scholars who developed the Helsinki Rules. The ILA Water Resources Committee is in particular indebted to him for his contribution of the Rules on Flood Control and on the Protection of Water Resources and Water Installations in Times of Armed Conflicts.
2. **The Law of International Drainage Basins**, edited by A.H: Garretson, R.D. Hayton & C.J. Olmstaed, published for the Institute of International Law, New York University School of Law, Oceana Publications, Inc., Dobbs Ferry, New York, 1967, 916 pp.

A specialized doctrinal treaties on international law as applicable to the drainage basin with case studies on the Columbia, Nile, Plata, Indus and Colorado Drainage Basins.

3. **International Groundwater Law**, by Ludwik A. Teclaff & Albert E. Utton, Oceana Publications Inc., London, Rome, New York, 1981, 490 pp.

A compendium of doctrinal articles addressing the origin and development of domestic and international law to the management of underground water resources contributed by such leading scholars, among others, as Dante A. Caponera, Robert Emmet Clark, Robert D. Hayton, Ludwik A. Teclaff and Albert E. Utton.

4. For compendia on national water legislation, see FAO Legislative Studies on **Water Legislation in Central America, The Caribbean and Mexico** (No. 8), 196 pp., in **Selected European Countries**, Vol. I (No. 10), 257 pp., & Vol. II (No. 30), 155 pp., in **Selected African Countries** (No. 17), 267 pp., and in **South American Countries** (No. 19), 171 pp., published between 1975 and 1983.

Comprise monographs on El Salvador, The Dominican Republic, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama (in Spanish only); on Belgium, Cyprus, England & Wales, Finland, France, Israel, Italy, The Netherlands, Spain, Turkey, The USSR, and Yugoslavia; and on Benin, Burundi, Ethiopia, Gabon, Kenya, Mauritius, Sierra Leone, Swaziland, Upper Volta (Burkina Fasso) and Zambia (including a comprehensive historical study of African customary and colonial water resources laws and their subsequent codification and a comparative study of current water legislation in those countries).

5. **Systematic Index of International Water Resources Treaties, Declarations, Acts and Cases By Basin**, Vol. I & II, Legislative Studies Nos. 15 & 34, FAO, Rome, Italy, 1978, 481 pp., and 1984, 332 pp.

A chronological compilation of some 3700 legal instruments governing international water resources from the early IXth century until 1983, with Tables classifying water resources by country and countries by basin.

For subsequent treaties, see <http://www.fao.org> selecting “Legal Office” - “FAOLEX” - “International Treaties”, FAO’s electronic legislative data base.

6. Other FAO Legislative Studies related to water resources law subjects include **A Legal and Institutional Framework for Natural Resources Management** (No. 9), **Legal and Institutional Responses to Growing Water Demand** (No. 14), **The Law of International Water Resources** (No. 23), **Irrigation Users’ Organizations in the Legislation and Administration of Certain Latin American Countries** (No. 24), **International Groundwater Resources Law** (No. 40), **The Freshwater-Maritime Interface: Legal and Institutional Aspects** (No. 46), **Treaties Concerning the Non-Navigational Uses of International Watercourses – Europe** (No. 50) and **Preparing National Regulations for Water Resources Management** (No. 52) published between 1975 and 1994.

A set of studies contributed by such authors, among others, as Julio A. Barberis, Guillermo J. Cano, Dante A. Caponera, Ludwik Teclaff and Stefano Burchi. Of particular significance is Legislative Study No. 52 which reproduces and analyses

existing national procedures and forms used for the administration of water resources, including groundwater exploration, exploitation and use permits, pollution abatement and control and municipal water supply as well as water pricing regulations.

7. **Principles of Water Law and Administration, National and International**, by Dante A. Caponera, A.A. Balkema, Rotterdam, Brookfield, 1992, 260 pp.

The bible of the national and international water lawyer. A comprehensive treaties on water law, including a historical and comparative law review of the major customary and codified legal and institutional systems of the World as relate to water resources, and proposing a methodology for the drafting of both national legislation and international treaties together with their respective institutional frameworks and water rights administration procedures.

*A French translation by Bernard J. Wohlwend has been published under the title : **Les Principes du Droit et de l'Administration des Eaux, Droit interne et Droit international**, par Dante A. Caponera, Editions Johanet, Paris, 2000, 349 pp.*

8. **Transboundary Groundwaters : The Bellagio Draft Treaty**, by Robert D. Hayton and Albert E. Utton, International Transboundary Resources Center, School of Law, University of New Mexico, Albuquerque, NM, USA, November 1992, a bilingual publication, 59 pp. [29, Nat. Res. J., Summer 1989, p.663-722].

Originally conceived by two eminent members of the ILA Water Resources Committee, and as subsequently revised by different political fora, the Draft Treaty presents the reader with an extensively annotated international framework agreement for the management of international aquifers based on the recent principles of international water law as applied to the US-Mexico border region.

9. **Water Disputes in the Jordan Basin Region and their Role in the Resolution of the Arab-Israeli Conflict**, Environment and Conflicts Project (ENCOP) Occasional Paper No. 13, by Stephan Libiszewski, Center for Security Studies and Conflict Research, Swiss Federal Institute of Technology, Zürich, Switzerland and Swiss Peace Foundation, Bern, Switzerland, August 1995, 108 pp., available at: <http://www.fsk.ethz.ch/fsk/encop/encop.html>

A comprehensive analysis of the water resources situation in the Middle East, including both surface and underground, and of the role of water in the historical conflicts within the Region using the Jordan Basin as a case study, together with a detailed review of the peace negotiations since the early 1990s and until the 1994 Jordano-Israeli Peace Treaty. Carries a plea for the integration of diplomacy and water management. Contains a very rich specialized bibliography.

10. **Application of International Water Law to Transboundary Groundwater Resources, and the Slovak-Hungarian Dispute over Gabčíkovo-Nagymaros**, by Gabriel Ekstein, 19 Suffolk Transnat'l L.R. 67 (1995), 44 pp.

A thorough examination of international water law as applicable to the physical nexus between surface and underground waters, and of the Slovak-Hungarian Dispute over Gabčíkovo-Nagymaros as a case study.

Slovakia submitted the dispute to the International Court of Justice in May 1994. In October 1997, the Court pronounced its judgment as follows:

The Court found both states in breach of their legal obligations, as established in the treaty of 1977, which concerned the construction of dam structures in Slovakia and Hungary for the production of electric power, flood control and improvement of navigation on the Danube. As may be recalled, in 1989 Hungary suspended and subsequently abandoned completion of the project alleging that it entailed grave risks to the Hungarian environment and the water supply of Budapest. Slovakia denied these allegations and insisted that Hungary carry out its treaty obligations. In addition, it carried out an alternative project on its territory, whose operation had adverse effects on Hungary's access to Danube waters.

In its judgment, the Court found:

that Hungary was not entitled to suspend and subsequently abandon, in 1989, its part of the works in the dam project, as laid down in the 1977 Treaty between Hungary and Czechoslovakia and related instruments;

that Czechoslovakia was entitled to start, in November 1991, preparation of an alternative provisional solution (called "Variant C"), but not to put that solution into operation in October 1992 as a unilateral measure;

that Hungary's notification of termination of the 1977 Treaty and related instruments on 19 May 1992 did not legally terminate them (and that they are consequently still in force and govern the relationship between the parties);

and that Slovakia, as successor to Czechoslovakia, became party to the 1977 Treaty.

As to the future conduct, the Court stated that:

the two parties must negotiate in good faith as to the achievement of the objectives of the 1977 Treaty, and establish a joint operational regime for the dam in Slovak territory, unless they agree otherwise. It further determined that the parties must compensate each other for the damage caused, and that the accounts for the construction and operations of the works must be settled in accordance with the provisions of the Treaty.

Finally, the Court held that:

in order to reconcile development with environment protection, the parties "should look afresh at the effects on the environment of the operation of the Gabčíkovo power plant. In particular, they must find a satisfactory solution for the volume of water to be released into the old bed of the Danube and into the side-arms of the river." (Court's Web Site: <http://www.icj.cij.org>)

In spite of the numerous questions this case raised in respect of transboundary groundwaters and of a much awaited consideration of the applicability of the Helsinki Rules to the case, the Court simply stated that the amount of water to be released should be reconsidered.

(Courtesy communication of Ms Marcella Nanni, Water Law Expert and Alternate Member for Italy, ILA/WRC, Rome, Italy)

11. **Convention on the Law of the Non-Navigational Uses of International Watercourses**, as drafted by the International Law Commission of the United Nations (ILC), text in: United Nations (1997b) Report of the Sixth Committee convening as the Working Group of the Whole (A/51/869), 11 April 1997.

The Convention was adopted on 21 May 1997 by General Assembly Resolution 51/229 with 106 affirmative votes, 26 abstentions and 3 negative votes (Burundi, China and Turkey), United Nations, 1997a, pp. 7-8. The Convention is subject to ratification.

12. **International Law Association Rules on International Water Resources**, edited by Slavko Bogdanovic, Yugoslav Association for Water Law, Yugoslav Branch of the International Law Association in Novi Sad, and the European Centre for Peace and Development (ECPD) in Belgrade, Prometej, Novi Sad, Yugoslavia, 1999, a bilingual publication, 277 pp.

The most up-to-date and trustful publication of the consolidated 1966 Helsinki Rules and Other Rules on International Water Resources Subsequently Adopted by the ILA up to 1996, together with the original commentary.

13. **Sustainable Development and Management of Water Resources: a Legal Framework for the Mediterranean**, edited by Sergio Marchisio, Gianfranco Tambourelli and Liana Peccoraro, Institute for Legal Studies on the International Community – CNR, Mediterranean Sustainable Development Law – MESDEL, Rome, Italy, 1999, 256 pp.

A compendium of several articles of which the most relevant to the subject of this article are (i) 'Le Partenariat euro-méditerranéen et la Tunisie', by Slim Laghmani, p. 25; (ii) Water Management Legislation and Administration in Selected Mediterranean Countries, by Stefano Burchi, p. 119; (iii) Water Demand as a Guide to Management, by Fatma Bassiouni, p. 129; (iv) Water Management in the Nile Basin: Opportunities and Constraints, by Aziza Fahmi, p. 133; (v) Water Resources Management in Spain, by Antonio Fanlo Loras, p. 148; Sustainable Water Development under Conditions of Scarcity: Israel as a Case Study, by Hillel Shuval, p. 196; Legal and Institutional Problems of Water Resources Management in Palestine, by Abdel Rahman Tamimi, p. 236; and The Management of Water Resources : A Priority Issue in the Framework of the Euro-Mediterranean Partnership, by Ezio Martuscelli, p. 252.